

SRI VENKATESWARA UNIVERSITY:TIRUPATI

Minor: ENVIRONMENT SCIENCES

SEMESTER-V - W.E.F.2025-26

SOLID WASTE MANAGEMENT

Theory

Credits:3

3hrs/week

Learning objectives:

The main objective of solid waste management is to make student understand the need of solid waste management, types of solid wastes (urban and industrial), hazardous waste management. It explains proper transportation, handling and disposal of solid waste to minimize its effect on environment.

Learning Outcomes:

1. Upon completion of the unit a student will be able to understand the types and composition of solid wastes and factors influencing the generation of municipal solid waste.
2. Upon completion of the unit a student will be able to understand the methods disposal of solid wastes and recycling of MSW
3. Methods of composting, recycling and reuse of materials, classification of hazardous wastes and its control methods

Unit I: Solid waste introduction

No. of Hours: 9

Definition, sources and types of solid waste, municipal, industrial, agricultural, domestic and biomedical waste, composition and characteristics (physical, chemical and biological), Collection and transportation of Municipal Solid Waste.

Unit 2: Effect of solid waste disposal on environment

No. of Hours: 9

Impact of solid waste on environment, human and plant health; effect of solid waste and industrial effluent discharge on water quality and aquatic life; mining waste and land degradation; effect of land fill leachate on soil characteristics and ground water pollution.

Unit 3: Solid waste Management

No. of Hours: 9

Different techniques used in collection of (municipal, hazardous and biomedical waste); storage, transportation and disposal of solid waste landfill (traditional and sanitary landfill design); thermal treatment (pyrolysis and incineration) of waste material; drawbacks in waste management techniques.

Unit 4: Industrial waste management

No. of Hours: 9

Types of industrial waste: hazardous and non-hazardous; effect of industrial waste on air, water and soil; industrial waste management and its importance; stack emission control and emission monitoring; effluent treatment plant and sewage treatment plant.

Unit 5: Resource Recovery

No. of Hours: 9

3R- reduce, reuse, recycle; biological processing - composting, anaerobic digestion, aerobic treatment; reductive , green techniques for waste treatment: Waste Management and Recycling, Energy Efficiency, Challenges in adopting Green technology, Government Measures for promoting Green technology.

Skills Outcome:

On Successful Completion of this paper, Student will be able to

- Understanding of waste management principles, including reduce, reuse, and recycle.
- Knowledge of different types of waste, including hazardous and non-hazardous waste.
- Understanding of waste management systems, including collection, transportation, and disposal.
- Ability to develop and implement waste reduction and recycling plans.

SRI VENKATESWARA UNIVERSITY:TIRUPATI
ENVIRONMENT SCIENCE (MINOR)
SEMESTER-V-W.E.F.2024-25

Solid Waste Management

Practical	Credits: 1	2 hrs/week
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- 1 Determination of Physical characteristics of solid waste : Particle size; Temperature; pH; Conductivity and bulk density
- 2 Estimation of organic and Inorganic fraction of solid waste.
- 3 Visit to any solid waste processing center in any nearby villages.
- 4 Design the organization chart Tirupati municipal corporation for managing the solid waste in any particular area.
- 5 Prepare the organization chart for E-waste and its impacts on human health and protection methods.
- 6 3R centers in Tirupati a case study

REFERENCES:

1. George Tchobanoglous and Frank, K. Handbook of Solid Waste Management, Second Edition, Mc Graw-HILL.
2. George Tchobanoglous et al, —Integrated Solid Waste Management Mc Graw - Hill.
3. Tchobanoglous Thiesen Ellasen; Solid Waste Engineering Principles and Management, Mc Graw – Hill.
4. Manual on Municipal Solid waste Management, CPHEEO, Ministry of Urban Development, Govt. of India, New Delhi.
5. Blide A. D. & Sundaresan, B. B, —Solid Waste Management in Developing Countries, INSDOC.
6. Waste and waste water technology, Mark, JH. John Wiley and Sons, New York.
7. Water and waste water analysis, B.B. Sundaresan, NEERI, Nagpur.
8. Standard methods for examination of Water and waste water, APHA, American Water work Association, Water pollution control federation, New York.
9. Industrial Waste Management, M.N. Rao and A.K. Datta.

CO-Curricular Activities:

a)Suggested Co-Curricular Activities

1. Provide resources and mentorship to help students organize events, campaigns, and community service projects related to solid waste management.
2. Seminars, Quiz, Group Discussions on related topics
3. Guest lectures by subject experts
4. Paper clips collection.

SRI VENKATESWARA UNIVERSITY: TIRUPATI
ENVIRONMENT SCIENCE (MINOR)
SEMESTER- V

Paper: Solid Waste Management
Model Question Paper

Time: 3 Hours

Max. Marks: 70

Section-A

Answer Any Four Questions. Each question carries 5 marks (4X5= 20M)

1. Write a brief note on composition of solid waste
2. Explain about the sanitary land filling
3. Describe various impacts of hospital waste
4. Write the difference between degradable and non-biodegradable waste
5. Explain the aerobic sludge treatment
6. Write the importance of green technologies
7. Illustrate the effects of industrial waste on air
8. Sources of solid waste

Section-B

Answer ANY questions. Each question carries 10 marks (5X10= 50M)

9. (a) Define solid waste, explain types of solid waste.

Or

- (b) Explain sources, effects and management of agricultural waste

10. (a) Explain Impact of solid waste disposal on environment.

Or

- (b) Effects of solid waste and industrial effluent discharge on water quality and aquatic life

11. (a) Explain Different techniques used in collection of municipal waste management

Or

- (b) What are the drawbacks in waste management techniques Explain

12. (a) Explain industrial effluent treatment plant.

Or

- (b) Describe the hazardous and non-hazardous waste.

13. (a) Explain green techniques for waste treatment.

Or

Write a short note and reduce, reuse and recycle of solid waste

	SRI VENKATESWARA UNIVERSITY:TIRUPATI	Program B.Sc (Honours) Minor Environmental Sciences
Course Code	TITLE OF THE COURSE SOLID WASTE MANAGEMENT	Semester-V
Time: 3 hrs	QUESTION PAPER-BLUE PRINT	Max Marks: 70

Blue Print for the Question Paper Setting

S. No.	Type of Question	To be given in the Question Paper			To be answered		
		No. of Questions	Marks allotted to each question	Total Marks	No. of Questions	Marks allotted to each question	Total Marks
1	Section – A (Short Questions)	8	5	40	4	5	20
2	Section - B (Essay Questions)	10	10	100	5	10	50
		Total Marks		140	Total Marks		70

Chapter No.	Short Questions 5 Marks	Essay Question 10 Marks	Marks allotted to the Chapter
UNIT –1	2	2	30
UNIT –2	1	2	25
UNIT - 3	1	2	25
UNIT –4	2	2	30
UNIT - 5	2	2	30
Total No. of Questions	8	10	140

SRI VENKATESWARA UNIVERSITY:TIRUPATI

Minor: ENVIRONMENT SCIENCES

SEMESTER-V - W.E.F.2025-26

SOCIAL ISSUES AND ENVIRONMENT

Theory

Credits:3

3hrs/week

Learning objectives:

This course examines the intersection of social issues and environmental challenges, focusing on the complex relationships between human societies and the natural world. The course will emphasize critical thinking, ethical reasoning, and social responsibility in addressing environmental issues

Learning Outcomes:

1. Define *social issues* and their impact on the *environment*.
2. Explain the processes needed to transit from unsustainable to sustainable.
3. Understand what are the climatic changes
4. *Environmental health Issues* and Possible Solutions.
5. Improves knowledge on Environmental Ethics, Philosophy of environment for better lifestyle

Unit I- Social Issues

No. of Hours: 9

Unsustainable to sustainable development, urban problems related to energy, Consumerism and Waste Products, Wasteland Reclamation, desertification and its control.

UNIT II- Climate Changes

No. of Hours: 9

Global Climatic changes -Global Warming, Acid Rains and Ozone Layer depletion, nuclear hazards, world food problems, ocean. Acidification and coral bleaching

UNIT III - Environmental problems

No. of Hours: 9

Environmental problems in India drinking water, sanitation and public health, urbanization, industrialization, water scarcity and ground water depletion, conservation on major dams, Rain water harvesting and Watershed management

Unit - IV -Disaster management

No. of Hours: 9

Floods, earthquake, cyclones, landslides and drought, Resettlement and rehabilitation of people, Disaster management-frame works (sendai, hyogo)

Unit – V Environment and Human Health

No. of Hours: 9

Population growth impact on environment, women and child welfare programs, role of information technology in environment and human health, environmental ethics, value education

Skill Out Comes:

- Understanding of national and international environmental climatic changes.
- Knowledge of environment and Human Health
- Learn about Environmental related problems
- Learn about Disaster management

SRI VENKATESWARA UNIVERSITY:TIRUPATI
ENVIRONMENT SCIENCE (MINOR)

SEMESTER-V-W.E.F.2024-25

Social Issues and Environment

Practical

Credits: 1

2 hrs/week

1. Watershed development from aerial photos
2. Geomorphological Analysis for Inventory of Degraded Lands
3. Analysis of CO₂, SO₂, NO₂
4. Analysis of Acidity in water samples

Field Visits

5. Visit to any dams
6. Students can conduct a community-based environmental assessment to identify local environmental issues and social concerns

REFERENCES:

1. Deeksha Dave and E.Sai Baba Reddy, "Textbook of Environmental Science", Cengage Publications.
2. M.Anji Reddy, "Text book of Environmental Sciences and Technology", BS Publication.
3. J.P.Sharma, Comprehensive Environmental studies, Laxmi publications.
4. J. Glynn Henry and Gary W. Heinke, "Environmental Sciences and Engineering", Prentice hall of India Private limited
5. G.R.Chatwal, "A Text Book of Environmental Studies" Himalaya Publishing House
6. Environmental studies by R.C.Sharma, Gurbir sangha published by kalyani publishers,
7. Environmental studies by purnima smarath published by kalyani publishers.
8. Principal of Environmental Studies, C. Manoharachary, P.jayarama reddy,BS Publications

CO-Curricular Activities:

a) Suggested Co-Curricular Activities

On Successful Completion of this Course, Student will be able to

1. Organizing Eco club activities to promote eco-friendly green belts
2. Promoting awareness to create a clean and pollution free environments
3. Seminars, Group discussions, Quiz, Debates on related topics.
4. Invited lectures and presentations on related topics by experts in the specified area
5. Assignments

SRI VENKATESWARA UNIVERSITY:TIRUPATI

B.Sc ENVIRONMENT SCIENCE (MINOR)

SEMESTER- V

Paper: Social Issues and Environment

Model Question Paper

Time: 3 Hours

Max.Marks: 70

Section-A

Answer Any Four Questions. Each question carries 5 marks

(4X5= 20M)

1. Explain the impact of population growth on environment
2. Explain world food problems in India.
3. urban problems related to energy
4. Wasteland Reclamation
5. Resettlement and rehabilitation
6. Global climate changes impact on environment
7. Explain women and child welfare programmes
8. Explain water scarcity and ground water depletion

Section-B

Answer ANY questions. Each question carries 10 marks

(5X10= 50M)

9. (a) Explain sustainable development in detail

Or

- (b) Describe social issues impact on environment

- 10.(a) Explain global climate changes.

Or

- (b) Write a short note on nuclear hazards, ocean acidification and coral bleaching

- 11.(a) Explain rain water harvesting and Watershed management

Or

- (b) Explain environmental problems in India

- 12.(a) Describe disaster management.

Or

- (b) Explain resettlement and rehabilitation during cyclones

- 13.(a) Explain environmental ethics and value education

Or

- (b) Role of Information Technology for protection of environment and human health

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