

ENVIRONMENTAL STUDIES

(Common to ECE, , ME,ECM during I B.Tech., I Semester)

(Common to IT, AE,CSE,EEE,CE during I B.Tech., II Semester)

Course Code(s): CEIT4, MEIT4, CSIT4, EE1T4, IT2T4, AE2T6, EC2T4

Credits: 3

Lecture: 3 periods/week

Internal assessment: 30 marks

Semester end examination: 70 marks

Objectives:

1 To get awareness of the various aspects that governs the environment status and finding the solutions to environmental problems

2 To gain an integrated, quantitative, and interdisciplinary approach to the study of environmental systems

Course Outcomes:

At the end of the course the student will be able to

- Gain Knowledge of impact of development and appreciation for the local and natural history of the area.
- Apply the Knowledge of Biodiversity and Renewable energy recourses for creating a better Environment .
- creating awareness among the youth on the various environmental concerns that play a vital role in societal development.
- analyze environmental issues scientifically and apply those skills for providing sustainable environment

UNIT – I

ECOSYSTEMS:

Definition, Scope and importance, 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, Flow of energy, Bio-geochemical cycles, Bio-magnification, Ecosystem values, Services and carrying capacity.

UNIT – II

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 other effects on forest and tribal people .

WATER RESOURCES –

Use and over utilization of surface and ground water –Floods, drought, conflicts over water, dams – benefits and problems.

MINERAL RESOURCES: Use and exploitation problems, 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. Organic Farming, Bio fertilizers and Bio-pesticides.

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.

UNIT - III

BIODIVERSITY AND ITS CONSERVATION:

Introduction - Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India, India as a mega-diversity nation, Hot-spots of biodiversity, Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic, option values and ecosystem service values. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT - IV

ENVIRONMENTAL POLLUTION:

Definition, Cause, effects and control measures of:

- a. Air pollution
- b. Water pollution
- c. Soil pollution
- d. Marine pollution
- e. Noise pollution
- f. Thermal pollution
- g. Nuclear hazards- and

Monitoring and Management of pollution

Solid waste Management: classification and characters of solid waste, factors affecting waste generation, collection and disposal of solid waste. E-waste and management.

UNIT – V

GLOBAL ENVIRONMENTAL PROBLEMS AND GLOBAL EFFORTS:

Green house effect, Green house gasses, Global warming, Climate change and their impacts on human environment, ozone layer depletion. International conventions / protocols: Earth summit, Kyoto protocol & Montreal protocol.

UNIT – VI

ENVIRONMENTAL IMPACT ASSESSMENT & MANAGEMENT

PLANS, ENVIRONMENTAL LAW:

Definition of impact, Classification of impacts, Impacts of different components such as: human health, resources, air, water, flora & fauna. ENVIRONMENT MANAGEMENT PLANS (EMP): Technological solutions for pollution control, Green-belt-development, Rain water harvesting, Remote sensing and GIS methods. Environmental law (Air, Water, Wild life, Forest Acts): Objectives of Acts, Institutional arrangements for Implementation and Regulation.

UNIT - VII

TOWARDS SUSTAINABLE FUTURE:

From Unsustainable to Sustainable development, Population and its explosion, Urban problems related to energy, Consumerism and waste products, Role of IT in Environment and human health. Value Education. HIV/AIDS, Environmental ethics , Concept of green buildings and Clean Development Mechanism.

UNIT - VIII

FIELD WORK:

Visit to a local area to document environmental 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 pond, river, hill slopes, etc.

Learning resources

Text books :

1. Text Book of Environmental Studies, by Erach Bharucha, University Grants Commission, Universities Press Pvt.Ltd., Hyderabad, 2010.
2. Text Book of Environmental Sciences and Technology, (2nd Edition), by M. Anji Reddy, BS Publications, 2008.

Reference books :

1. Text Book of Environmental Studies, (3^{ed} Edition) by Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. Text Book of Environmental Science and Engineering, by G.Tyler Miller, Jr, Cengage learning, 2006 .
3. Text Book of Environmental Studies, (2nd Edition) by R. Raja Gopalan, Crisis to Cure.
4. Environmental Studies, by K.V.S.G. Murali Krishna, VGS Publishers, Vijayawada.