SARVODAYA KELAVANI SAMAJ MANAGED,

SHREE MANIBHAI VIRANI & SMT. NAVALBEN VIRANI SCIENCE COLLEGE

AN AUTONOMOUS COLLEGE- AFFILIATED TO SAURASHTRAUNIVERSITY, RAJKOT

Re-accredited at the 'A' Level (CGPA 3.28) by NAAC
'STAR' College Scheme & Status by MST-DBT
A College with Potential for Excellence - CPE (Phase-II) by UGC
UGC-DDU KAUSHAL Kendra
Accredited at the G-AAA Highest Grade 'A-1′ Level by KCG, Govt. of Gujarat
UGC-DDU KAUSHAL Kendra
GPCB-Government of Gujarat approved Environment Audit Centre

Enclosure I (C)

DSE Allied Zoology

Semester III

(With Biochemistry)

19UBCDA301	Zoology - II	3 Hrs/Week	3 Credits

Objective:

- Educating the students about the need to necessity, conservation and protection about ecology and environment and microbial ecology as welfare of human and its future.
- To enable the students to understand the roll of ecology in environment, its importance, habitat, interaction, and abiotic component cycle etc.

Unit 1: Introduction to Environmental Biology **(9Hrs)**

- History, basic concepts and Applications.
- Chemical evolution for the Origin of life.

- Biological evolution for the Origin of life.
- Ecosystem – structure, function and types.
- Abiotic factors – Water, Light and Temperature.

Unit 2: Habitat Ecology (9Hrs)

- Soil formation, constituents and types.
- Soil profile and Soil organism in Terrestrial habitat.
- Types, Stratification and Zonation in Aquatic habitat
- Atmosphere – Structure and Stratification, Air and Gases, Aerosol.
- Causes and Effects of Habitat loss.

Unit 3: Community and interaction (9Hrs)

- Composition, Structure, Quantitative characters, Qualitative characters of Community
- Interaction – Mutualism, Commensalism, Antagonism, competition
- Introduction, General process, Causes and types of Successions.
- Population Ecology- Population characteristics; Size, Frequency, Density and Abundance.
- Population dynamics- Natality, Mortality, Age structure and Dispersion.

Unit 4: Environmental pollutions and Biogeochemical Cycles (9Hrs)

- Types of Pollutants, Air, water and Soil pollution and strategies to control.
- Environmental policies of India to control the pollution.
- Carbon cycle, Nitrogen Cycle
- Phosphorous cycle and Sulfur cycle
- Oxygen and Water cycle

Unit 5: Human Welfare and Wild Life Management (9Hrs)

- Classification and Conservation of natural Resources
- Types of Agriculture, Introduction to Aquaculture and Waste management
- Concept of threatened species, reasons and modes of wild life conservation;
- National parkas and Sanctuaries of India,
- Wild life Projects- Projects tiger, Asian elephant project, Conservation of Rhinos

Text Books:

- Arumugam, Concepts of Ecology, seventh edition, 2010, Saras publication.
- Verma, P. S., & Agarwal, V. K. (2015). *Environmental Biology: Principles of Ecology*., S. Chand publication, New Delhi.

Reference Books:

- Odum, E. P., & Barrett, G. W. (1971). *Fundamentals of ecology*. Philadelphia: Saunders.
- Groom, M. J., Meffe, G. K., & Carroll, C. R. (2006). *Principles of conservation biology*, Sunderland: Sinauer Associates publishing.

PRACTICALS:

19UBCDA302	Zoology II Practical	6 Hrs/wk	2 Credits

Objectives:

- Enhancing the students practical work about the environmental conservation and protection by ecological grip on hands.
- To enable the students to understand the roll of ecology in environment, its importance, future necessity and control of pollution by practical works.

1. Study of Aquatic ecosystem
    a. Pond ecosystem
    b. Oceanic Zonetion
2. To Compare the chemical characteristics of soil - I
    a. pH
    b. Moisture content
3. To Compare the chemical characteristics of soil - II
    a. Carbonate content
    b. Nitrate content.
4. Estimation of Chlorinity in water.

5. Estimation of Carbon dioxide in tap water.
6. Measurement of water quality, based on Hardness.
7. Measurement of water quality, based on BOD and COD.
8. Study of Biotic-interaction.
9. Study of Ecological adaptation part I.
10. Study of Ecological adaptation part II.
11. To determine 'species Area curve' and community size by quadrate method.
12. To determine Frequency of the community by quadrate method.
13. To determine Density of the community by quadrate method.
14. To determine Abundance of the community by quadrate method.
15. To calculate Mean for community dynamics.
16. To calculate Median for community dynamics.
17. To calculate Mode for community dynamics.
18. To determine population strength by quadrate method.
19. To determine Water holding capacity of the soil from deferent soil samples.
20. To count planktonic population among polluted water.
21. Study of Marine Zonetion and stratification.
22. Habitat study of Desert Area.
23. Habitat study of Forest Area.
24. Habitat study of Fresh water Area.

References:

- Arumugam, Concepts of Ecology, seventh edition, 2010, Saras publication.

Verma, P. S., & Agarwal, V. K. (2015). *Environmental Biology: Principles of Ecology*.,

- S. Chand publication, New Delhi.