



**SARVAJANIK UNIVERSITY**  
**Sarvajnik College of Engineering and Technology**  
**Master of Computer Applications**



**Integrated MCA I Semester 2**

**Subject Name:** Environmental Science

**Subject Code:** IMCA17209

**Type of course:** Mandatory

**Prerequisite:** Efficacy towards understanding natural systems and its sustainability

**Rationale:** Sustainability is the prime goal of the modern world. Transformation and proconservation actions is the prime 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	CAT	TEP	CAP	
2	0	0	0	60	40	-	-	100

**CAT:** Continuous Assessment Theory comprised of CA1 and CA2 **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) **CAP:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in courses.





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**Content:**

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	<b>Introduction to Environment</b> Definition, Principles and scope of Environmental Science. Impacts of technology on Environment, Importance for different engineering disciplines	02	8%
2.	<b>Environmental Pollution</b> <ul style="list-style-type: none"><li>● Water Pollution: Introduction Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants.</li><li>● Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like PM, SO<sub>2</sub>, NO<sub>x</sub>, Auto exhaust, Effects of common air pollutants</li><li>● Noise Pollution: Introduction, Sound and Noise, Noise measurements, Causes and effects.</li><li>● Solid Waste: Generation and management.</li><li>● Bio-medical Waste: Generation and management.</li><li>● E-waste: Generation and management.</li><li>● Land Pollution and Role of GPCB (Gujarat Pollution Control Board) for environmental clearance of sites</li></ul>	14	40%
3.	<b>Global Environmental Issues</b> Sustainable Development, Climate Change, Global Warming and GreenHouse Effect, Acid Rain, Depletion of Ozone layer, Carbon Footprint, Clean Development Mechanism (Montreal and Kyoto Protocol), Biodiversity conservation (In situ-Ex situ), International Steps for Mitigating Global Change	07	24%
4.	<b>Basic Concept of Green Building and Smart Cities</b> 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.	<b>Environmental Management:</b> Energy and Environment, Environmental impact assessment, Main Steps in the EIA process, Norms of National Green Tribunal and CPCB.	03	12%





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**Suggested Specification table with Marks (Theory/Practical):**

<b>Distribution of Theory Marks</b>					
<b>R Level</b>	<b>U Level</b>	<b>A Level</b>	<b>N Level</b>	<b>E Level</b>	<b>C Level</b>
<b>20</b>	<b>40</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Legends: R:** Remembrance, **U:** Understanding; **A:** Application, **N:** Analyze, **E:** Evaluate **C:** Create and above Levels (**Revised Bloom's Taxonomy**)

**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 Text Books:**

<b>Sr. No.</b>	<b>Title of book /article</b>	<b>Author(s)</b>	<b>Publisher and details like ISBN</b>	<b>Year of publication</b>	<b>Publication Edition</b>
1	Textbook of Environmental Studies for Undergraduate Courses	Erach Bharucha	Universities Press (India) Private Ltd, Hyderabad ISBN: 978-8173718625	2013	2 <sup>nd</sup> Edition
2	Environmental Studies	Dr. Suresh K Dhameja	S K Kataria & Sons New Delhi ISBN: 978-93-5014-385-8	2018	4 <sup>th</sup> Edition
3	Basics of Environmental Studies	Prof Dr N S Varandani	LAP -Lambert Academic Publishing, Germany ISBN: 978-3-8473-2102-6	2013	1 <sup>st</sup> Edition
4	Environmental Studies	Anindita Basak	Darling Kindersley (India) Pvt. Ltd Pearson ISBN: 978- 8131721186	2009	1 <sup>st</sup> Edition
5	Basics of Environmental Studies	U K Khare	Tata McGraw Hill ISBN: 978-0071077781	2011	1 <sup>st</sup> Edition





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6	A Textbook of Environmental Studies	Dr. K Raghvan Nambiar	Scitech ISBN:9788183711111	2009	1 <sup>st</sup> Edition
7	Environmental Studies	Dr. B S Chauhan	University Science Press ISBN: 9788131803288	2008	1 <sup>st</sup> Edition
8	Environmental Sciences	Daniel B Botkin & Edward A Keller	John Wiley & Sons ISBN: 9788126534142	2011	8 <sup>th</sup> Edition
9	Environmental Studies	R. Rajagopalan	Oxford University Press ISBN: 978- 0199459759	2015	3 <sup>rd</sup> Edition

**Course Outcome:**

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
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	PO 13
CO-1	2	2	2	0	2	3	0	0	0	0	0	0	0
CO-2	3	2	3	0	2	3	0	0	0	0	0	0	0
CO-3	2	1	3	1	2	3	0	0	0	0	0	0	0
CO-4	1	1	2	0	1	3	0	0	0	0	0	0	0
CO-5	1	2	1	0	2	3	0	0	0	0	0	0	0
Rational e*													





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**Rationale\*:** Explaining why it is matching this particular program outcome

**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/>  
It 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](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](https://onlinecourses.nptel.ac.in/noc20_ar01/preview)  
It covers the sustainable architecture designing of green buildings.

