

Course Number and Name	
BCE406 & Environmental Studies	
Credits and Contact Hours	
3 & 45	
Course Coordinator's Name	
Ms.M.Asathy	
Text Books and References	
Text Books:	
1. Gilbert M.Masters, "Introduction to Environmental Engineering and Science", Pearson Education Pvt., Ltd., Second Edition, ISBN 81-297-0277-0, 2004.	
2. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p	
3. BharuchaErach, the Biodiversity of India, Mapin Publishing Pvt. Ltd. Ahmedabad – 380 013, India, 1989.	
4. Benny Joseph, "Environmental Studies"., TATA McGraw Hill, 2010	
References:	
1. Trivedi R.K., "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards", Vol.I and II, EnviroMedia 2009	
2. Cunningham, W.P.Cooper, T.H.Gorhani, "Environmental Encyclopedia", Jaico Publ., House, Mumbai, 2001.	
Course Description	
1. To study the nature and facts about environment.	
2. To find and implement scientific, technological, economic and political solutions to environmental problems.	
3. To study the interrelationship between living organism and environment.	
4. To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.	
5. To study the dynamic processes and understand the features of the earth's interior and surface.	
6. To study the integrated themes and biodiversity, natural resources, pollution control and waste management.	
Prerequisites	Co-requisites
Engineering Chemistry- II	Nil
required, elective, or selected elective (as per Table 5-1)	
Required	
Course Outcomes (COs)	
CO1:Play an important role in transferring a healthy environment for future generations.	
CO2:Analyze the impact of engineering solutions in a global and societal context.	
CO3:Discuss contemporary issues that results in environmental degradation and would attempt to provide solutions to overcome those problems.	
CO4:Ability to consider issues of environment and sustainable development in his personal and Professional undertakings.	
CO5:Highlight the importance of ecosystem and biodiversity.	

Student Outcomes (SOs) from Criterion 3 covered by this Course												
COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1			M		M	L	M	M		L	L	M
CO2			M		M	L	M	M		L	L	M
CO3		M	H		H	M	M	H	M	L	L	M
CO4			M		H	M	M	M				M
CO5			M		M	M	M			M		

List of Topics Covered

UNIT I THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES⁹

Definition, scope and importance, Need for public awareness.

Natural Resources : Renewable And Non – Renewable Resources

Natural resources and associated problems

- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effect on forests and tribal people.
- Water resources: Use and over-utilization of surface and ground water, flood, drought conflicts over water, dams-benefits and problems.
- Mineral resources: Uses and exploitation, environmental effects of extracting and using mineral resources, case studies.
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, case studies.
- 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.

UNIT II ECOSYSTEMS

8

Concepts 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 :- Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems, (ponds, streams, lakes, rivers, oceans, estuaries)-Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation - Ethics : Issues and possible Solutions, Climate change, global warming, acid rain, ozone layer depletion.

UNIT III BIODIVERSITY AND ITS CONSERVATION

7

Introduction and Definition - genetic, species and ecosystems diversity, Biogeographical classification of India - Value 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, poaching of wildlife, man-wildlife conflicts, Endangered and endemic species of India, Conservation biodiversity - In-situ and Ex-situ conservation of biodiversity.

Environmental Pollution

7

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 earthquake, cyclone and landslides.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

8

From Unsustainable to Sustainable development, Urban problems related to energy, nuclear accident and holocaust, case studies, wasteland reclamation, Environmental 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 –

Fireworks and its impact on the Environment – Chemicals used in Fireworks – (Fuel –oxidizing Agent – Reducing Agent –Toxic Materials – Fuel –Binder- Regulator) – Harmful nature of ingredients – chemical effects on health due to inhaling fumes – Noise produced by fire crackers – Noise pollution – Noise level standards for fire crackers – Intensity of sound – Impact on hearing – Safety measures.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

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Population growth, variation among nations, population explosion-Family Welfare programs, Environment and human health, Human Rights, Value Education, HIV and AIDS, Women and Child Welfare, Role of Information Technology in Environment and Human health - Case Studies.