



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: UG

Branch: Plastic Technology

Subject Code : BE04023031

Subject Name : Fundamentals of Mold Design

w. e. f. Academic Year:	2024-25
Semester:	4
Category of the Course:	PCC

Prerequisite:	Students should familiar with general manufacturing techniques, especially the fundamental principles of plastic processing like injection molding. Students should have a strong ability to read and interpret technical drawings, blueprints, and geometric dimensioning and tolerancing (GD&T).
Rationale:	The course will help the student of Plastic Technology to understand the fundamentals of mold designing. This knowledge will help them to design & develop molds used for processing of plastic materials.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Understand different mould parts and related terminology
02	Identify and understand different types of gates, runners and parting surfaces and calculate feed system.
03	Draw and understand the need and importance of different types of ejection and cooling systems.
04	Design Hand injection mold.

Teaching and Examination Scheme:

Teaching - Learning Scheme (in Hours per Semester)					Total Credits = TH/30	Assessment Pattern and Marks					Total Marks
L	T	P	TW/SL	TH		Theory		Tutorial / Practical			
						ESE (E)	PA (M)	PA/ (I)	TW/ SL(I)	ESE (V)	
45	00	30	45	120	04	70	30	20	30	50	200

Where L = Lecture, T= Tutorial, P= Practical, TW/SL = Term-Work / Self-Learning, TH = Total Hours, ESE = End- Semester Examination, PA = Progressive Assessment



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	General Mould Construction: Basic Terminology related to mould, Parting line, Core and cavity, Core Plate, Cavity Plate, Runner and gate, Sprue, Sprue Bush, Sprue Puller, Guide Pin, Guide Bush, Dowel, Registered ring, Ejector, Ejector Pin, Ejector Plate, Ejector back Plate, Ejector Rod, Guide bushes, Guide pillars, Day light Mould cavity and core □ Integer – cavity and core plate □ Insert- cavity and core Bolsters and its types Guide Bushes and Guide Pillars and its all type Sprue Bushes Registered ting	10	15
2.	Feed System: Sprue Runner □ Runner section □ Runner size, □ Runner layout, □ Runner balancing Gates □ Positioning of gate □ Balance gating □ Types of gate □ Feed system calculation.	10	20
3.	Parting Surface : □ General Introduction □ Flat parting surface □ Non-Flat parting surface and its types □ Venting	5	10
4.	Ejection System: General Introduction, Ejector grid, Ejector Plate Assembly: □ Ejector Plate □ Ejector retaining Plate □ Ejector Rod and Ejector Rod Bush Ejection Techniques □ Pin Ejection □ Stepped Ejector pins □ D-Shaped Ejector Pin □ Sleeve ejection □ Blade ejection □ Valve ejection □ Air Ejection □ Direct actuation Sprue Puller and Sprue Puller types	8	25
5.	Cooling System: □ General Introduction □ Cooling Integer type mould plates □ Cooling Integer type cavity plate □ Cooling Integer type core plate	7	15
6.	Designing of Mould: □ Designing of Hand Injection Mould	5	15
	Total	45	100



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Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	25	15	5	5	5

Suggested Specification Table with Marks (Theory):

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Injection Mold Design- R.G.W Pye
2. Fundamentals of injection mold design- A.B.Glenvil L and Denton
3. Plastics Mold Engineering- Pribble and Drebois
4. How to make injection mold-Henser Publication

(b) Open source software and website:

- 1) <https://nptel.ac.in/>

Suggested Course Practical List: If any

Practical based on above topics.

Self-Learning Activities:

Sr. No.	Activity	No. of hours	Total hours claimed	Evaluation Criteria
1	Industry/Research laboratory visit	Visit = 5h, Report preparation = 5h	10	Based on report submitted.
2	Poster/chart/power point preparation on technical topics	Duration = 10 h	10	Based on Poster/Chart/PPT preparation and presentation skills
3	Assignment writing.	5 assignments of 2h each.	10	Based on the assignment submitted.
4	Technical Video based learning related to the subject	Duration of video = 5h Report preparation = 5h	10	Report /presentation based on the video learning outcomes.



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5	Group Discussion on emerging/trending technical topics based on subject	Duration = 1 h each	-	Based on performance in group discussion, technical depth, knowledge etc.
6	Attending Expert Lecture/Webinar/Seminar	Duration- 1hr each	--	Based on Short report
7	Self-learning on-line course	Minimum duration of the course should be 10h.	10	Examination based assessment at the end of course. Based on the certificate produced
8	Exhibition/ Conference/ Trade Fair/ Industrial exposure for 2-3 days	Visit- 15 hr Report preparation- 5 hr	20	Based on learning, observations and short report.
9	Working model on technical topics	Working = 15 h	15	Based on design, understanding & presentation of the model
10	Non-working model on technical topics	Non- working = 5 h	5	Based on design, understanding & presentation of the model
11	Videos on Industrial safety aspects based on subject	Duration of video = 5h Report preparation = 5h	10	Based on report submitted

Above activities are suggestive, faculty can choose any of these activities and cover up the rest of the 45 Self Learning Hours. The number of hours is suggestive. Faculty can sub-divide the number of hours based on the activity. However, the total number of hours is fixed.

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