SARVAJANIK UNIVERSITY
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Sarvajanik University

Sarvajanik College of Engineering & Technology, Surat

Bachelor of Technology (B. Tech.)

Semester I/II

Subject Name: Environment Science **Subject Code: BTMD17102**

Type of course: Mandatory

Prerequisite: Efficacy towards understanding natural systems and its sustainability.

Rationale: Sustainability is the prime goal of today's modern world. Transformation and pro-conservation actions is the prime approach to conserve the environmental values. Honourable 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				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
2	0	0	0	60	25	15	0	0	100

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	**Introduction to Environment** Definition, Principles and scope of Environmental Science. Impacts of technology on Environment, Importance for different engineering disciplines	02	8%
2.	**Environmental Pollution** • Water Pollution: Introduction – Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants. • Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like PM, SO_2, NOX, Auto exhaust, Effects of common air pollutants • Noise Pollution: Introduction, Sound and Noise, Noise measurements, Causes and effects.	14	40%

Sr. No.	Topics	Teaching Hrs.	Module Weightage
	• Solid Waste: Generation and management. • Bio-medical Waste: Generation and management. • E-waste: Generation and management. • Land Pollution and Role of GPCB (Gujarat Pollution Control Board) for environmental clearance of sites		
3.	**Global Environmental Issues** Sustainable Development, Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer, Carbon Footprint, Cleaner Development Mechanism (Montreal and Kyoto Protocol), Biodiversity conservation (In situ-Ex situ), International Steps for Mitigating Global Change	07	24%
4.	**Basic Concept of Green Building and Smart Cities** Green Building: Introduction, Objectives, Fundamental Principles, Benefits of Green Building, Examples of Green Building Smart Cities: Concept, Role of Information technology in Environment.	04	16%
5.	**Environmental Management:** Energy and Environment, Environmental impact assessment, Main Steps in the EIA process, Norms of National Green Tribunal and CPCB.	03	12%

Suggested Specification Table of Marks as per Bloom's Taxonomy (Theory/Practical):

% Distribution of Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	**40**	**40**	**0**	**0**	**0**

Legends: R: Remembrance, **U:** Understanding; **A:** Application, **N:** Analyze, **E:** Evaluate **C:** Create and above Levels.

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.

Reference Books:

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of Publication	Publication Edition

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of Publication	Publication Edition
1.	Textbook of Environmental Studies for Undergraduate Courses	Erach Bharucha	Universities Press (India) Private Ltd, Hyderabad ISBN: 978-8173718625	2013	2nd
2.	Environmental Studies	Dr. Suresh K Dhameja	S K Kataria & Sons New Delhi ISBN: 978-93-5014-385-8	2018	4th
3.	Basics of Environmental Studies	Prof Dr N S Varandani	LAP -Lambert Academic Publishing, Germany ISBN: 978-3-8473-2102-6	2013	1st
4.	Environmental Studies	Anindita Basak	Darling Kindersley (India) Pvt. Ltd Pearson ISBN: 978-8131721186	2009	1st
5.	Basics of Environmental Studies	U K Khare	Tata McGraw Hill ISBN: 978-0071077781	2011	1st
6.	A Textbook of Environmental Studies	Dr. K Raghvan Nambiar	Scitech ISBN: 97881837111111	2009	1st
7.	Environmental Studies	Dr. B S Chauhan	University Science Press ISBN: 9788131803288	2008	1st
8.	Environmental Sciences	Daniel B Botkin & Edward A Keller	John Wiley & Sons ISBN: 9788126534142	2011	8th
9.	Environmental Studies	R. Rajagopalan	Oxford University	2015	3rd

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of Publication	Publication Edition
			Press ISBN: 978-0199459759		

Course Outcome:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weight age
CO-1	Identify the different types of environmental pollution in society along with their sources. *(A, U - Cognitive level).*	40
CO-2	Monitoring the environment impact and its effect on society *(U,A-Cognitive level)*	20
CO-3	Conceptualize the principles of Green Buildings, Smart cities and pollution free society. *(R,U, A - Cognitive level)*	15
CO-4	Demonstrate an integrative approach to environmental issues with a focus on sustainability. *(R,U,A - Cognitive level)*	15
CO-5	Communicate complex environmental information to both technical and non-technical audiences. *(A - Cognitive level)*	10

Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO-1	2	2	2	-	-	2	3	-	-	-	-	-			
CO-2	3	2	3	-	-	2	3	-	-	-	-	-			
CO-3	2	1	3	1	-	2	3	-	-	-	-	-			
CO-4	1	1	2	-	-	1	3	-	-	-	-	-			
CO-5	1	2	1	-	-	2	3	-	-	-	-	-			
Rationale*	9	8	11	1	-	9	15	-	-	-	-	-			

***Rationale:**

Sustainability is a matter of environment concern. All CO demonstrated is correlating to the major outcomes of the programme. Society health, safety and development are directly connected to the environment activities carried out on different part of earth biosphere were all living kind is surviving. Sustainable goals can only be achieved when proper application of all things is demonstrated in engineering considering the environment as a key factor.

List of Open Source/Learning website:

- https://nptel.ac.in/courses/127/106/127106004/
  - It covers the Environment, Ecology and LCA for sustainability.
- https://nptel.ac.in/noc/courses/noc19/SEM2/noc19-ge22/
  - It covers basic of Environment and water, soil and noise pollution.
- https://nptel.ac.in/courses/103/106/103106162/
  - Its covers the basics of Environment analysis.
- https://nptel.ac.in/courses/105/104/105104099/
  - It covers the basics of Air pollution.
- https://sdgs.un.org/goals/
  - It covers the sustainable development goals.
- https://onlinecourses.swayam2.ac.in/cec21_ge08/preview
  - It covers all types of pollution and its management.
- https://onlinecourses.nptel.ac.in/noc20_ar01/preview
  - It covers the sustainable architecture designing of green buildings.

List of Open Software: Nil