SARVAJANIK UNIVERSITY

Sarvajanik College of Engineering and Technology

Master of Technology

Environmental Engineering

MTech II Semester III

Subject Name: Urban Environment and Sustainability **Subject Code:** MTEN14301
Type of course: PE V
Prerequisite: Basic Knowledge of water ,wastewater, air and solid waste issues and treatment
Rationale: This course focuses on urban environmental issues and assesses the attempts that are being made to develop cities in ways which reduce environmental damage and improve quality of life both now and in the long term so as to achieve environmental sustainability in urban areas

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	100
3	0	0	3	60	20	20	00	00	

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

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage (%)
1	**Introduction:** Concept of sustainability, goals and objectives of sustainability, Environmental sustainability and its importance, urbanization and its impact, Urban Environment, scenario of sustainability at micro and macro level, approach towards sustainability, Case studies , Eco city, Sustainable city	6	15
2	**Urban Environmental Issues**: urban heat island, climate change, GHG emission, Socio economics impact, diseases associated with urban environment	4	5
3	**Urban Planning for sustainability**: Impacts of transportation, sustainable transportation: Mass transportation and green fuel, green zone, green building and energy efficient building , ISO 14000, Carbon Footprint , Ecological footprint, Sustainable lifestyle assessment and behavioural modifications at household levels, wastelands, river pollution	10	30
4.	**Urban Water & Wastewater Management:** urban water and wastewater management, water conservation techniques, Rain water harvesting , reuse and recycling of water and waste water, Zero waste discharge	7	15
5.	**Urban Waste Management:** Managing city waste: Municipal Solid Waste, integrated municipal solid waste management, management of plastic waste, E-waste and Biomedical waste,	8	20

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	segregation at source, 5 R's Management, waste to energy, wastelands and its utilisation		
6	**Urban Air and Noise Pollution: Issues & Management:** Evaluation of ambient air quality, air quality index, vehicular emissions, indoor air quality, odour evaluation and control, Noise Pollution issues, impact of noise, noise control	7	15

% Distribution of Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
15%	**25%**	**25%**	**20%**	**10%**	**5%**

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

Reference Text Books:

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1.	Problems & Issues in Urban Environmental Management	Toral Kobawala, Narendra Modi, Hiren Mandalia	LAP Lambert Academic Publishing 978-6200229359	2020	First
2.	The Urban Heat Island	Iain Stewart Gerald Mills	Elsevier 9780128150177, 9780128156902	2021	First
3.	Cradle to Cradle: Remaking the Way We Make Things	Michael Braungart	North Point Press ISBN-10: 0865475873	2002	First
4.	Rainwater Harvesting and Soil Water Conservation Technique	Lizarraga L.	Intelliz	2016	First
5.	Catch Water Where It Falls - Toolkit on Urban Rainwater Harvesting	Gita Kavarana, Sushmita Sengupta	Center for Science and Environment 978-81-86906-65-1	2018-	First
6.	Rebuilding Earth: Designing Ecoconscious Habitats for Humans	Teresa Coady , Elizabeth May	North Atlantic Books 1623174317	2020	
7.	Environmental Carbon Footprints : Industrial case studies	Subramanian Senthilkannan Muthu	Butterworth-Heinemann 978-0-12-812849-7	2018	First
8.	Introduction to E-Waste Management	Lakshmi Raghupathy	TERI 9789386530196	2019	-

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9.	Handbook of Electronic Waste Management: International Best Practices and Case studies	Majeti Narasimha Vara Prasad, Meththika Vithanage and Anwesha Borthakur	Butterworth-Heinemann 978-0-12-817030-4	2019	First

Course Outcome:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	To study basic concept of sustainability and urban environment *(R,U – Cognitive level)*	15
CO-2	To study the environmental urban environmental issues, challenges and management *(R,U, A – Cognitive level)*	20
CO-3	Prepare plan strategies to control and reduce Urban environmental pollution *(N, E, C – Cognitive level)*	30
CO-4	To study approaches for waste reduction and reuse of waste as resource *(N,E, C – Cognitive level)*	20
CO-5	To understand resource recovery and conservation *(U, A, E – Cognitive level)*	15

List of Open Source/learning website:

1. Introduction to Sustainable Development
2. https://www.youtube.com/watch?v=DNUYxyaYh3g
   https://www.youtube.com/watch?v=CLC8VcgX5YI
3. Rainwater Harvesting
   https://nptel.ac.in/content/storage2/courses/105101010/downloads/Lecture10.pdf
4. Waste recovery
   https://nptel.ac.in/courses/120/108/120108005/
5. Waste to Energy
   https://onlinecourses.nptel.ac.in/noc20_ch16/preview

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