GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering
Subject Code: 3721804
Semester – II
Subject Name: ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT

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	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	**Introduction**: Environment Risk assessment and Management: The what's, whys and how's.	2
2	**Risk Assessment:** Assessing risk to human health and ecological systems from chemicals	4
3	Risk assessment and management for waste treatment and disposal.	4
4	Risk Communication	2
5	Economics of risk and valuing risk	4
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
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
8	**Consequence analysis:** Development and assessment of various scenarios, determination of extent of damage	6
9	Disaster Management Plan (DMP) and Emergency preparedness plan (EDP)	4

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 Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Identify the diseases associated with occupation	10%
CO-2	Identify the hazards in industrial operation and propose prevention measures	20%
CO-3	Identification Of Hazard Through HAZOP And Assessment Of Risk Through HAZAN	40%
CO-4	Develop risk management plan	30%

List of Experiments / Tutorial :

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.

Major Equipment: ----------

List of Open Source Software/learning website:

https://nptel.ac.in/