



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: Diploma

Branch: Environmental Engineering

Course / Subject Code : DI03013051

Course / Subject Name : Environmental Project Management

<b>w. e. f. Academic Year:</b>	2024-25
<b>Semester:</b>	3 <sup>rd</sup>
<b>Category of the Course:</b>	PCC

<b>Prerequisite:</b>	Environment and sustainability knowledge
<b>Rationale:</b>	Due to increase in Industrialization the energy demand has also increased, and this has resulted in increase in greenhouse gas emission. All of these activities have led to climate change the effect of which are being felt in the present days. This has raised the need to implement all projects in an environmentally sound way. This course deals with general aspects of project management & environmental management system. In this course students are expected to learn the application of planning and execution of project in an environment friendly way leading to sustainable development.

## Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Identify various phases of Environmental project and various elements of Environmental project management triangle	R, A & U
02	Interpret Environmental project management framework and methods	R, A & U
03	Summarize Environmental Project Management tools and techniques	R, A & U
04	Explain various aspects of safety management in industry	R, A & U
05	Explain principles, & appropriate methods of “disaster management”.	R, A & U

\*Revised Bloom's Taxonomy (RBT)



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### Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR		C	Theory		Tutorial / Practical	
			ESE (E)		PA(M)	PA(I)	ESE (V)	
3	0	0	3	70	30	0	0	100

### Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	<b>Environmental Project Management Methodology</b> 1.1. Definition of Environmental based project, Difference between Green project and Environmental based project, Definition of Environmental Project Management, Environmental project life cycle 1.2. Various phases of Environmental project like Initiation phase, Environmental Impact study phase, Decision making phase, Implementation phase, Close out phase 1.3. Elements of Environmental project management triangle 1.4. Brundtland's definition of sustainable development, Baridu's definition of Project sustainability	7	15
2.	<b>Environmental Project Management Framework And Economics</b> 2.1 Purpose and desired outcome of Environmental Project Management Framework 2.2 Environmental project management methods such as ISO 14001 environmental management systems, Plan-Do-Check-Act (PDCA) cycle, the six sigma Define-Measure-Analyze- 2.3 Improve-Control (DMAIC) system 2.4 Interdependency of market economy and environment, Economics of environmental pollution, enlist methods of economic evaluation of environmental projects	5	10
3.	<b>Environmental Project Management Tools And Techniques</b> 3.1 Brainstorming, stakeholder Analysis, SWOT Analysis 3.2 Affinity diagram, Work breakdown structure,	11	25



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	Responsibility assignment matrix, Network diagram(CPM), Gantt chart 3.3 Milestone chart, Cause and effect diagram, PERT 3.4 Al gore’s definition of Digital Earth concept, Introduction to geospatial data, role of geo spatial in Environmental Project Management		
4.	<b>Safety Management</b> 4.1 Preliminary knowledge regarding environmental related safety codes (BIS) for Fire Hazards & its prevention, Chemical hazards and its prevention, Mechanical, Electrical & radiation hazards, Biological and Ergonomical Hazards. 4.2 Control of Hazards through cases/examples/videos Occupational safety, Safety Equipment & Campaign, Dos and Don’t for Storage of Chemicals. 4.3 Principle of accident prevention, Principle of accident causation, Personal protective equipments 4.4 Factories Act, 1948, Workman’s Compensation Act, 1948, Employees State Insurance Act, 1948. Mines Act, 1948, Air (Prevention and control) Pollution Act, 1981, Water (Prevention and Control) Pollution Act, 1974, Boiler Vessels Act. Child Labour and Women Employee Act.	11	25
5.	<b>Disaster Management</b> 5.1 Introduction to various Kinds of Disaster, Effects of various kinds of disaster including Socio-economic & culture effects 5.2 Pre disaster management, Management during and after disaster 5.3 Role of NDMA, National Plan, Fund allocation for disaster management, offences and penalties stated in act	11	25
<b>Total</b>		<b>45</b>	<b>100</b>

**Suggested Specification Table with Marks (Theory):**

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
40	50	10	-	-	-

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom’s Taxonomy)



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## References/Suggested Learning Resources:

### (a) Books:

S. No.	Title of Book	Author	Publication
1	Environmental Project Management Principles, Methodology, and Processes	Ebenezer A. Sholarin, Joseph L. Awange	Springer
2	Industrial Safety , Health and Environment Management Systems	R. K. Jain and Sunil S. Rao	Khanna publishers
3	Fundamentals of Industrial Safety & Health	Dr. K. U. Mistry	Siddharth Prakashan
4	Industrial Safety		National Safety Council of India ISHET
5	Project Planning by CPM & Pert	B.C.Punamia & Khandwala	Laxmi publications
6	Industrial Safety and Environment	Anupama Prashar & Pratibha Bansal	S.K. Kataria and sons
7	Safety health and environment handbook	CPWD	Director general, CPWD, New Delhi
7	Disaster management in India		Ministry of home affairs, Government of India



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**(b) Open source software and website:**

- a) Microsoft Project
- b) [ndma.gov.in](http://ndma.gov.in)
- c) <https://labour.gov.in/industrial-safety-health>
- d) [www.nptel.ac.in](http://www.nptel.ac.in)

**Suggested Course Practical List: NIL**

**List of Laboratory/Learning Resources Required: NIL**

**Suggested Project List:**

- a) Study various types of project and classify them into Green project and Environment based project and prepare a chart of classification.
- b) Perform literature survey and identify and report various environment based projects undertaken in India till date.
- c) Prepare individual charts for world's environmental disasters identifying their cause and effect.
- d) Apply environmental project management tools for planning, scheduling and implementation for a hypothetical project and report it.
- e) Study safety management system of some environmental organization and prepare a report
- f) Study the various acts related to occupational health and safety and prepare a report of important provisions.
- g) Undertake case study of accidents in industries/factories and prepare report on cause and effect and preventive measures to avoid such accidents.
- h) Prepare a report on disaster management preparedness of residing district.
- i) Prepare report on various kinds of disasters that took place in India with their causes and possible preventive measures.
- j) Study the Disaster Management act and make a report of important provisions listed in the act.

**Suggested Activities for Students: If any**

- a) Student will visit nearby Industries to study the existing Environmental management system.
- b) Student will Survey an ongoing project site and check whether environmental project management methods are implemented or not.
- c) Student will carry out survey in nearby industries to study the safety management implemented over there.

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