

ST. JOSEPH'S COLLEGE FOR WOMEN (A), VISAKHAPATNAM
Four Year – B.Sc. (Hons), Semester – VIII
ZOOLOGY

ENVIRONMENT BIOLOGY AND ENVIRONMENT PHYSIOLOGY

Time:4 hrs/week

Max. Marks-100

Code: Z 8501(3)

Learning objectives: Enable the students to

- Gain knowledge about the structure and components of the ecosystem
- Comprehend the dynamics of Ecosystem
- Understand the importance of adaptations in animals to different environments.
- Summarize the effects of environmental stress and stress physiology

Learning outcomes: students should be able to

- Gain knowledge of the structure and Components of Ecosystem
- Understand the Community dynamics
- Know the natural resources and their conservation
- Outline the basic concepts of Stress physiology
- Understand the importance of yoga and meditation in combating stress.

I. Syllabus

UNIT- 1

1.1 Structure and components of ecosystem. Types and functions of ecosystem. Ecological modeling. Limiting factors

1.2 Energy flow, food chain, food web and trophic levels, ecological pyramids. Ecological succession

1.3 Biogeochemical cycles: water cycle, carbon, oxygen and nitrogen cycles.

UNIT-2

- 2.1 Population dynamics- Dynamics of population growth. Factors that increase or decrease population.
- 2.2 Community dynamics- Characteristics and composition- Development and classification of communities.
- 2.3 Renewable and non-renewable resources: Forest, water and mineral resources. Conservation of energy sources.

UNIT-3

- 3.1 Levels of adaptation. - Mechanisms of adaptation.
- 3.2. Adaptations to different environments. Terrestrial (arboreal, cursorial, fossorial, polar, Desert etc, Aerial, Aquatic (Pelagic, hadal).
- 3.3 Adaptations to different environments. Polar, Deep-Sea Environment-Wet land.

UNIT-4

- 4.1 Stress Physiology - Basic concepts of environmental stress and strain, Concept of elastic and plastic strain.
- 4.2. Stress avoidance, stress tolerance and stress resistance. Acclimatization.
- 4.3 Endothermic and physiological mechanism of regulation of body temperature.

UNIT-5

- 5.1 Stress physiology in different conditions
- 5.2 Physiological response to oxygen deficient stress. Physiological response to body exercise.
- 5.3 Effect of meditation and yoga

II. Suggested Text books

FUNDAMENTALS OF ECOLOGY Odum P.

III. Reference Books

- ECOLOGY with special reference to animal & man S. Charles, Kendeigh Prentice hall of India Pvt. Ltd. New Delhi
- ELEMENTS OF TROPICAL ECOLOGY- Yanney Ewusie (English language Book Society, Heine mann educational book publication)
- ANIMAL PHYSIOLOGY, MECHANISM AND ADAPTATION - Eckert, R., W,H, Freeman and Co.
- BIOCHEMICAL ADAPTATION- Hochachka, P.W, and Somero S.N, Princeton, New Jersey
- ANIMAL PHYSIOLOGY: ADAPTATION AND ENVIRONMENT. - Schiemidt Nielsen, Cambridge
- GENERAL & COMPARATIVE ANIMAL PHYSIOLOGY Hoar W.S. Princeton Hall of India

IV. **Suggested activities**

- Case study Meditation and yoga
- Collection of specimens from various environments

UNIT-5

5.4 Stress physiology in different conditions

5.5 Physiological response to oxygen deficient stress. Physiological response to body exercise.

5.6 Effect of meditation and yoga

V. Suggested Text books

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VII. Suggested activities

- Case study Meditation and yoga
- Collection of specimens from various environments