GUJARAT TECHNOLOGICAL UNIVERSITY

CHEMICAL TECHNOLOGY (36)
DESIGN & FABRICATION OF MOLDS
SUBJECT CODE: 2183602
B.E. 8TH SEMESTER

Type of Course: Chemical Technology

Prerequisite: Studied subject PR-09(Design & Fabrication of Moulds) basic knowledge of moulds that are used in Polymer & Rubber Industry.

Rationale: The main objective of this subject is to study the moulds and their design how are they prepared and useful in the rubber & polymers in chemical industries. This subject provides fundamental knowledge of various types of designing of various parts used in making various parts of rubber & polymers in chemical industries.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
4	0	3	7	70	20	10	20	10	20	150

Content:

Sr. No.	Topic	Teaching Hours	Module Weightage (%)
1	**Compression Moulds**- Positive, semi-positive & flash Mould with Horizontal & vertical flash, arrangement of loading shoes , simple two, Plate & three – plate Moulds , split Moulds	8	16
2	**Transfer Moulds-** Principles if Integral post, auxiliary rams & separated Pot Mould, calculation of number of cavities.	7	14
3	**Injection Moulds-** Two plate & three plates types , injection , venting, Runner & gates , calculation of number of cavities , hot runner Mould	8	16
4	**Extrusion Dies**- Extrusion of simple shapes tubing cable covering & Sheeting dies	7	14
5	**Mould Fabrication**- Steels for molding tools & their treatment include processes used for Mould fabrication finishing, processes	8	16
6	**Heating Systems-** for plates & Moulds , measurement & control of Temperature of Moulds & dies, simple blow Mould	6	12
	Computer Aided Design- Introduction to computer aided design & software design aspects for Moulds & dies.	6	12

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
60	**10**	**10**	**10**	**10**	**-**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Plastic Mould engineering hand book ,Du Boi's & I. Pribble, Chapman & Hall, 1995.
2. Plastic Mould & dies ,Laszlo Sors., L Bardocz, I Radnoti, Van Nostrand Reinhold Co., 1981.
3. Gastrow Injection Moulds, H Gastrow & P Unger, Hanser Verlag, 2006.
4. Compression & transfer molding of plastics. J.Butle, Plastic Institute, 1959.
5. Plastic engineering data book, A Glanvill, Industrial Press, 1973.
6. Encyclopedia of Polymer Science & Technology, John Wiley & Sons, Inc 1965.
7. Encyclopedia of Polymer Science & Technology, John Wiley & Sons, Inc 1988
8. Handbook of Polymer Testing Roger Brown, Marcel Dekker Inc, 1999.

Course Outcomes:

1. To get knowledge of how the moulds are prepared and how they are design and are useful in recent trends in Polymer & Rubber Technology.
2. To be able to apply this knowledge in Polymer & Rubber industries.
3. To build a bridge between theoretical and practical concept used in industry.

List of Experiments:

1.	Design of two plate injection mould
2.	Design of three plate injection mould
3	Design of compression Moulds
4.	Design of tubing/sheet die

Open Ended Project fields:-

Students are free to select any area of science and technology based on chemical technology applications to define Projects.

Some suggested projects are listed below:

1. Industrial practices for mold design for compression molding
2. Industrial practices for mold design for injection molding
3. Design and fabrication of mold
4. Design and fabrication of slit die

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide.