

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: V

ENVIRONMENTAL ENGINEERING

Subject Name: **Environmental Resources**

Subject Code: **151304**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
3	2	0	5	70	30	50

Sr. No.	Course Content
1.	Water Resources: Global water distribution, Assessment of water resources, Water budget of India, water requirements: Domestic, Agriculture, Industry, water uses and consumption, water scarcity, water management & sustainable water use in India, water conservation in industry, agriculture and homes, Rain water harvesting. Desalination of sea water Recycling & Reuse of waste water.
2.	Food Resources: Sources of food, measures of food availability, limits to food production, food production & environment, -agriculture: Environmental impacts, -Domesticated animals, -Aqua culture.
3.	Energy Resources: Energy Basics, Energy Scenario for Renewable & Non-renewable energy resources: Global & India, Non Renewable resources: Estimation of stock and reserves : Static Reserve Index, Exponential Reserve Index, Conventional Fossil fuels: Coal, Oil and Natural gas , Nuclear fuels, Alternative Energy sources: How it works and citing criteria, Solar Energy: Solar Cell and Solar Panel, Hydro power, Tidal energy, Wind energy, Geothermal energy, prospects and potential of different alternative energy sources.
4.	Forests and Wildlife: Types of forest, importance of forest, deforestation, desertification, causes and consequences, social forestry.
5.	Biodiversity: Importance of biodiversity, decline of biodiversity, reasons of the decline, consequences of losing biodiversity, steps to protect biodiversity.
6.	Population: Population theories: Malthusian theory, Optimum Theory, Demographic transition Theory, Population dynamics: instantaneous rate of increase, basic equation of population dynamics, growth rate equation, the exponential growth (application & properties), Doubling time: concept & application, Population forecasting, Demographic projections & population structure (world & India) : population profiles, age structure diagrams, Population explosions: causes & consequences, Remedial measures.

7.	Environmental Ethics and Politics: Pollution control policies, GNP and Quality of Life, Science-technology & laws, Global commons- tragedy of the commons, Feeding the rich & over consumerism, Environment & ethics. ,Environmental Movements(National and International.
8.	Global warming and Climate change: Role of CO ₂ , Methane, Nitrous oxide, and Chloroflurocarbons in climate change, Carbon footprint, CDM.

Reference Books:

1. Eco science, Population, Resources and Environment by Erlich and Erlich (W.H. Free man & Company San Fransico1977)
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)