ENVIRONMENTAL SCIENCES

Course Code	20MC1402	Year	II	Semester	II
Course Category	Mandatory	Branch	ME	Course Type	Theory
Credits	0	L-T-P	2-0-0	Prerequisites	Nil
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes: Upon successful completion of the course, the student will be able to

CO	Statement	Skill	BTL	Units
CO1	Apply advanced solutions to measure the threats and hazards in environment to linkwith human natural systems.	Apply	L3	1,2
CO2	Analyze the ethical, cultural and historical interactions between man and environment.	Analyze	L4	1, 2
CO3	Analyze various environmental assets and record for better management	Apply	L4	3
CO4	Analyze global issues to design and evaluate policies.	Apply	L4	4,5
CO5	Apply system concepts to methodological social and environmental issues.	Analyze	L3	4,5

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3: High, 2: Medium, 1: Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2						2							1
CO2		2					3							1
CO3		3					3							1
CO4		2					3							1
CO5	2						2							1

Syllabus

Unit	Contents	Mapped CO's
I	**INTRODUCTION TO ENVIRONMENT AND NATURAL RESOURCES** Introduction to environment: Definition scope importance need for public awareness. Natural resources: Renewable and non renewable resources, natural resources and associated problems. Forest resources: Uses, Reasons for over-exploitation, deforestation effects case studies. Water resources: Use and over – utilization of surface and ground water, floods, drought, conflicts over water, dams- benefits and problems. Mineral resources: Uses, environmental effects of extracting and using mineral resources, case studies. Food resources: World food problems, Impacts of overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Growing energy needs, use of renewable and non renewable energy sources, case studies	CO1,CO2
II	**ECOSYSTEMS AND BIODIVERSITY** Structure components of ecosystem: Biotic and Abiotic components. Functional components of an ecosystem: Food chains, Food webs, Ecological pyramids, Energy flow in the ecosystem,	CO1 CO2

	Ecological succession. Biogeochemical cycle: Nitrogen, carbon, Phosphorus cycle. Biodiversity: Definition, Levels of biodiversity: genetic, species andecosystem diversity. Bio-geographical classification of India, Values of biodiversity: consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega – diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Conservation of biodiversity: In– situ and Ex-situ conservation of biodiversity.	
III	**ENVIRONMENTAL POLLUTION AND CONTROL** Environmental Pollution: Definition, causes, effects and control measures: Air Pollution, Water pollution, Soil pollution, Marine pollution, Thermal pollution, Nuclear hazards, Solid waste Management, e-waste, Pollution case studies.	**CO3**
IV	**SOCIAL ISSUES AND GLOBAL ENVIRONMENT PROBLEMS AND EFFORTS** From Unsustainable to Sustainable development. Urban problems related to energy. Water conservation, rain water harvesting, watershed management, Remote sensing and GIS methods. Environmental ethics: Issues and possible solutions. Green building concept, Environmental Impact Assessment Environmental Management Plan, Climate change: global warming, acid rain, ozone layer depletion.	**CO4** **CO5**
V	**HUMAN POPULATION AND ENVIRONMENT LEGISLATION** Population growth, Environment and human health. HIV/AIDS,. Value Education. Women and Child Welfare. Role of Information Technologyin Environment and human health. Environment Legislation. Air (Prevention and Control of Pollution) Act. Water (Prevention and Control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Environmental Protection Act.	**CO4** **CO5**

Learning Resources

Text Books

1. Anubha Kaushik and C.P. Kaushik, Text book of environmental studies New AgeInternational Publisher (2014).
2. Erach Barucha, Text book of environmental studies for undergraduates courses,published by – University Grants Commission, University Press (2005)
3. Anindita Basak, Environmental Studies. Pearson (2009)

Reference Books

1. D.K. Asthana and Meera Asthana, A Text book of Environmental Studies, S. Chand(2010).
2. P.M Cherry Solid and Hazardous waste Management, CBS Publisher (2016).
3. Charles H. Ecclestion, Environmental Impact Assessment, CRC Press (2011).