25CV101: Environmental Awareness

w. e. f. Academic Year:	**2025-26**
Semester:	**1/2**
Category of the Course:	**Engineering Science**
Prerequisite:	Zeal to learn the subject
Rationale:	Equips future engineers with the knowledge, ethical perspective, and tools needed to design and implement solutions that address critical global challenges like climate change, pollution, and resource scarcity; by integrating systems thinking, lifecycle assessment, and sustainability principles early on, graduates are better prepared to minimize environmental impacts through green engineering practices, comply with evolving regulations, foster interdisciplinary collaboration, and drive innovation for a sustainable future—all while cultivating a sense of responsibility toward society and the planet.

Course Outcomes:

After Completion of the Course, students will be able to:

	Course Outcome (CO)	**RBT Level (Cognitive Domain)**
CO1	Understand the fundamental concepts, scope, and components of Environmental Science, including sustainability, environmental ethics, and public awareness.	Understand / Apply
CO2	Analyze various types of environmental pollution—air, water, soil, and noise—along with their causes, effects, and control measures through collaborative group activities and practical applications.	Analyze / Create
CO3	Evaluate solid waste management practices, including municipal, biomedical, and e-waste handling, and apply waste segregation techniques in real-life scenarios.	Analyze / Understand
CO4	Apply the concept of 4Rs (Reduce, Reuse, Recycle, Recover) and assess their role in environmental conservation through practical case studies and group discussions.	Analyze / Understand / Evaluate
CO5	Examine major global environmental issues such as climate change, ozone depletion, and acid rain, and interpret the role of international treaties like the Kyoto Protocol, Paris Agreement, and IPCC reports in addressing these challenges.	Analyze
CO6	Develop environmental consciousness and sustainable problem-solving skills by engaging in hands-on interviews with local bodies and applying environmental knowledge to community-based issues.	Analyze / Apply

Teaching and Evaluation Scheme:

Teaching Scheme					Examination Scheme				
L	**T**	**P**	**C**	**Hrs/Week**	**IE**	**Theory**	**CIA**	**Practical**	**Total Marks**
-	-	02	01	02	-	-	30	20	50

IE: Internal Evaluation Theory: Theory Exam (End Semester)
CIA: Continuous Internal Assessment Practical: Practical Exam (End Semester)

List of Practical:

Topic	Hrs
Introduction to the Environment and Sustainable Development: Concept: Definition, principles, and scope of Environmental Science. Components of Environment, Environmental education, ethics and public awareness, Concept of sustainability and sustainable development. Practical based on hands-on interviews with local bodies about sustainable development.	02
Environmental pollution and its management (Air, Water, Soil, Noise Pollution): Practical and group activity based on: Air, water, soil, noise pollution causes, effects, and control	16
Solid Waste Management: Control Measures for Municipal, Biomedical, and E-Waste. Practical and group activity based on the segregation of different waste	04
Concept of 4Rs and Environmental Policies: Principles, Application of 4Rs. Practical and group activity based on analysis of 4 'R'	04
Global environmental issues and treaties: Global environmental issues include global warming, ozone depletion, acid rain, and hazardous waste. Climate change and its impacts on ecosystems and human societies. Practical and group activity based on International environmental treaties and protocols such as the Stockholm Conference, the Kyoto Summit, and the Paris Agreement. Inter-governmental Panel on Climate Change (IPCC)United Nations Framework Convention on Climate Change (UNFCCC-1992).	04
	30

Reference Books:

1. Daniel B. Botkin & Edward Akeller, "Environmental Science: Earth as a Living Planet", John Wiley & Sons (2005).
2. R. Rajagopalan, "Environmental Studies: From crisis to cure", Oxford University Press (2016).
3. Benny Joseph, "Environmental Studies", McGraw-Hill Education (2017).
4. Suresh K Dhameja, "Environmental Studies", S. K. Kataria & Sons (2021).
5. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharuch, Second edition, 2013, Publisher: Universities Press (India) Private Ltd, Hyderabad.
6. Basics of Environmental Studies by Prof Dr N S Varandani, 2013 Publisher: LAP Lambert Academic Publishing, Germany

7. Wagner K. D., 1998. Environmental Management, W. B. Saunders Co, USA.

Course Outcomes Mapping:

CO	Course Outcome (CO)	POs/ PSOs Mapped	Cognitive Level (RBT)	Knowledge Category	Lab Sessions (Hrs)
CO1	Understand the fundamental concepts, scope, and components of Environmental Science, including sustainability, environmental ethics, and public awareness.	PO1, PO2, PO6, PO7, PO12, PSO1, PSO2	Understand / Apply	Procedural, Conceptual	02
CO2	Analyze various types of environmental pollution—air, water, soil, and noise—along with their causes, effects, and control measures through collaborative group activities and practical applications.	PO1, PO2, PO4, PO6, PO7, PO9, PO10, PO12, PSO1, PSO2	Analyze / Create	Procedural, Conceptual	16
CO3	Evaluate solid waste management practices, including municipal, biomedical, and e-waste handling, and apply waste segregation techniques in real-life scenarios.	PO1, PO2, PO4, PO6, PO7, PO12, PSO1, PSO2	Understand	Procedural, Conceptual	04
CO4	Apply the concept of 4Rs (Reduce, Reuse, Recycle, Recover) and assess their role in environmental conservation through practical case studies and group discussions.	PO1,PO2, PO4, PO6, PO7, PO10, PO12, PSO1, PSO2	Understand / Evaluate	Procedural, Conceptual	04
CO5	Examine major global environmental issues such as climate change, ozone depletion, and acid rain, and interpret the role of international treaties like the Kyoto Protocol, Paris Agreement, and IPCC reports in addressing these challenges.	PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO10, PO11, PO12, PSO1, PSO2	Analyze	Procedural, Conceptual	02
CO6	Develop environmental consciousness and sustainable problem-solving skills by engaging in hands-on interviews with local bodies and applying environmental knowledge to community-based issues.	PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO10, PO11, PO12,	Understand	Procedural, Conceptual	02

		PSO1, PSO2			

Mapping of COs with POs & PSOs:

CO	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	0	0	0	3	3	0	0	0	0	3	3	3
CO2	3	3	0	3	0	3	3	0	1	3	0	3	3	3
CO3	3	3	0	3	0	3	3	0	0	0	0	0	3	3
CO4	3	3	0	3	0	3	3	0	0	3	0	0	3	3
CO5	3	3	3	3	0	3	3	2	0	3	0	3	3	3
CO6	3	3	3	3	0	3	3	2	0	3	1	3	3	3

3: High, 2: Medium, 1: Low