



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3141308

Semester – IV

Subject Name: Environment Resource Management

Type of course: Mandatory Course

Prerequisite: Basics of Environmental Sciences

Rationale: To make students aware about finite resources & their management.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
2	1	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	INTRODUCTION TO NATURAL RESOURCES: Definitions & Classifications of Resources, Classifications between Renewable & Non Renewable resources, Resource utilization & exhaustion, Conservation of natural resources.	04
2	ENVIRONMENTAL RESOURCES: A. Water Resources: Global water distribution , assessment of water resources , water budget of India , uses & Consumption of water for domestic , industrial & agriculture sectors , water management techniques , water reuse & recycling concept. B. Energy Resources: a. Conventional Sources of Energy: Fossil fuel types of energy, energy generation techniques, environmental consequences thereof. b. Alternative Sources of Energy: Energy generation techniques & environmental consequences of Solar Energy, Energy from sea, Geothermal	18



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	Energy, Nuclear energy, Wind energy & Biomass energy. C. Forest & Wildlife: Types of forest, importance of forest, deforestation, causes & consequences of deforestations, desertification, concept & types of social forestry. D. Food Resources: Sources of food, measures of food availability, food production & environment. E. Biodiversity: Importance of biodiversity, reasons of biodiversity decline, consequences of decline of biodiversity, steps to protect biodiversity.	
3	POPULATION DYNAMICS & FORECASTING METHODS: Population theories: Malthusian, optimum & demographic transition , basic equation of population dynamics , growth rate equation , concept & application of doubling time , Population forecasting methods , social & environmental consequences of population explosion.	12
4	ENVIRONMENTAL RESOURCE MANAGEMENT TOOLS: Sustainable development concept, need, principles & challenges, National & international steps for resource conservation, GNP & Quality of Life, Clean Development Mechanisms (CDM), Carbon footprint.	08

Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	35	25	--	--	--

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. Eco science, Population, resources, environment By Ehrlich and Ehrlich (W.H. Free man & Company San Fransico 1977)
2. Essentials of Environment by Gilbert Master (3rd Edition- Prentice hall, New Jersey.)
3. Basics of Environmental Studies by Prof. Dr. N.S. Varandani (Books India Publication)



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Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Recognize various types of natural resources & need for their conservation.	10%
CO-2	Explain importance of natural resources, reasons of their depletion & steps for their protection.	45 %
CO-3	Discuss population dynamics & its relationship with social & environmental consequences.	25%
CO-4	Describe the various resource management tools for achievement of sustainable development goals.	20%

List of Tutorials:

1. Definition of terms related to types of resources.
2. Water resources: Availability, importance, reasons of depletion & steps for their protection.
3. Energy resources : Types , methods of energy generation & pros and cons with their application
4. Forest & Wild life.
5. Biodiversity.
6. types of Food resources & relationship with environment.
7. Numericals based on Population forecasting & dynamics.
8. Population theories, dynamics & forecasting & relationship with social and environment.
9. various resource management tools.