GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering
Level: PG
Branch: Construction Engineering and Management
Subject Code: ME02014041
Subject Name: Construction & Demolition Waster Management

w.e.f. Academic Year:	2024-25
Semester:	2
Category of the Course:	Professional Elective Course

Prerequisite:	Nil
Rationale:	Construction and demolition (C&D) waste management is important for a number of reasons, including Environmental Impact, Economic benefits, Resource Conservation and Sustainable construction.

Course Outcome:

After Completion of the Course, Student will able to:

No.	Course Outcomes
1	Gain knowledge of the disposal and treatment of construction and demolition wastes.
2	Evaluate plan for suitable storage, collection, transfer and transfer strategies for C&D waste management.
3	Study in detail various environmental legislations for safe disposal of C&D wastes.
4	Formulate 4Rs approach for processing and recovery of C&D waste.
5	Understand various modern demolition methods and hazards.

Teaching and Examination Scheme:

Teaching Scheme(in Hours)			Total Credits L+T+(PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial/Practical		
L	T	PR	C	ESE (E)	PA/ CA (M)	PA/CA(I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1	**INTRODUCTION TO C&D WASTE** Solid Waste-its classification, Hazardous Waste-overview, Construction and Demolition Waste, need for disposable management, composition of C&D Waste, Areas of application of C&D Waste, Duties of Waste Generator, Service providers and their contractors, local authority, state pollution control board, state government, central pollution control board, BIS and IRC.	**07**	**16**
2	**C&D WASTE MANAGEMENT** National and International practices, Methods for managing C&D Waste: On-Site Management, Processing and Recovery at a Central Recycling Facility, Land Disposal, C&D Waste Recycling Approaches: The current scenario and Challenges to C&D waste Recycling; Hazardous materials in Demolition Waste; C&D Waste Management Rules, 2016, procedures for determining potential for beneficial use.	**08**	**18**
3	**LEGISLATIONS** Environmental Legislation; Characterization and site assessment; Waste minimization and resource recovery; Storage and Transportation of C&D Waste; Initiatives in promoting C & D waste products by GoI; demolition disputes and legislation.	**08**	**18**
4	**TREATMENT OF C&D WASTE** Collection and transportation of C&D Waste, Sorting of C&D waste, Processing and treatment of C&D Waste, 4R concepts, Hazard in processing and treatment; Physical, Chemical, Thermal and Biological processes; C&D waste disposal.	**08**	**18**
5	**DISPOSAL OF C&D WASTE** Landfill disposal and land storage, Challenges and issues in C&D Waste disposal; Groundwater contamination: Containment, Remedial alternatives	**07**	**16**
6	**DEMOLITION METHODS** Dismantling, Demolition and Deconstruction, Methods of Demolition – Conventional Demolition Methods, Modern Demolition Methods, Special Demolition Methods, Implosion; Phases of demolition, Demolition planning, Demolition cost estimation, accidents and hazards in demolition works, challenges and issues in demolition, provisions in codes of practices.	**07**	**16**
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	30	30	10	10	0

Where R:Remember; U:Understanding; A:Application, N:Analyze and E:Evaluate C:Create(as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

1. Construction and Demolition Waste Management Rules, 2016, Ministry of Environment, Forest and Climate Change
2. Design, Construction and Monitoring of Landfills, Bagchi, A., Wiley Interscience.
3. Hazardous and Industrial Waste Treatment, Haas, C. N. and Vamos, R. J., Prentice Hall.
4. Hazardous Waste Management Engineering, Martin, E. J. and Johnson, J. H., Van Nostrand.
5. Hazardous Waste Management, 2nd Ed., Wentz, C. A., McGraw Hill, 1995.
6. Biological Treatment of Hazardous Wastes, Lewandowski, G. A. and DeFilippi, L. J., John Wiley and Sons, INC.
7. Practical Management of Chemicals and Hazardous Wastes: An Environmental and Safety Professional's Guide, Kuhre, W. L., Prentice Hall.
8. BIS (Bureau of Indian Standards), 2002. Demolition of Building – Code of Safety (second revision), BIS 4130, New Delhi, India.
9. BSI (British Standards Institution), 2011. Code of Practice for Full and Partial Demolition, BS 6187, London, UK.
10. Building Department Hong Kong, 2004. Code of Practice for Demolition, Hong Kong.

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