Year (Semester)	Course Title	Course Code	L-T-P-Credits
1stYear (1st and 2ndSemester)	Environmental Studies	CHT-102	3-0-0-3
Evaluation Policy	**Mid-Term**	**InternalAssessment**	**End-Term**
	26 Marks	24 Marks	50 Marks

Pre-requisites: None.

Course Outcomes: At the end of the course, the student will be able to:

CO1	Learn the role of environmentand natural resources towards sustainability.
CO2	Illustrate an eco-system with the help of biogeochemical cycles.
CO3	Classify the environmental pollutions and their control measures.
CO4	Discuss the various social aspects related to the environment by field assignment.

Detailed Syllabus:

Module No.	Contents	Hours
Module 1	**Environment and Natural Resources** Introduction, scope and importance of environmental studies, Types of natural resources, Natural resources and associate problems (1) Forest resources: deforestation, dams and their effects on forests and tribal people, (2) Water resources: surface and ground water, floods, drought, conflicts over water, benefits and problems associated with dams, (3) Mineral resources: classification and environmental effects of extracting the mineral resources, (4) Food resources: world food problems, effects of modern agriculture, problems with the use of fertilizers-pesticides and (5) Energy resources: growing energy needs, renewable and non- renewable energy sources and their applications.	**11**
Module 2	**Ecology and Eco-Systems** Introduction, basic concept and definitions, ecology, ecosystems, structure and function of an eco-system, Energy flow in the ecosystems (food chain, food web, ecological pyramids), Biogeochemical cycles (water cycle, nitrogen cycle, carbon cycle, oxygen cycle, phosphorous cycle, sulphur cycle), Ecological succession, Introduction, types, characteristic features, structure and function of forest and freshwater ecosystems (lake/river).	**10**
Module 3	**Environmental Pollution** Definition of pollution; pollutants; classification of pollutants; solubility of pollutants (hydrophilic and lipophilic pollutants),Definition, Causes, Effects and Control measures of (1) Air pollution (global warming, acid rain, ozone layer depletion) (2) Water pollution (COD, BOD, DO) (3) Soil pollution (4) Marine pollutionand (5) Nuclear hazards. Solid waste Management: Causes, effects and control measures of urban and industrial wastes.	**11**
Module 4	**Social issues and the Environment, Field Assignment** From unsustainable to sustainable development, urban problems related toenergy, water conservation, rain water harvesting, watershedmanagement,Environmental ethics: issues and possiblesolutions, climate change, global warming, acid rain, ozone layer depletion,nuclear accidents and holocaust.Environment protectionAct, Air (prevention and control of pollution)Act, Water (prevention and control of pollution)Act, Wildlife protectionAct, Forest conservationAct. Field Assignment: Assignment on local environment problems.	**10**

Books Recommended:

1. Bharucha E., Textbook of Environmental Studies for Undergraduate Courses, Universities Press, 2nd edition, 2019.
2. Mishra D.D., Fundamental Concepts in Environmental Studies, S. Chand & Company Pvt. Ltd, 4th

edition,2014.
3. Rajgopalan R., Environmental Studies: From Crisis to Cure, Oxford University Press, 3rd edition, 2015.
4. Kaushik A., Kaushik C. P., Perspectives in Environmental Studies, New Age International Pvt. Ltd., 7th edition, 2021.
5. Joseph B.,Environmental Studies, McGraw Hill Education, 3rd edition, 2017.
6. Chiras D.D., Environmental Science, Jones and Bartlett Publishers,10th edition, 2014.
7. Nazaroff W.W., Alvarez-CohenL., Environmental Engineering Science, Wiley India Pvt. Ltd., 1st edition, 2009.
8. Gregory K.J., Environmental Sciences: A Student's Companion, SLE Pound Publication,1st edition, 2008.