GUJARAT TECHNOLOGICAL UNIVERSITY

PLASTIC TECHNOLOGY (24)

SAFETY , POLLUTION CONTROL AND WASTE MANAGEMENT IN POLYMER INDUSTRIES

SUBJECT CODE: 2722402

SEMESTER: II

Type of course: open elective

Prerequisite: Basic knowledge of plastics waste and safety precautions, environmental issues.

Rationale: NA

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
				Theory Marks		Practical Marks				
L	T	P	C	ESE (E)	PA (M)	ESE (V)		PA (I)		
						ESE	OEP	PA	RP	
3	2#	2	5	70	30	20	10	10	10	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Plastics waste management – 4 R & I approach viz. Source reduction, Reuse, Repair, Recycling, and Incineration with examples. Plastics recycling – Classification – Code of practice - Primary, secondary, territory and quaternary recycling with examples.	10	30
2	Safety and Health at work, Managing safety, Safety Policy, Identification & evaluation of risks. Safety inspection – Checklist, documentation, Managers participation in safety, MIS.	6	15
3	Environmental Engineering, Noise in Industry & its effect on Human being, effective methods of noise reduction, lighting for working, Heat stress in Plastics Industries & effects of over exposure to heat, combating heat stress industry. Industrial ventilations & Exhaust systems.	07	15
4	Chemical Safety Management if Hazardous / toxic materials occupational health management, the human side of safety employees participation in safety accident prevention programme.	06	10
5	Earth & its environment, business enterprise, environmental issues related to the Plastics Industries – Global concern V/s Local & regional concerns, Global warming, depletion of stratospheric ozone. Polymer & Energy, Plastics in the Marine Environment. Environmental effects on polymeric materials.	13	30

Reference Books:

1. Nabil Mustafa, Plastics Waste Management, Disposal Recycling and Reuse, Marcel Dekker, Inc. New York, 1993
2.Safety Management in Industry: N.V.Krishnan, Jaico Publishing House, 1997.
3. Plastics and the Environment Anthony L. Andrady, John Willy & Sons 2003.
4. Mc Grawhills Hazardss Chemicals safety guide for the plastics industry.
5. Plastics for Environment & Sustainable Development ICPE & CIPET Publication 2003 Ed.

Course Outcome:
After learning the course the students should be able to:

- Find recycling Code of practice
- Understand 4 R & I approach.
- Understand Chemical Safety Management
- Understand Safety Policy.

List of Experiments/tutorials:

1. Source reduction, Reuse, Repair, Recycling & Classification of plastics recycling.
2. Primary recycling of plastics waste.
3. Secondary recycling of plastics waste.
4. Tertiary recycling of plastics waste.
5. Give various effective methods of noise reduction.
6. Manager's participation in safety.
7. Environmental issues related to the Plastics Industries.

Major Equipments
Nil

Open ended problems/ design oriented problems
1. Identification of recycling codes
2. Safety inspection – Checklist
3. Hazardous / toxic materials occupational health management
4. Industrial ventilations & Exhaust systems.

List of Open Source Software/learning website:
https://saferenvironment.wordpress.com **http://www.moef.nic.in/**

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.