

SYLLABUS

24 CY 401- ENVIRONMENTAL SCIENCE AND ENGINEERING

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UNIT-1 -ECOLOGY AND BIODIVERSITY (6)

Definition, scope and importance of environment – need for public awareness – concept of an ecosystem - Biodiversity and its values- Biodiversity at global, national and local level- India as a mega-diversity nation – hotspots of biodiversity – threats to biodiversity – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.

UNIT -II WATER RESOURCES AND ENVIRONMENT MICROBIOLOGY (6)

Water resources: Use and over- utilization of surface and groundwater – dams benefits and problems, conflicts over water –Water availability at global level, surface level, ground level-Sources-Hydroponics -Classification of microorganism –Role of microorganism in waste water treatment-Bacterial nutrition and growth

UNIT-III AIR AND NOISE POLLUTION (6)

Sources and classification of air pollutants and their effect on human health-Ambient air quality and emission standards-Air pollutants-Particulate matters-Control equipments- Gravity separator-Centrifugal separator-fabric filter-Electrostatic separator, Catalytic convertors– Noise pollution-causes – Consequences-Control measures- modern tools used in pollution mitigation measures-sustainable activity of pollution control- recent case studies - Environmental Protection Act.

UNIT-IV-SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT (6)

Soil contaminants–sources and management methods of -Solid Waste Hazardous waste – Plastic waste- -Biomedical waste- Hazardous waste& E-waste management -Case studies on Occupational Health and Safety Management system (OHSMS).

UNIT V-ENVIRONMENTAL MANAGEMENT AND SUSTAINABLE DEVELOPMENT (6)

Renewable and non-renewable energy Sources- Energy Policies- Development, GDP, Sustainability- concept, needs and challenges-economic, social and aspects of sustainability-Zero waste and R concept, Circular economy, ISO 14000 Series, Material Life cycle assessment, Environmental Impact Assessment-Sustainable goals -Sustainable habitat- Green buildings, Green materials, Energy efficiency, Sustainable transports. Carbon emission-Carbon footprint-Carbon Sequestration.

Total: 30 Periods

Text Books:

1. Benny Joseph, Environmental Science and Engineering ‘, Tata McGraw-Hill, New Delhi, (2014).
2. Miguel Fischer, “Environmental Management: Ecosystems, Competitiveness and Waste Management” Nova Science Publishers, (2021)

Reference Books:

1. Dharmendra S.Sengar, ‘Environmental law ‘, Prentice hall of India Pvt Ltd, New Delhi, (2007).
2. Erach Bharucha, “Textbook of Environmental Studies”, Universities Press (I) Pvt, Ltd, Hyderabad, (2015).
3. G.Tyler Miller, Scott E. Spoolman, “Environmental Science”, Cengage Learning India Pvt. Ltd, Delhi, (2014).
4. Mahuabasu, Xavier saverimuthu, “Fundamentals of Environmental Studies”, Cambridge university press, (2017)
5. Anubha Kaushik , C.P. Kaushik, “Perspectives in Environmental Studies”, New Age International Pvt. Ltd, New Delhi, (2004). 6. Frank R. Spellman, “Handbook of Environmental Engineering”, CRC Press, (2015).

Course Outcome

CO1	Illustrate the important features of environment and its conservation.	K2
CO2	Explain the need of water resources and its application to meet the modern requirements and the necessity of its conservation.	K2
CO3	Identify the causes, effects of environmental pollution and explain the control techniques for particulate, gaseous emissions and contribute to the preventive measures in the society.	K3
CO4	Identify the different management methods of solid and hazardous waste.	K3
CO5	Explain the sustainability practices and identify green materials for sustainable development .	K2

