3108 - ENVIRONMENTAL STUDIES

Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)			
					Theory		Practical Ex.	Total
Lectures	Practical	Credits						
3	1	4	25	25	3 hrs	100	--	150
Pre-requisite		Nil	S					

Semester	Theory	Test	Total	TW	PR	Gr Total
	75	25	100	25	-	125

NOTE: - This course is compulsory for all p
students intending to join degree course und

Rationale: - Human beings have been interested in ecology since the beginning of the civilisation. Even our ancient scriptures have emphasised about practices and values of environmental conservation. It is now ever more critical than ever before for mankind as a whole to have a clear understanding of environmental concerns and to follow sustainable development practice.

COURSE CONTENTS

	Hrs	Mks
1. MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES	02	2

Definition, Scope and importance. Need for public awareness.

2. NATURAL RESOURCES	10	15

Renewable and non-renewable resources: Natural resources and associated problems.

a). Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

b). Water resources: Use and over-utilisation of surface and ground water. floods, drought, conflicts over water, dams benefit and problems.

c). Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d). Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer & pesticide problems, water logging, salinity, case studies.

e). Energy resources: Growing energy needs, renewable and non-renewable energy resources, use of alternate energy sources, case studies.

f). Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources.

Equitable use of resources for sustainable lifestyles.

3. ECOSYSTEMS	08	12

Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: (a) Forest ecosystem
(b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (Ponds, streams, lakes, rivers, oceans, estuaries).

4. BIODIVERSITY AND ITS CONSERVATION	08	12

Introduction – Definition: genetic, species and ecosystem diversity.
Biogeographical classification of India. Value of biodiversity: Consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels. India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-suit and Ex-suit conservation of biodiversity.

5. ENVIRONMENTAL POLLUTION	08	12

Definition, Causes, effects and control measures of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards. Solid

waste Management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management: Floods, earthquakes, cyclone and landslides.

6. SOCIAL ISSUES AND THE ENVIRONMENT 08 12

From unsustainable to sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns; case studies. Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust; case studies. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest conservation Act. Issues involved in enforcement of environmental legislation. Public awareness.

7. HUMAN POPULATION AND THE ENVIRONMENT 06 10

Population growth, variation among nations. Population explosion – Family Welfare Programme. Environment and human health. Human rights. Value education. HIV / AIDS. Women and child welfare. Role of Information Technology in Environment and human health. Case studies.

8. FIELD WORK 16 25

Visit to local area to document environment assets-river / forest / grassland / hill / mountain. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural. Study of common plants, insects, birds. Study of simple ecosystems – ponds, river, hill slopes, etc. (Field work equal to 5 lecture hours).

Total

REFERENCE BOOKS:

1. Agarwal, K. C., 2001 Environmental Biology, Nidi Publ. Ltd., Bikaner.
2. Barucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad - 380013, India.
3. Brunner R. C., 1989, Hazardous Waste Incineration, Mc Graw Hill Inc. 480p
4. Clark R. S., Marine Pollution, Clanderson Press Oxford (TB)
5. Cunningham, W.P.Cooper, T.H.Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p
6. De A. K., Environmental Chemistry, Wiley Eastern Ltd.
7. Down to Earth, Centre for Science and Environment (R)
8. Gleick, H. P. 1993. Water in crises, Pacific Institute for studies in Dev., Environment & Security, Stockholm Env. Institute, Oxford Univ. Press. 473p
9. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
10. Heywood, V. H & Watson, R. T. 1995, Global Biodiversity Assessment, Cambridge Univ. Press 1140p
11. Jadhav.H & Bhosale,V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284p.
12. Mckinney, M. L. & School, R. M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
13. Mhaskar A. K., Matter Hazardous, Techno-Science Publications (TB)
14. Miller T. G. Jr., Environmental Science, Wadsworth Publishing Co (TB).
15. Odum, E.P. 1971, Fundamentals of Ecology, W. B. Saunders Co. USA, 574p
16. Rao M N & Datta, A. K. 1987. Waste Water treatment, Oxford & IBH Publ. Co. Pvt. Ltd. 345p
17. Sharma B. K., 2001 Environmental Chemistry, Goel Publ. House, Meerut.
18. Survey of the Environment, The Hindu (M).
19. Townsend C., Harper J, and Michael Begon, Esentials of Ecology, Blackwell Science (TB)
20. Trivedi R. K., Handbook of Environmental Laws, Rules, Guidelines Compliances and Standards, Vol I and II, Enviro Media (R).
21. Trivedi R. K. and P. K. Goel, Introduction to air pollution, Techno-Science Publications (TB)
22. Wagner K. D., 1998. Environmental Management. W. B. Saunders Co. Philadelphia, USA 499p

(M) Magazine, (R) Reference, (TB) Textbook