



Gyanmanjari
Innovative University

Syllabus
Gyanmanjari College of Computer Science
Semester-1(BSC IT)

Subject: Environmental Studies- BST2XX11202

Type of course: Multi-disciplinary

Prerequisite: Basic knowledge of environment and ecology.

Rationale: To inculcate the environmental values translating into pro-conservation actions. Honorable Supreme Court of India has made it mandatory to introduce a basic course on environment at the undergraduate level.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks		Total Marks
CI	T	P		SEE	CCE	
2	0	0	2	50	50	100

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

Course Content:

Unit No.	Course content	Hrs.	% Weightage												
1	Module -1 Environment and Ecosystem Definition, scope and importance, Need for public awareness. Ecosystems: Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem. Food chains, food webs and ecological pyramids. Examination Style: <table border="1"> <tr> <th>Sr. No.</th><th>Evolution Methods</th><th>SEE</th><th>CCE</th></tr> <tr> <td>1.</td><td>Food Web Puzzle & Pyramid Building</td><td>05</td><td></td></tr> <tr> <td>2.</td><td>Quiz –(ALA-1)</td><td></td><td>10</td></tr> </table>	Sr. No.	Evolution Methods	SEE	CCE	1.	Food Web Puzzle & Pyramid Building	05		2.	Quiz –(ALA-1)		10	T:6	20%
Sr. No.	Evolution Methods	SEE	CCE												
1.	Food Web Puzzle & Pyramid Building	05													
2.	Quiz –(ALA-1)		10												



3.	Documentary Review	05	
Total		10	10

1. Food Web Puzzle & Pyramid Building" (05Marks)
Objective: Understand inter connectedness of species and levels trophic
Activity: Faculty will provide images or cards of various species. Students connect them into food chains and webs. Then construct an ecological pyramid and mark biomass or energy at each level.

2. Quiz (10Marks)
 MCQ will be provided from the unit. 1 mark for each correct answer.

3. Documentary Review (05 Marks)
 A documentary will be suggested by the faculty and will be reviewed (Minimum 300 Words) by the student.

2 **Module -2:**
Environmental Pollution
Definition, Causes, effects and control measures of:
 (a) Air pollution
 (b) Water pollution
 (c) Soil pollution
 (d) Noise pollution
 (e) Marine pollution
Examination Style:

Sr. No.	Evolution Methods	SEE	CCE
1.	Pollution Diary / Journal Activity— (ALA-2)		10
2.	Watch and Respond	10	
Total		10	10

1. ALA-Pollution Diary / Journal Activity (10 Marks)
Objective: Reflect on personal environmental footprint
Task: Keep a 3-day journal of personal pollution contribution (plastic use, travel emissions, noise, etc.)Reflect on what changes can be made.
Deliverable: Diary entry summary + action plan

2. Watch and Respond (10 marks)
 Show the students one of the following short educational videos (10–15 minutes) on the topic of pollution (select based on the chapter). Students must watch the video carefully and answer the

T:6

20%

	questions below in their answer sheet. No notes allowed during watching.																						
3	Module -3 Natural Resources (a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people. (b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems. (c) Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity. Examination Style: <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Evolution Methods</th><th>SEE</th><th>CCE</th></tr> </thead> <tbody> <tr> <td>1</td><td>Field Visit Report-(ALA-3)</td><td></td><td>10</td></tr> <tr> <td>2.</td><td>Case Study Report</td><td>05</td><td></td></tr> <tr> <td>3.</td><td>Short note on natural resources</td><td>05</td><td></td></tr> <tr> <td colspan="2">TOTAL</td><td>10</td><td>10</td></tr> </tbody> </table> Activity No. 1 Field Visit Report / Virtual Field Study (10 Marks) • A local dam site or mining area • A community practicing rainwater harvesting. Then ask students to write a report answering: • What are the environmental concerns? • What are the socio-economic implications? Activity No. 2.- Case Study Report (05 Marks) • Task: Faculty will assign students one of the following real-life problems. • Rain water harvesting, • Watershed management. • Other. Activity No.3. Short note on natural resources (05 Marks) Food resources, Water resources, Food resources	Sr. No.	Evolution Methods	SEE	CCE	1	Field Visit Report-(ALA-3)		10	2.	Case Study Report	05		3.	Short note on natural resources	05		TOTAL		10	10	T:6	20%
Sr. No.	Evolution Methods	SEE	CCE																				
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2.	Case Study Report	05																					
3.	Short note on natural resources	05																					
TOTAL		10	10																				



4	Module -4 Bio-diversity and its Conservation Introduction, Definition: genetic, species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity Case study - Gir forest Gujarat conservation of Asiatic lions Examination Style: <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Evolution Methods</th><th>SEE</th><th>CCE</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Situation given by faculty: Should Zoos Exist? –(ALA-4)</td><td></td><td>10</td></tr> <tr> <td>2.</td><td>Biodiversity Hotspots of India” – Mapping</td><td>05</td><td></td></tr> <tr> <td>3.</td><td>From Roots to Rights: A Biodiversity Appeal</td><td>05</td><td></td></tr> <tr> <td colspan="2">Total</td><td>10</td><td>10</td></tr> </tbody> </table> Activity No. 1.ALA- Role-play/Debate: Should Zoos Exist? (10 Marks) Objective: Understand ex-situ vs in-situ conservation Task: Divide students into two groups: Pro-Zoo (ex-situ) vs Anti-Zoo (prefer in-situ)include points on ethics, conservation success, animal rights Deliverable: Debate summary and one-page position paper Activity No. 2. Hotspots of India – Mapping (05 Marks) Objective: Understand India’s rich biodiversity Task: Ca biodiversity hotspot map of India Ex. Western Ghats, Himalayas, Indo-Burma region, Sundaland. Activity No. 3. From Roots to Rights: A Biodiversity Appeal Task Description: (05 Marks) Write a persuasive letter titled “Roots to Rights: A Biodiversity Appeal” You may address it to: • A Government Environmental Authority • A Member of Parliament • The General Public or Media	Sr. No.	Evolution Methods	SEE	CCE	1.	Situation given by faculty: Should Zoos Exist? –(ALA-4)		10	2.	Biodiversity Hotspots of India” – Mapping	05		3.	From Roots to Rights: A Biodiversity Appeal	05		Total		10	10	T:6	20%
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Total		10	10																				
5	Module -5: Environmental issues Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.	T:6	20																				

Case studies: In Nuclear holocaust in Japan 1945			
Examination Style:			
Sr. No.	Evolution Methods	SEE	CCE
1	Why Did It Happen?" Forensic Report Activity	05	
2	Role as a Green Advocate (Speech)	05	
3.	Acid Rain in a Jar-- (ALA-5)		10
Total marks		10	10
Activity: 1. "Why Did It Happen?" Forensic Report Activity (05 Marks) Task: Given an environmental disaster (e.g., acid rain or nuclear leak etc.), students write a forensic-style report: • What caused it? • Which laws were violated or missing? • Recommendations to prevent future incidents Evaluation Focus: Cause-effect analysis, scientific reasoning, understanding of legal gaps.			
Activity: 2. Role as a Green Advocate (Speech Competition) (05 Marks) Prompt: If I were the Environment Minister of India. Students present what laws they would create, strengthen, or reform. Evaluation Focus: Vision, legal knowledge, leadership thinking			

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	10%	20%	30%	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 Understand of key environmental concepts and ecosystem.



- CO2 Evaluate pollution control strategies and propose sustainable practices to minimize environmental hazards and promote cleaner technologies
- CO3 Propose sustainable practices for the conservation and efficient utilization of natural resources to mitigate overexploitation and ensure ecological balance.
- CO4 Recognize India's status as a mega -Diversity nation, and identify major biodiversity hotspots and their significance.
- CO5 Identify and analyze environmental problems, such as climate change, Global warming and Acid rain.

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.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

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. Perspectives in Environmental studies
2. Environmental studies by Dr. D.L. Manjunath, Pearson Education-2006
3. Environmental studies by R. Rajagopalan, Oxford Publication-2005
4. Principles of Environmental Science by Curnningham. W.P. & Cunningham M.A, Tata McGraw Hill Publishing Co. Ltd., New Delhi.
5. Textbook of Environment & Ecology by Deeksha Dave and S.S. Katewa, Cengage Learning India Pvt. Ltd., Patparganj, Delhi, 2009
6. Environmental studies by Benny Joseph, Tata MCgraw-Hill-2005

Suggested Rubrics:

Suggested Assessment guidelines	
Module I	MODULE 1: Environment and Ecosystem Activity 1: Food Web Puzzle & Ecological Pyramid Building – 5 Marks



	Criteria	Marks
	Correct formation of food chains and proper linking into a food web	2 Marks
	Construction of ecological pyramid with correct trophic levels and labeling	2 Marks
	Overall clarity, correctness, and presentation	1 Mark
	Total	5 Marks
	Activity 2: Quiz (MCQ-Based) – 10 Marks (CCE)	
	Criteria	Marks
	Conceptual accuracy demonstrated through MCQ responses	5 Marks
	Application and understanding of syllabus concepts	3 Marks
	Overall performance, consistency, and correctness	2 Marks
	Total	10 Marks
	Activity 3: Documentary Review – 5 Marks	
	Criteria	Marks
	Understanding of documentary theme and key ecological issues	2 Marks
	Integration of ecological concepts with examples	1 Mark
	Critical analysis and personal reflection	1 Mark
	Organization, language, and word limit	1 Mark
	Total	5 Marks
MODULE 2	MODULE 2: Environmental Pollution	
	Activity 1: Pollution Diary / Journal Activity – 10 Marks (CCE)	
	Criteria	Marks
	Systematic recording of pollution-related activities over three days	4 Marks
	Identification of pollution sources and their impacts	3 Marks
	Practical action plan for reducing personal environmental impact	2 Marks
	Organization and presentation	1 Mark
	Total	10 Marks

	Activity 2: Watch and Respond – 10 Marks (SEE)												
	<table><tr><td>Criteria</td><td>Marks</td></tr><tr><td>Understanding of video content and identification of pollution issues</td><td>4 Marks</td></tr><tr><td>Explanation of causes, effects, and possible solutions</td><td>3 Marks</td></tr><tr><td>Critical thinking and relevance of responses</td><td>2 Marks</td></tr><tr><td>Clarity and completeness of answers</td><td>1 Mark</td></tr><tr><td>Total</td><td>10 Marks</td></tr></table>	Criteria	Marks	Understanding of video content and identification of pollution issues	4 Marks	Explanation of causes, effects, and possible solutions	3 Marks	Critical thinking and relevance of responses	2 Marks	Clarity and completeness of answers	1 Mark	Total	10 Marks
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MODULE 3	MODULE 3: Natural Resources												
	Activity 1: Field Visit Report / Virtual Field Study – 10 Marks (CCE)												
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	Activity 2: Case Study Report – 5 Marks												
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	Activity 3: Short Note on Natural Resources – 5 Marks												
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	Importance, uses, and environmental threats	1 Mark
	Conservation measures and sustainable utilization	1 Mark
	Clarity and organization	1 Mark
	Total	5 Marks
MODULE 4	MODULE 4: Biodiversity and Its Conservation	
	Activity 1: Role-play / Debate – “Should Zoos Exist?” – 10 Marks (CCE)	
	Criteria	Marks
	Understanding of conservation, animal welfare, and biodiversity protection	3 Marks
	Quality of arguments and supporting scientific evidence	3 Marks
	Communication, participation, and response to opposing views	2 Marks
	Conclusion and overall presentation	2 Marks
	Total	10 Marks
	Activity 2: Biodiversity Hotspots of India – Mapping – 5 Marks	
	Criteria	Marks
	Correct identification and location of the Western Ghats and Himalayas	2 Marks
	Correct identification and location of the Indo-Burma and Sundaland regions	2 Marks
	Map labeling, neatness, and presentation	1 Mark
	Total	5 Marks
	Activity 3: “From Roots to Rights: A Biodiversity Appeal” – 5 Marks	
	Criteria	Marks
	Identification of biodiversity issues and conservation concerns	2 Marks
	Scientific understanding and supporting arguments	1 Mark



	Practical recommendations and persuasive appeal	1 Mark
	Letter format, language, and presentation	1 Mark
	Total	5 Marks
MODULE 5	MODULE 5: Environmental Issues	
	Activity 1: “Why Did It Happen?” – Forensic Report Activity – 5 Marks	
	Criteria	Marks
	Identification and explanation of the causes of the environmental incident	2 Marks
	Scientific analysis of environmental consequences	1 Mark
	Relevant environmental laws and preventive measures	1 Mark
	Report organization and presentation	1 Mark
	Total	5 Marks
	Activity 2: Role as Green Advocate – Speech – 5 Marks	
	Criteria	Marks
	Understanding of environmental issues, policies, and laws	2 Marks
	Practical solutions and recommendations	1 Mark
	Logical organization and communication	1 Mark
	Relevance to the topic and presentation	1 Mark
	Total	5 Marks
	Activity 3: Acid Rain in a Jar – 10 Marks (CCE)	
	Criteria	Marks
	Understanding of the scientific principle of acid rain	3 Marks
	Correct experimental procedure and safe handling of materials	3 Marks
	Observation, recording, and interpretation of results	2 Marks
	Conclusion and environmental relevance	2 Marks
	Total	10 Marks

