

(For AC-Batch only)

ST. JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

VI SEMESTER

BOTANY

TIME: 3Hrs/week

B(3)

ECOLOGY & PHYTOGEOGRAPHY

Max. Marks: 100

W.e.f. 'V' (2008 – 2011) Batch

SYLLABUS

OBJECTIVES: To enable the students to

1. understand basic concepts of Ecology and environment.
2. understand the morphological, anatomical and physiological responses of plants to the environmental factors.
3. understand the importance of community ecology and ecological succession.
4. know the significance of Phytogeography and understand the phytogeographical regions of India

COURSE:

ECOLOGY

UNIT – I: Concepts and components of Ecosystem

1. Introduction
2. Ecosystem Ecology
 - a. Abiotic and biotic components
 - b. Food chains, food webs, ecological pyramids.
 - c. Energy flow, bio-geo-chemical cycles of carbon, nitrogen and phosphorus.
3. Ecosystems – major ecosystems of grassland, forest, desert / cropland, aquatic – fresh water – Pond; marine – oceanic / estuarine

UNIT – II: Plants and Environment

1. Ecological Factors - Climatic
 - a. Light
 - b. Temperature
2. Edaphic Factors – composition of soil, soil profile, formation of soil – weathering: Physical, chemical; pedogenesis – process of soil formation.
Soil erosion; soil conservation (Brief account)
3. Biotic factors
4. Ecological Adaptations of Plants
 - a) Hydrophytes
 - b) Xerophytes

UNIT III: Population and Community Ecology

1. Population ecology – Natality, Mortality, Growth curves, ecotypes, ecads
2. Community ecology – characteristics of community – Frequency, Density, Cover, and basal area, dominance, life forms, Biological spectrum, Important Value Index (IVI)
3. Methods of Study of Plant Communities.

UNIT IV: Plant Succession & Production Ecology

1. Ecological succession
 - a) Hydrosere
 - b) Xerosere
2. Production Ecology – concepts of productivity, GPP, NPP, CR (Community Respiration), Secondary production, P/R Ratio
2. Methods to estimate Primary productivity

PHYTOGEOGRAPHY

UNIT V: Phytogeography

1. Phytogeographical regions of India
2. Vegetation of India
 - i)Forest vegetation
 - ii)Grass land vegetation
 - iii)Mangrove forests
 - iv)Pond vegetation
3. Threatened and endangered Plants of India; IUCN Red Data Book.
4. Role of Organizations in the conservation of biodiversity – IUCN, UNEP, WWF, NBPGR, NBD.

TEXT BOOK:

K. Ramakrishna & B.R.C Murthy (2006) Text Book of Common Core Botany – Vol.II – Vikas Publications. Guntur.

REFERENCE BOOKS:

1. Plant Ecology – R.S. Ambast – Students friends & Co., Varanasi, India – 1988.
2. Ecology & Environment – P.D. Sharma – Rastogi Publications, Meerut – 2001.
3. A. Treatise on Plant Ecology – K.N. Bhatia & Sharma K.K. – Pradeep Publications, Jalandhar – 1991.
4. Textbook of Environmental Studies of Undergraduate Courses. Bharucha, E.Universities Press (I) Pvt.Ltd., Hyderabad 2005
5. Concepts of Ecology, Kormondy, E.Prentice Hall of India, New Delhi 1989
6. Ecology Michael S. Oxford University Press, London 1996.
7. Basics of Ecology Odum, E.P. Saunders Intenational Students Edition, Philadephia 1983
8. Elements of Ecology, Sharma P.D. Rastogi Publications, Meerut 1989
9. Environmental Biology Singh H.R.S.Chand & Co. Ltd. New Delhi 2005

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ST. JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM
VI SEMESTER **BOTANY** TIME: 3Hrs/week
B(1) **ECOLOGY & PHYTOGEOGRAPHY** Max. Marks: 50
W.e.f. 'V' (2008 – 2011) Batch **PRACTICAL IV**

OBJECTIVES: To enable the students

- learn the quantitative aspects of a plant community by quadrat method
- study various aspects of plant communities.
- Acquire knowledge of the Phytogeography of the region

COURSE:

1. Knowledge of ecological instruments : working principles and applications of Hygrometer, Rain gauge, Anemometer, Altimeter, Light meter, Wet and Dry Bulb Thermometer (with the help of equipment / diagrams / photographs)
2. Determination of Soil texture – Composition of clay, sand, silt etc. and pH.
3. Study of morphological and anatomical characteristics of plant communities using locally available plant species –
 - Hydrophytes - Hydrilla, Eichhornia, Pistia, Nymphaea, Vallisneria
 - Xerophytes - Asparagus, Opuntia, Euphorbia, antiquorum
 - Halophytes - Rhizophora, Avicennia
4. Quatitative Analysis of Herbaceous Vegetation : Study of frequency, density, abundance and biomass.
5. Detailed study of the flora of a fresh water body or aqua culture pond.
6. Geographical spotting of certain endemic and endangered plant species of Andhra Pradesh.
7. Minimum of two field visits to local areas of ecological / conservation of biodiversity importance (Sacred grove / reserved forest / botanical garden / zoo park / lake etc.)

REFERENCES:

1. Text book of Practical Botany (Vol .II) – Ashok Bendra & Kumar, Rastogi Publications, Meerut – 2001-2002
2. Practical Botany (Vol.II) – H.N. Srivastava, Pradeep Publications, Jalandhar – 200.
3. Modern Practical Botany – B.P.Pandey – S.Chand & Co., New Delhi – 1988.

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