

GUJARAT TECHNOLOGICAL UNIVERSITY

ENVIRONMENTAL MANAGEMENT (18)

ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT

SUBJECT CODE: 2721804

SEMESTER: II

Type of course: Environmental Management

Prerequisite: Knowledge of occupational health.

Rationale: The graduate engineer employed in SHE department of industry requires knowledge of matters relating to human health risks and their mitigation.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	ESE (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr. No.	COURSE CONTENT	Total Hrs	% Weightage
1	Introduction: Environment Risk assessment and Management: The what's, whys and how's.	2	4.76
2	Risk Assessment: Assessing risk to human health and ecological systems from chemicals	4	9.52
3	Risk assessment and management for waste treatment and disposal.	4	9.52
4	Risk Communication	2	4.76
5	Economics of risk and valuing risk	4	9.52
6	Risk Assessment Process: Conceptual frame work, Hazard identification, Hazard assessment, Risk estimation, Risk evaluation, Risk mitigation, Risk assessment in option evaluation, Risk assessment during operation of risk assessment.	10	23.8
7	Maximum Credible accidents (MCA) analysis: Hazard indices viz. Dow's fire and explosion. Indexc (FEI) and MOND index – degree of hazard – toxicity index	6	14.3
8	Consequence analysis: Development and assessment of various scenarios, determination of extent of damage	6	14.3
9	Disaster Management Plan (DMP) and Emergency preparedness	4	9.52

	plan (EDP)		
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Reference Books:

1. Hand book of Environmental Impact Assessment vol –1: By Judith petts,
2. The Risk Assessment of Environmental and Human Health Hazards (Text book of case studies):
By Paustenbach, D.ceds
3. Hand book of Env Risk Assessment and Management Edited: By Peter Callow
4. Environmental Risks and Hazards: By Cutter and Susan

Course Outcome:

After learning the course the students should be able to:

1. Identify the diseases associated with occupation.
2. Identify the hazards in industrial operation and propose prevention measures.
3. Carry out Hazop and Hazan analysis.

List of Tutorials: Term Work will comprise of assignments and exercises based on MCA analysis, Hazard indices, Dow's fire and explosion index, toxicity index, fault tree analysis, HAZAN and HAZOP, DMP and Emergency preparedness Plan.

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.