

4. Criteria for transport related EIA.
5. Environmental guidelines for EIA of industrial establishments.
6. Measurement of suspended particulate matter in air.
7. Study on agricultural activities and their impact on environment.
8. Impact on environment due to urbanization.
9. Preparation of model environmental audit report for the financial year ending 31st March for any industry/process/operation.

ESP522 HUMAN POPULATION AND ENVIRONMENT LAB.

Course Outcomes:

CO1 Measure population growth.

CO2 Collect and identify medicinal plants.

CO3 Learning different methods of representation of population growth rates.

CO4 Know to identify common medicinal plants and learn their medicinal properties.

1. Study on population growth.
2. Graphical representation of Indian and world population.
3. Diagrammatic representation of population growth rates.
4. Regional population growth.
5. Study of medicinal properties by collecting and identifying some common medicinal plants.
6. Measurement of population.
7. Study of population density in India and world.

OPEN ELECTIVE COURSES

ESE523 NATURAL RESOURCES

39 hrs.

Course Outcomes:

CO1 Discuss about natural resources and their management.

CO2 Describe energy crisis and conservation of energy resources.

CO3 Get a detailed knowledge of various renewable and non-renewable energy sources.

CO4 Understand energy crisis, conservation and management.

UNIT I (13 hours)

Natural Resources: Classification, uses, distribution. Threats to natural resources. Protection and conservation of natural resources – air, water, soil, forest resource, wildlife resource, fossil fuel, mineral resource. Management of natural resources.

UNIT II (13 hours)

Renewable energy sources: Definition, classification, solar energy - solar cells and solar photovoltaic technology, solar thermal technology, solar energy programmes; wind energy, wind energy programmes; hydropower - hydel projects in India; Geothermal energy, Geothermal energy programmes; Ocean energy – Tidal power, thermal energy, wave energy, salinity energy; biogas, biogas programmes.

UNIT III (13 hours)

Non-renewable energy sources: Definition, classification. Coal – composition. Petroleum - components and refinery process, natural gas - reserves, fuel wood. Nuclear Power – Nuclear reactors – types. Energy crisis and conservation of energy resources. Management of biotic and abiotic energy sources.

References:

1. Agrawal, K.C.2001. Fundamentals of Environmental Biology, Nidhi Publishers, Bikaner, India.
2. Bennett, H.H. 2002. Soil Conservation.
3. Deka, M.M. 2002. Joint Forest Management of Water Projects.
4. Gangstad, E.O. 2002. Environment Managements of Water Projects.
5. Khan, T.I. 2000. Global Biodiversity and Environment Conservations. Pointer Publishers, Jaipur.
6. Khenshoo, T.N. Environment Concerns and Strategies.
7. Maitra, M.K. 2002. Watershed Management; Project, Planning, Development and Implementation.
8. RajendraManeria, Environment Conservation and Planning.
9. Tiwari, S.K.1997. Wildlife Sanctuaries of Madhya Pradesh.
10. Ural, O. 1980. Soil and Water Conservation.

ESE524 WASTE MANAGEMENT

39 hrs.

Course Outcomes:

CO1 Discuss about the production of waste from different sources.

CO2 Understand different methods of solid waste management and liquid waste treatment.

CO3 Learning different type of waste released to the environment and their sources.

CO4 Know various methods of liquid waste treatment and solid waste management which help in entrepreneurship opportunities.

UNIT I (13 hours)

Waste: Introduction, classification - Solid waste and liquid waste. Solid waste - Definition, classification and components; Municipal, industrial, domestic, hazardous, biomedical waste. Environmental standards - emission standards, drinking water standards. Effects of solid waste on environment; physical and chemical properties of solid waste.

UNIT II (13 hours)

Solid waste Management: Physical methods- sorting, salvaging, Chemical methods- incineration and other thermal treatments and Biological methods- composting, sanitary landfilling, bioreactors. Waste management and utilization of plantation crop wastes, aquatic weeds, kitchen, garden and poultry waste. Recycling and reuse of solid and liquid wastes.

UNIT III (13 hours)

Liquid waste: Sewage and effluents, effect of liquid waste on environmental components. Treatment of liquid waste- physical methods-Screening, grit chamber, sedimentation, chemical