SEMESTER –I

Interdisciplinary Course (IDC-101)

Name of the paper: Basic Concepts of Ecology and Environmental Science

Total Marks= 100

End Semester Examination = 70

Internal Examination = 30

Total Credits=3

Course Objectives:

- To understand basic concepts and need of Ecology and Environmental Science .
- To understand the factors affecting ecosystem .
- To understand energy flow and biogeochemical cycles in an ecosystem.
- To develop an in-depth understanding about the chemistry and importance of the atmosphere, hydrosphere and lithosphere.

Expected Course Outcomes:

After completing this course, students will be able to:

- Understand the basic concept and need of Ecology and Environmental Science.
- Understand the concept of structure and function of different components of the Environment and appreciate the interactions of different components of ecosystems.
- Understand the transfer of energy from one trophic level to another and biogeochemical cycles in an ecosystem.
- Learn about the composition of the atmosphere, hydrosphere and lithosphere.

17/5/2023

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UNIT1: Introduction to Ecology and Environmental Science : (10 lectures)

Definition, aim, Objectives, scope and importance of Ecology and Environmental Science; history of ecology ; various approaches of studying Ecology and Environmental Science; multidisciplinary nature of Ecology and Environmental Science; Need for environmental awareness.

UNIT 2: Ecosystem and its components : (12 lectures)

Concept and definition of ecosystem; components of ecosystem; types of ecosystem: terrestrial ecosystem, aquatic ecosystem; concept of species, population and community; energy flow in an ecosystem; food chain and food web; biogeochemical cycle: patterns and types; biosphere.

UNIT 3: Atmosphere: (8 lectures)

Definition, composition and importance of atmosphere; layers of atmosphere; stratospheric ozone; differences between weather and climate; climate of North East India; tropical monsoon climate.

UNIT 4: Hydrosphere: (10 lectures)

Definition and importance of hydrosphere; hydrologic cycle; fresh water ecosystem (lotic and lentic); marine ecosystem; estuarine ecosystem. Concept Surface and ground water.

UNIT 5: Lithosphere : (10 lectures)

Definition, composition and importance of lithosphere; formation and composition of core , mantle and crust. Composition and formation of soil; physical properties of soil; soil profile; soil water holding capacity; soil humus.

Suggested readings:

1. Asthana, D. K. (2006). Text Book of Environmental Studies. S. Chand Publishing.
2. Basu, M., Xavier, S. (2016). Fundamentals of Environmental Studies, Cambridge University Press, India .
3. Bharucha, E. (2013). Textbook of Environmental Studies for Undergraduate Courses. Universities Press.
4. De, A.K., (2006). Environmental Chemistry, 6th Edition, New Age International, New Delhi.
5. Odum, E. P., Odum, H. T., & Andrews, J. (1971). Fundamentals of ecology. Philadelphia: Saunders.
6. Sharma, P. D., & Sharma, P. D. (2005). Ecology and environment. Rastogi Publications.
7. Sharma, P. D., & Sharma, P. D. (2005). Ecology and environment. Rastogi Publications.
8. Odum, E.P., Odum, H.T. & Andrews, J. (1971). Fundamentals of Ecology. Philadelphia: Saunders.
9. Killham, K. (1994). Soil Ecology. Cambridge University Press.