

# GUJARAT TECHNOLOGICAL UNIVERSITY

B.E Semester: 3

## Environment Engineering

Subject Code 131303

Subject Name Ecology & Remote Sensing

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### (A) Ecology

Sr.No	Course content
1.	Limiting factors and Tolerance Levels : Shalfords and Liebigs laws, Climagraphs, Tolerance levels and pollution, Indicator organisms, Alien organisms,
2.	Structure and Dynamics of Single Spices Population and Population Growth: Population Sizes and estimates, Spatial distribution, Population and Patterns of population growth: Malthusian growth and Logistic growth.
3.	Social Behavior and Population Dynamics: Territorialism and Dominance Hierarchies, Social behavior in population regulation.
4.	Inter specific population like: Communalism, Mutualism, Predication, Parasitism, Competition, Amensalism and antibiosis.

### (B) Remote Sensing

Sr.No	Course content
1.	Principles of remote sensing; in situ sensing oaf environment; economic benefits; geographical uses; physical basis; radiation characteristics of natural phenomena, Types of photograph and size of photograph.
2.	Sensors for monitoring; sensors within and outside visible wave lengths; absorptions spectrometers; sensor plat form; packages and data distribution; land set systems; space lab; space shutlle; relationship.
3.	Collection, analysis and interpretation of data; collecting in situ data; enhancement and interchangeability of data; manual data analysis; and interpretation, numerical data processing and analysis.
4.	Remote Sensing Applications: Weather analysis; forecasting; global climatology; water in the environment soil and land form; rocks and minerals resources; national parks and wild life study; crops and land use; built in environment; hazards and catastrophes.

5.	Problems and prospects; limitations of costs; security restriction handling; large quantity of data; interface between technologist and user and future development. Ground – truth data and Global Positioning System.
6.	GIS Application.
7.	Functions and Advantages of GIS.

### **Reference Books:**

1. Principles of Ecology – by Chrles Southwick
2. Principles of Remote Sensing – by Lillyson
3. Remote Sensing and GIS – by Bhatia
4. Concepts of Modern Ecology by S.C. Tiwari
5. Text book of Ecology by Deeksha Dava & S.S. Katewa