



**Gyanmanjari**  
Innovative University

Course Syllabus  
Gyanmanjari Institute of Technology  
Semester 4

**Subject:** Environmental Science 1 – BETCH14307

**Type of course:** Minor

**Prerequisite:** Interest in natural systems and the factors sustaining the life on the earth.

**Rationale:** To inculcate the environmental values translating into pro-conservation actions. Government of India has emphasized on introducing a basic course on environment at the undergraduate level.

### Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
3	0	2	4	60	30	10	20	30	150

*Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*

### Course Content:

Sr. No.	Course content	Hrs	Weightage
1	<b>Introduction to Environment and Environmental Studies:</b> Definition and Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Environmental Degradation, Multidisciplinary nature of the Environment studies, its scope and importance in the present day Education System.	10	20%
2	<b>Natural Resources:</b> Renewable and Nonrenewable resources, exploitation and conservation, Role of individual in conservation of natural resources. Water resources: Water sources- Surface and Ground	10	25%





	<p>water sources, Indian and Global scenario.</p> <p>Land as a resource, social issues, Forest resources: Definition and Classification of Forests Ecological and Economic importance and benefits of forest, Indian scenario, Deforestation: causes and effects, remedial measures.</p> <p>Food resources: Sources of food, Global and Indian food demand scenario, Limits of food production, Environmental effects of Agriculture.</p>		
3	<p><b>Energy Resources and Global Environmental Issues</b></p> <p><b>Energy resources:</b> Global and Indian energy demand scenario, Future Projections, Conventional and Non-conventional sources of energy, Advantages and Limitations, Utilization, Exploitation and related Environmental problems, Environmental implications of Non conventional Energy Sources.</p> <p><b>Global Environmental Issues:</b> Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer.</p>	10	25%
4	<p><b>Environmental Acts and Regulations:</b></p> <p>List of prevalent Environmental Acts, Brief description related to the purpose with at least five important provisions Water (Prevention and control of pollution) Act 1974, Air (Prevention and control of pollution) Act 1981, Environmental Protection Act, 1986.</p> <p>Organization and Role of Institutions of Gujarat like Gujarat Pollution Control Board, Gujarat Environmental Management Institute, Gujarat Ecology Commission, Gujarat Institute of Desert Ecology, Department of Environment and Forest, Department of Climate Change, Gujarat State Disaster Management Authority. Environmental Awareness: Role of Non-Government Organizations. Environmental Ethics: Environmental Ethics, Objectives of ethics, Ethical theories, Code of Ethics, Importance and limitations of ethics, Environmental Ethics in India.</p>	15	30%

### Continuous Assessment:

Sr. No.	Active Learning Activities	Marks
1.	<p><b>Environment quiz:</b></p> <p>There will be a quiz based on environment related topics with MCQ questions on google classroom.</p>	10
2.	<p><b>Impact prediction:</b></p> <p>Use modeling techniques to predict the potential impacts of a proposed project on the environment. Prepare a report and upload on GMIU Web portal.</p>	10



3.	<b>Mitigation measures:</b> Prepare a report for developing strategies to minimize or mitigate the negative impacts of a technological project related to industries. Upload the report on GMIU Web portal.	10
<b>Total</b>		<b>30</b>

**LIST OF PRACTICALS:**

Sr. No.	Practical	Unit	Hours
1	<b>Dissolved Oxygen (DO) measurement:</b> Determine the oxygen content in water samples using a DO meter.	1	2
2	<b>pH measurement:</b> Determine the acidity or alkalinity of water using a pH meter.	1	2
3	<b>Nitrate and phosphate analysis:</b> Measure the levels of nutrients in water samples.	1	4
4	<b>Particulate matter (PM) collection and analysis:</b> Collect PM samples using filters and analyze them using a microscope or gravimetrically.	1	4
5	<b>Soil texture determination:</b> Determine the proportions of sand, silt, and clay in soil samples.	2	4
6	<b>Soil moisture content determination:</b> Measure the amount of water in soil samples.	2	4
7	<b>Noise pollution measurement:</b> Use a decibel meter to measure noise levels.	2	2
8	<b>Baseline studies:</b> Conduct surveys to gather data on the existing environmental conditions in a project area.	4	2
9	<b>Total Dissolved Solids (TDS) Measurement:</b> Determine the amount of dissolved solids present in water using a conductivity meter or a TDS meter.	3	4
10	<b>Temperature and Humidity Measurement:</b> Measure temperature and humidity using a weather station.	3	2
<b>Total</b>			<b>30</b>

**Suggested Specification table with Marks (Theory): 60**

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	20%	25%	15%	10%	10%





Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

### Course Outcome:

After learning the course the students should be able to:	
CO1	Realize the multi-disciplinary nature of the environment, its components, and inter-relationship between man and environment.
CO2	Understand the relevance and importance of the natural resources in the sustenance of life on earth and living standard.
CO3	Identify different types of environmental pollution and control measures.
CO4	Learn the laws for environment protection and conservation.

### Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

### Reference Books:

- [1] Textbook of Environmental Studies for Undergraduate Courses, Erach Bharucha Second edition, Universities Press (India) Private Ltd, Hyderabad, 2013.
- [2] Basics of Environmental Studies, N S Varandani, LAP - Lambert Academic Publishing, Germany, 2013.
- [3] Environmental Studies, Anindita Basak, Dring Kindersley (India) Pvt. Ltd Pearson, 2009.
- [4] Textbook of Environmental Studies, Deeksha Dave & S S Kateva, Cengage Publishers.
- [5] Environmental Studies, R. Rajagopalan, Oxford University Press.

