## ENVIRONMENTAL SCIENCE SYLLABUS

### M.Sc. SEMESTER – I 2010

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ENV 401 NATURAL ENVIRONMENTAL RESOURCES AND CONSERVATION

UNIT-1 Forest Resources

Forest Resources-Uses, Forest Type and Management, World Forest Cover, Forest Resources of India, Deforestation, Effect of Deforestation on Tribal People, Effect of Dams on Forest, Forest Degradation in India, Sustainable Forest Management.

UNIT-2 Water Resources


UNIT-3 Mineral, Land and Food Resources


UNIT-4 Conservation of Natural Resources and Environmental Management

Conservation of Natural Resources, Role of Individuals in Sustainable Environmental Management, Value System and Equitable Resources Use for Sustainable Life System, Role of Individuals in Conservation and Prevention of Pollution.
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ENV 402 NATURAL BIOLOGICAL ENVIRONMENT

UNIT-1 Cellular Basis of Life

Introduction, Prokaryotes and eukaryotes, A comparison between the ultrastructure of eukaryotic plant and animal cells, Mitochondria and the process of cell respiration, Chloroplasts and the process of photosynthesis, The structure of DNA and RNA, Protein synthesis, Chromosomes and cell division, The study of genetics, Recombinant DNA technology.

UNIT-2 Biological Communities and Ecosystem

Introduction, Interactions between species, Natural selection, Species richness, Ecological succession, Food chains and food webs, Primary production, Energy flow in ecosystems, Secondary productivity, Decomposition, Ecosystem stability.

UNIT-3 Bioelement Cycling


UNIT-4 Terrestrial and Aquatic Biomes

Introduction, Tundra and Taiga, Temperate deciduous forest, Mediterranean vegetation, Temperate and tropical grasslands, Desert and tropical rainforest, The marine and the freshwater biome.
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ENV 402        NATURAL BIOLOGICAL ENVIRONMENT

REFERENCES

ENV 403 CURRENT ENVIRONMENTAL ISSUES

UNIT-1 Global Warming, Greenhouse Effect and Global Ozone Problems


UNIT-2 Acid Rain, Atmosphere Turbidity and Nuclear

Introduction, Nature and Development of Acid Rain, Acid Rain and Geology, Acid Rain and Aquatic Environment, Acid Rain and Terrestrial Environment, Acid Rain and Build Environment, Acid Rain and Human Health, Mitigation of Acid Rain Problems, Aerosol types, Production and Distribution, Atmospheric Turbidity – Natural and Man-made Sources, Nuclear Winter.

UNIT-3 Global Carbon Dioxide-Rise and Impact on Biosphere Vehicle Pollution

Introduction, Consequences of global CO₂ changes, Strategies for Conservation of Environmental Changes Induced by CO₂ Rise, Automobile Emission Characteristics, Impact of Automobile Pollutants, The Indian Scenario, Automobile Pollution Abatement.

UNIT-4 Radiation Hazardous and Environmental Degradation

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ENV 403 CURRENT ENVIRONMENTAL ISSUES REFERENCES

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ENV 404 ENERGY PRODUCTION AND MANAGEMENT


Introduction, The laws of energy flow, Dynamic equilibrium and spontaneous change, Chemical kinetics, Atoms and elements, Molecules and covalent compounds, Valency and periodic table of the elements, Oxidation states, Compound mixtures, Chemical species and chemical reactions, The atomic nucleus and nuclear reactions.

UNIT-2 Energy Production and Management


UNIT-3 Non-Conventional and Biological Energy


UNIT-4 Use of Wastes and Energy Use Pattern in India

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ENV 404 ENERGY PRODUCTION AND MANAGEMENT

REFERENCES

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ENV 405 PR          PRACTICALS

1) Good Laboratory Practices
   Preparation and standardization of Experimental Solutions, Calibration of Glasswares
2) Physical Characteristics of Water
   Hardness, Color, Turbidity, TDS, Alkalinity, Acidity
3) Estimations
   Dissolve Oxygen, Chemical Oxygen Demand, Biological Oxygen Demand
4) Determination
   Chloride, Sulphate, Phosphate and Copper from Waste Water Samples
5) Determination from Soil Samples
   Nitrogen, Phosphorous, Potassium and Heavy Metals
6) Determination of Oil and Grease from Water Sample.

M.Sc. SEMESTER – I

ENV 406 S          SEMINARS

1) Select an Environmental Topic Related to the syllabus
2) Explore the Resources Available and Learn How to Access Them
3) Collect References Secondary Information on the Topic Selected and Prepare Bibliography
4) References must be taken from a Book, Magazine, Newspaper and Internet
5) An Appropriate Report to be submitted after the Field Visit, Highlighting the Objective and Findings.

References:
1. Richard T. Wright, “Environmental Science”, Published by Dorling Kindersley(India) Pvt. Ltd., licenses of Pearson Education.
8. Anindita Basak, “Environmental Studies”, Published by Dorling Kindersley (India) Pvt. Ltd., licensees of Pearson Education.