



Code	Subject Title	Cr. Hrs	Semester
BOT-307	Environmental Biology	3	V
Year	Discipline		
3	Botany		

Syllabus Outline: Study of Environmental Factors and Pollutants with relation to Biolife.

Course Outline:

Introduction: Aim and Scope, Interdisciplinary Approach.

Natural Resources: Nature and Conservation of the following: Energy, Water, Mineral and Land Resources. Agriculture, Forestry, Range Land, Wild Life and Aquaculture.

Environmental Pollution: Nature and Classification.

Air Pollution: Sources and Effects of Pollutants on Plant Growth viz; Fluoride, Sulphur dioxide (SO₂), Ozone, Pan + Smog, Ammonia, Chlorine, Ethylene, Dusts etc., Nature, Causes, Prevention and Control of Air Pollution (Vehicular Pollution and Industrial Chimney Wastes).

Water Pollution: Sources of Water Pollution, Nature of Pollutants. Ground Water and Marine Pollution, Impacts of Water Pollution, Prevention of Water Pollution.

Radiation Pollution: Nuclear Concepts and Terminology, Comparative Radiosensitivity of Organisms, Radiation Effects at Ecosystem level, Fate of radio-nuclides in the environment, The Fall Out Problem, Nuclear Waste Disposal.

Sources, Nature and Impacts of **Solid Waste Pollution, Noise and Thermal Pollution.**

Pesticides and Agro-Chemicals: Herbicides, Insecticides and Fungicides as Plant Poisons and their Impact on Ecosystem.

Environmental Crisis: Major Causes and Solutions, Ozone Hole, Green House Effect, Acid Rains, Chemical and Biological Warfare.

Biodiversity and Conservation: Evaluation, Criteria and Values; Inventory and Measuring of Biodiversity; *In-situ* and *Ex-situ* Conservation of Plants.

Module Aims: Completion of this program will produce a working knowledge of ecological sampling, analysis and interpretation of biological data and prepare graduates to study and resolve the ecological consequences of environmental problems.

Learning Strategies:

1. Lectures
2. Group Discussion
3. Laboratory work
4. Seminar/ Workshop

Learning Outcome: The students will acquire knowledge about the hazardous effects of different Environmental Pollutants and Relative Measures for their Control/Prevention.

Assessment Strategies:

1. Lecture Based Examination (Objective and Subjective)
2. Assignments
3. Class discussion
4. Quiz



5. Tests

Books Recommended:

1. **Koziol, M.J. and Whatley, F.R. (2009).** *Gaseous Air Pollution and Plant Metabolism.* Butterworths. U.K.
2. **Goodstein, E.S. (2008).** *Economics and the Environment.* Prentice Hall Publishers. New Jersey.
3. **Mitsa, W.J. and Gosselink, A. (2007).** *Wetlands.* Johan Wiley and Sons, Inc. New York.
4. **Simmons, I.G. (1981).** *The Ecology of Natural Resources.* Edward Arnold.
5. **Emery, M. (2005).** *Promoting nature in cities and towns.*
6. **Varshney, C.K. (2005).** *Water Pollution and Management,* Wiley Eastern Limited.
7. **Johnson, C.E. (2004)** *Eco-Crisis.* John Wiley and Sons. Inc., New York.
8. **Agrawal, K.C. (2001).** *Environmental Biology,* Agro Botanical Publishers, India.
9. **Chhatwal, D.R., Mehra, M.C., Satake, M., Katyal, T., Katyal, M. and Nagahiro. T. (2001).** *Encyclopedia of Environmental Pollution and its Control.* (6 Vols.), Anmol Publication, New Delhi, India.
10. **Moriarty, F. (2001)** *Ecotocology.* Acadmeic Press Inc.
11. **Nobel, B.J. and Kormond, Y. (2001).** *Environmental Science.* Prentice Hall Inc. New Jersey. USA.
12. **Treshow, M. (2001)** *Environment and Plant Response.* McGraw Hill New York.
13. **Usher, M. (2001).** *Widllife Conservation Evaluation.* Chapman and Hall.
14. **Rao, D.N., Ahmad, K.J., Younas, and Singh, S.N. (2000).** *Perspectives in Environmental Botany (Vol. I,)* Print House, Lucknow, India.
15. **Smith, L. and Graham, A. (2000).** *Impact Assessment and Sustainable Resource Management.* John Wiley and Sons, New York.
16. **Jeffrey, A.M. (1999).** *Economics and Biological diversity. International union for conservation of Nature and Natural Resources in Gland, Switzerland.*
17. **Owen, O.S. (1999)** *Natural Resources Conservation - An Ecological Approach.* MacMilian Co., New York.



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18. **Southwick, C.H. (1997).** *Global Ecology*, Sinauer Associates Inc. Sunderland, Massachusetts. USA.
 19. **Mansfield, T.A. (1990).** *Effect of Air Pollutants on plants*. Cambridge University Press, London, New York, Melbourne.
 20. **Duffey, E. (1980).** *The Conservation of Nature*, McGraw Hill Book Company, New York.
 21. **Odum, E.P. (1971)** *Fundamentals of Ecology*. W.B. Saunders Company, Philadelphia, PA.
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