Subject Code : P8ZO13

CORE COURSE XIII : ENVIRONMENTAL BIOLOGY

UNIT 1

General components of environment-Hydrosphere, Lithosphere, Atmosphere and Biosphere
Ecosystem dynamics- stability and complexity
Primary Production and secondary production
Biogeochemical cycles-nitrogen and carbon

Unit II

Population dynamics- growth curve
Trends in human population – urbanization
Natural resources – Renewable (food, water and forest) and non-renewable (land, energy and mineral) resources. Conservation of natural resources and biota-soil conservation.

Unit III

Biodiversity –basic concepts, types, values, threats , methods of conservation-sustainable development and biodiversity indices.
Wildlife conservation-Wildlife sanctuaries and National Parks-Biosphere Reserves
Habitat Ecology- lake, marine, rocky, muddy and sandy shore, estuary, terrestrial-grassland,forest,desert

Unit IV

Pollution – sources, effects, and control of air, water, organic pollutants, BOD, COD, pesticides, heavy metals, thermal, radiation, oil, land and noise pollution – indicator organisms – bioaccumulation – biomagnification and biomonitoring of pollutants.

Environmental impact assessment (EIA) – definition, steps in EIA, method of EIA, problems involved in EIA, reporting (EIS).

Unit V

Remote sensing – aerial photography – satellite images – thermal, infra – red, radar images, ecological applications – resources exploration, understanding environmental factors, predicting natural hazards, ecosystem management.
GIS and its application
Law and Environmental Protection-National (Indian) and International –Earth summit

Recommended Text Books :

ODUM, E.P. (1996) Fundamentals of Ecology (III Edn), Nataraj Publishers, Dehradun.
SHARMA, B.K. and KAUR, H. (1997) Environmental Chemistry, Goel Publishing House, Meerut.
TACCONI, L. (2000) Biodiversity and Ecological Economics : Participation, Values and Resource Management. Earthscan Publications Ltd., London.
CASTRI, F.D. and YOUNES, T. (1996). Biodiversity : Science and Development. CAB Int., Wallingford, U.K.

Reference Books :

CHAPMAN, J.L., and REISS, M.J. (1997). Ecology – Principles and Applications, CAMBRIDGE University Press, U.K.
CLARK, G.L. (1963). Elements of Ecology, John Wiley and Sons, Inc., New York.
GHOSH, G.K. (1992). Environmental Pollution, Ashish Publishing house, New Delhi.
SHARMA, B.K. and KAUR, H. (1997). An Introduction to Environmental pollution, Goel Publishing House Meerut.
SIMMONS, I.G. (1981). The Ecology of Natural Resources (II Edn), Edward Arnold Publishers Ltd., Bedford Square, London.
KAPOOR, V.c. (1995). Theory and Practice of Animal Taxonomy (III Edn) Oxford and IBH Publishing Co., New Delhi
Global Biodiversity strategy (1992). Report by World Resources Institute (WRI). The Work Conservation Union, and United Nations Environment Programme (UNEP).
SINHA, R.K. (1996) Biodiversity (Global Concerns), Commonwealth Publishers, New Delhi.
SOLBRIG, O.T., VAN EMDEN, H.M., and VAN OORDT, P.G.W.J. (1995). Biodiversity and Global change. CAB International, Wallingford, U.K.
STEAMS, S.C and HEKSTRA, R.F. (2000) Evolution – An Introduction, OUP, London.
MUNN, R.E. (1975) Environment Impact Assessment, Principles and Procedures, John Wiley and Sons, Toronto.
AHMAD, Y.J and SAMMY, G.K. (1985). Guidelines to Environmental Impact Assessment in Developing Countries. Hodder and Stoughton, London.