GUJARATTECHNOLOGICALUNIVERSITY

Program Name: Engineering

Level: PG

Branch: Plastic Engineering

Course/Subject Code: ME01084021

Course/Subject Name: Plastic Processing Techniques-1

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

Course Outcome:

After Completion of the Course Student will able to:

No	Course Outcomes
01	Understand the Plastic Processing and constructional feature of processing machines.
02	Apply the knowledge of processing steps for manufacturing various products
03	Operate Plastic Processing machinery and set the parameters
04	Trouble shoot the defects

Teaching and Examination Scheme:

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

Course Content:

Unit No.	Content	No.of Hours	%of Weightage
1.	Injection Moulding Definition and Basic principles of Injection Moulding –Types of machines used – Constructional features of Injection Unit(Hopper, screw, barrel, nozzle, Injection end specifications)-Constructional features of Clamping Unit (Hydraulic clamp, Toggle clamp, Comparison, Clamp end specifications, Tonnage calculations)– Cycle time – Process variables & its effect on Moulding quality –Cavity pressure profile –Start up and shut down procedures – Processing parameters and special precaution to be taken while processing of Engineering plastics such as Nylon, Acetal, PC, etc., - Common moulding defects, causes and	22	45

	remedies, Injection Molding of Thermosets		
2.	ROTATIONAL MOULDING : Introduction, Process Advantages and Disadvantages, Raw Material Selection Criteria, Types of Machines, Process steps, Applications	5	15
3.	Compression Molding: -Introduction and Process Description, Advantages & Disadvantages and Applications of Compression molding, Factors effecting the process, Types of Compression molds (Positive, Semi positive and Flash molds), Bulk factor, Preforms, Calculations related to Powder well, Land area & Pressure Pads, Preheating, Heaters for compression mold, Factors affecting compression molding, Trouble shooting.	10	25
4.	Transfer Molding: Introduction, Advantages & Disadvantages and Applications of Transfer Molding, Transfer Molding Methods: Pot Type, Plunger Type, Screw Type Transfer Comparison between Compression and Transfer Molding, Factors affecting Transfer Molding, Trouble Shooting	5	15
	Total		**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
15	15	20	10	5	5

WhereR:Remember;U:Understanding;A:Application,N:AnalyzeandE:EvaluateC:Create(asper Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
Books:

1 Injection Moulding- Irwin I. Rubin
2. SPI Plastics Engineering Handbook of the Society of the Plastics Industry - Michael L. Berins

3. Thermosetting Plastics: Moulding Materials and Processes by John F Monk
4. Injection moulding M/c by Whelan
5. Plastics material and Processes by Schwartz and Goodman
6. Rotational Molding Technology: R J Crawford & J L Throne

(b)Open source software and website:

1) https://nptel.ac.in/

2) https://www.bpf.co.uk/

Suggested Course Practical List: : As per the above syllabus topics

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