CHOICE BASED CREDIT SYSTEM (CBCS) PROGRAM IN

ENVIRONMENTAL MANAGEMENT

For Academic Session 2021 -22

Programme Structure

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Curriculum & Scheme of Examination
2021

AMITY UNIVERSITY MADHYA PRADESH

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Environment and Human

Course Code: CBE 101 **Credit Unit - 3**

Course & Objective:

The goal of this course is to provide students with the scientific background needed to understand how the Earth works and how we, as human beings, fit into that. At the end of the course, it is expected that students will be able to understand the various process as well as the phenomena associated with these processes and understand what it is to be a steward in the environment.

Course Content:

Module I – Introduction to Environment

Meaning & scope; Environmental factors and impacts on life; The Global environment and its segments - atmosphere, hydrosphere, lithosphere and biosphere; Major climatic zones of the world, Climates of India, Climate and vegetation, Climatic extremes - environmental implications,

Ecological interactions. Ecosystem & Levels of organization in nature- Food chain and Tropic structure.

Module II – Human & Environment

Interdependence of human & environment, Human Impact on Natural Environment, Role of technology in Environmental disorders- Impact on land, climate, natural vegetation and impact on utilization of natural resources, Diseases in humans, relevance of environmental studies with respect to technological development, Trade and scientific progress. Environment as Science, Environmental Science- meaning and definition, nature and scope, methods and importance of study.

Module – III – Ecological Community & Human Population:

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Community **-** Community diversity, structure, dominance, stratification and periodicity; Community interdependence, Ecotone, Edge effect, Ecological Niche and Esturies *Biomes* - Classification of Biomes

Population dynamics**:** Concept of population, population growth and population explosion – global and regional human population growth, natality and mortality (Birth & Death rate); Causes & effects of population explosion, control of human population growth: Family welfare programs.

Examination Scheme

Component	CT	Attendance	Assingment/Project/Seminar/Quiz	EE
Weightage (%)	15	5	10	70

Recommended Books

1. Fundamentals of Ecology : E. P. Odum
2. Botany: A. C. Dutta; Oxford University Press, Calcutta
3. Aquatic Ecosystems : Kumar, A P H Pubh
4. Animal Ecology & Environmental Biology ; H. R. Singh : Chand Publication N. Delhi.

Introduction to Environmental Management

Course Code: CBE 201 **Credit Unit - 3**

Course & Objective:

The goal of this course is to provide students with the scientific background needed to understand how the Earth works and how we, as human beings, fit into that. The environmental studies addresses interdisciplinary relationships by providing maximum flexibility necessary for students to explore the social, cultural, and scientific issues pertaining to the environment.

Module I – Environmental Management:

Introduction to Management - Meaning and nature of management; Managerial functions, roles and skills; Evolution of management thoughts; Social and ethical responsibilities of management Environmental Management: Concept and scope, Systems and approaches, Standards- international and national; Ecomark; Environmental accounts and auditing, Green funding and taxes, Trade and environmental management.

Module II – Environmental Policies

Constitution of India: Fundamental rights and duties, Directive Principles of State Policy, Difference between Regulation, Law and Notification Bills. Evolution of environmental policy and major policy Parameters; role of regulatory agencies; role of NGO's; public participation for environmental management role of court and appellate authorities in environmental protection, national and international conventions. Public Policy for Industry and Business: Environmental Policy of the Government of India for Industrial Location with respect to Ecology.

Module III – Environmental Regulations & Laws

Evolution and development of International Environmental laws. Legal, administrative and constitutional provisions for environmental protection in India. Statutory protection of the Human Environment – Factories Act, Motor Vehicle Act, Hazardous Waste legislation for pollution abatement; Water Act. 1974 & 1977 (CESS), Air Act 1981, Environment Protection Act, 1986, Wild life protection act 1972 as amended 1991; forest conservation act, 1980; Indian forest act (revised) 1982.

Examination Scheme

Component	CT	Attendance	Assignment/Project/Seminar/Quiz	EE
Weightage (%)	15	5	10	70

Recommended Books

1. Ecology & Environmental Science: SVS Rana; PHI Learning Private Ltd. delhi
2. Animal Ecology & Environmental Biology; H. R. Singh: S. Chand Publication Delhi.
3. Environmental Biology- H. R. Singh; S. Chand publication, Delhi
4. Aquatic Ecosystems: Kumar, A P H Pubh

Environmental Pollution & Waste Management

Course Code: CBE 301 **Credit Unit - 3**

Course Objective:

The goal of this course is to provide students with the scientific background needed to understand how the pollution affects the environment and human beings. This study addresses will clear the concept of the students about the consequences in the environment due to mismanaged human activities. It is also making clear the treatment process and proper handling of different waste that can cause impact on environment and human health.

Course Content:

Module –I – Introduction to Environmental Pollution

Pollution & Pollutants – Definition, classification of pollutants, type of pollution, causes, effects and control of various types of pollution – Air, Water, Soil, Noise, Radioactive.

Module –II– Waste Management

Pollution prevention methodology; Methods for waste minimization; Techniques for control of Air Pollutants.

Waste water – sewage and industrial waste water. Treatment process of sewage and industrial waste water, Radioactive waste management, Management of waste of chemical, mining and manufacturing industries (petroleum, coal, cement, paper, fertilizer).

Module – III – Solid & Hazardous Waste Management

Solid waste – Introduction, classification, composition, effects and management. Treatment of various types of municipal solid waste (MSW).

Hazardous waste – Introduction, definition, classification, sources of hazardous wastes and its impact on environment and living organisms. Treatment and management of hazardous wastes-transportation, handling and dumping.

Examination Scheme

Component	CT	Attendance	Assingment/Project/Seminar/Quiz	EE
Weightage (%)	15	5	10	70

Recommended Books

1. S. K. Dhameja – Environmental Studies – Kataria & Sons, Delhi
2. P. Meenakshi – Environmental Science & Engineering - PHI learning, Delhi
3. Gerard Kiely – Environmental Engineering – McGraw Hill Publication, New Delhi
4. D.W. Connell – Environmental Chemistry – Lewis Publishers – New York
5. S. E. Manahan – Environmental Chemistry - Lewis Publishers – New York
6. H. Kaur – Environmental Chemistry – Pragati Prakashan, Meerut

Disaster Management & Industrial Safety

Course Code: CBE 401 **Credit Unit - 4**

Course Objective:

1. To understand environmental issues in general and related industrial sector in particular.
2. To develop the skill for environment management in the industrial sector.
3. 4. To develop environment friendly policy instruments.
4. To develop an expert manpower to handle the complex industrial environment.
5. To give knowledge about occupational health, industrial hygiene, accidental prevention techniques to the students. To make the student aware about safety auditing and management systems pollution prevention techniques etc.

Module – I – Introduction to Disasters

Introduction to Natural hazards: Hazard, vulnerability and risk; Natural and man-made hazards, Hazard Mitigation - identification of hazard prone belts, Hazard zonation and Risk assessment, Developing warning system, Risk assessment and reduction in vulnerable areas,

Emergency Preparedness, Education and Training Activities, planning for Rescue and Relief works.

Module – II –Disasters & its Management

Origin, Severity, effects and Management of Earthquake, Floods, Cyclones and Tsunami, volcanic activities and Landslides. Man-made Hazards: Hazards due to dams and reservoirs, Nuclear power plant, Industrial hazards, Occupational hazards - Management and mitigation measures.

Module – III – EIA, ISO and Industrial Safety

EIA: Introduction, Notification 1994 and amendments in current notification. Methodology and process of EIA in India. ISO – Introduction and classifications; Various ISO series. Qualities of Environmental Auditor, Contents of EA reports, Environmental Audit Terminology,

Industrial safety- Introduction, Responsibility of employees and employers regarding health and safety - Industrial hazards prevention and protection. General causes and classification of fire, Detection of fire, extinguishing methods, fire fighting installations with and without water. First aid techniques.

Examination Scheme

Component	CT	Attendance	Assingment/Project/Seminar/Quiz	EE
Weightage (%)	15	5	10	70

Recommended Books

1. Environmental Impact Assessment by R. K. Jain.
2. Environmental Impact Assessment by Canter.
3. Rau & Wooten 1987, Environmental Impact Assessment Handbook
4. International Standard ISO-14001 (2004)
5. R.K.Jain and Sunil S.Rao , Industrial Safety , Health and Environment Management Systems, Khanna publishers, New Delhi (2006)
6. Slote.L,Handbook of Occupational Safety and Health, John Willey and Sons, NewYork .

Sustainable Development and Environmental Economics

Course Code: CBE 501 **Credit Unit - 4**

Course Objective:

The aim of the current subject is to provide students with exact and professional information to economics of the environment. To give the students an understanding of the globalization process, the principal mechanisms of international economic connections through which it works and an idea of some of the debates it has evoked.

Module –I –SUSTAINABLE DEVELOPMENT

Introduction and emergence of global concern for environment and development – The Stockholm conference. The aspects of sustainable development, Objectives, management strategies for sustainable development. Imperatives for sustainable development – Slackening the pace of climate change, controlling of pollution, setting standards for pollutants discharged in to environment. Adoption of Eco-friendly techniques, Conservation of fresh water and rainwater harvesting, wasteland reclamation and other environmental conservation programs

Module–II– SUSTAINABLE DEVELOPMENT: NEW APPROACHES

Industrial ecology, Green chemistry, new technologies – Total quality management (TQM), Life cycle analysis (LCA), Preventive environmental management (PEM), Regulation on occupational safety and health (OSH). Energy utilizations – Heat engines, combined cycle power plants, Heat pumps, geothermal heat pumps, Cogeneration, entropy & chemical energy, fuel cells, Proton exchange membrane (PEM) fuel cell, electricity storage, hydrogen economy, dematerialization.

Module –III–Environmental Economics & Globalization

Economics of Exhaustible Resources - Hotelling's rule; Solow-Hartwick's Rule; competitive market structures and optimal extraction policy; monopoly, oligopoly, cartel and other market structures. Economics of Renewable Resources- Characteristics of renewable resources – growth functions and growth rate; economic models of fisheries, economics of optimal harvest cycles of forests; extinction of species, economics of Biodiversity. Economics of Non-renewable Energy Sources - Renewable Energy Sources and Environment Renewable technologies – solar, wind, geothermal; policies for renewable energy sources. Globalization and the new global economy: globalization as representing the triumph of free market capitalism. Agricultural globalization and Developing Countries. Industry and Services in the globalization process.

Examination Scheme

Component	CT	Attendance	Assingment/Project/Seminar/Quiz	EE
Weightage (%)	15	5	10	70

Recommended Books

1. Daly, H.E., Beyond Growth: The Economics of Sustainable Development, Beacon Press,
2. Sengupta, R. (2012), Ecological Limits and Economic Development, Oxford University Press, Delhi.
3. Sankar, U. (2001), Environmental Economics, Oxford University Press, Delhi.
4. Chopra, K. and V. Dayal (ed.) (2009), Handbook of Environmental Economics in India, Oxford University Press, Delhi.

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PROJECT WORK

Course Code: CBE 601 **Credit Unit - 1**

Course & Objective:

The basic objectives of the course are-

1. To train students on various aspects of Environmental Management

2. To create safe and sustainable environment by community strengthening capacity building

Students are supposed to make a project report based on field work or based on analysis on Environmental management processes.

Examination Scheme

Component	Project	Presentation	Viva-voce	Total
Weightage (%)	40	30	30	100