

# **COTTON COLLEGE STATE UNIVERSITY**

## **Undergraduate Environmental Science Syllabus**

### **DISTRIBUTION OF PAPERS/CREDITS (L+T+P format)**

**Paper Code: EVS 101CMP**

### **INTRODUCTION TO ENVIRONMENTAL SCIENCE - I**

**Credits: 2 (2+0+0)**

**(32 lectures)**

#### **Unit I: The multidisciplinary nature of environmental studies**

Introduction and definition of environmental science, scope and importance; need for public awareness.

Different segments of environment: atmosphere, hydrosphere, lithosphere, biosphere.

#### **Unit II: Natural resources**

Renewable and non-renewable resources: Forest resources, Water Resources, Mineral Resources, Food Resources, Energy Resources, Land Resources;

Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

#### **Unit III: Ecosystems**

Concept of an ecosystem; structure and functions of an ecosystem; producers, consumers and decomposers; energy flow in the ecosystem; ecological succession; food chains, food webs and ecological pyramids; Introduction and types of ecosystems: characteristic features, structure and functions.

#### **Unit IV: Biodiversity and its conservation**

Definition: genetic, species and ecosystem diversity; Biogeographic classification of India; Value of biodiversity: consumptive, productive use, social, ethical, aesthetic and option values; biodiversity at global, national and local levels; India as a mega diversity nation; hotspots of biodiversity; Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; endangered and endemic species of India; Conservation of biodiversity: in-situ and ex-situ.

**Field work (one of the following):**

1. Visit to a local area to document environmental assets, river/ forest/ grasslands/ hill/ mountain;
2. Visit to a local polluted site;
3. Study of common plants, insects, birds;
4. Study of simple ecosystems.

**Basic textbook:**

*Textbook for Environmental Studies For Undergraduate Courses of all Branches of Higher Education*; by Erach Bharucha for University Grants Commission, 2004, UGC;  
<http://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf>

**Further Readings (R: Reference; M: Magazine; TB: Textbook):**

1. Agarwal, K.C. 2001 *Environmental Biology*, Nidi Publ. Ltd. Bikaner
2. Bharucha Erach, *The Biodiversity of India*, Mapin Publishing Pvt. Ltd., Ahmedabad, India, Email:mapin@icenet.net (R)
3. Brunner R.C., 1989, *Hazardous Waste Incineration*, McGraw Hill Inc.
4. Chary S.N., 2008, *Environmental Studies*, Macmillan India Ltd.
5. Chawla Shashi, 2012, *A Textbook of Environmental Studies*, Tata McGraw Hill
6. Clark R.S., *Marine Pollution*, Clarendon Press Oxford (TB)
7. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, *Environmental Encyclopedia*, Jaico Publ. House, Mumbai, 1196
8. De A.K., *Environmental Chemistry*, Wiley Eastern Ltd.
9. *Down to Earth*, Centre for Science and Environment (R)
10. Gleick, H.P. 1993. *Water in crisis*, Pacific Institute for Studies in Dev., Environment & Security, Stockholm Env. Institute Oxford Univ. Press
11. Hawkins R.E., *Encyclopedia of Indian Natural History*, Bombay Natural History Society, Bombay (R)
12. Heywood, V.H & Weston, R.T. 1995. *Global Biodiversity Assessment*, Cambridge Univ. Press
13. Jadav, H & Bhosale, V.M. 1995. *Environmental Protection and Laws*, Himalaya Pub. House, Delhi.
14. McKinney, M.L. & Schoch, R.M. 1996. *Environmental Science systems & Solutions*, Web enhanced edition
15. Mhaskar A.K., *Matter Hazardous*, Techno-Science Publication (TB)
16. Miller T.G. Jr. *Environmental Science*, Wadsworth Publishing Co. (TB)
17. Odum, E.P. 1971. *Fundamentals of Ecology*. W.B. Saunders Co. USA, 574p
18. Rao M. N. & Datta, A.K. 1987. *Waste Water treatment*. Oxford & IBH Publ.Co. Pvt. Ltd.
19. Sharma B.K., 2001. *Environmental Chemistry*. Geol Publ. House, Meerut
20. *Survey of the Environment*, The Hindu (M)
21. Townsend C., Harper J, and Michael Begon, *Essentials of Ecology*, Blackwell Science (TB)
22. Trivedi R.K., *Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards*, Vol I and II, Enviro Media (R)
23. Trivedi R. K. and P.K. Goel, *Introduction to air pollution*, Techno-Science Publication (TB)
24. Wanger K.D., 1998 *Environmental Management*. W.B. Saunders Co. Philadelphia, USA.