

Curriculum for Environment Hygiene, Sanitation, and Waste Management

As an Elective Course for all Undergraduate Programmes

***Mahatma Gandhi National Council of Rural Education
Department of Higher Education
Ministry of Human Resource Development
Government of India***

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Background

While remembering Mahatma Gandhi on his 150th birth anniversary it is bounden duty of all us to take on his ideals and present national priorities of Swachhta. Swachhta is not just environmental need but also offers potential for entrepreneurship and employment. The burgeoning population of our country, its per capita increase in demand for resources and the growing economy lead us to one fundamental question- how can we provide enough for everyone? Equitable distribution of wealth and resources is a utopic dream. Whereas, an improved environment for one and all, especially for the rural and fringe urban citizens, is an achievable goal. For this, one important resource that goes un-noticed is what we term as 'waste'. Simply put, waste is a poorly managed resource. Today technology has advanced to such heights that wealth can be created out of garbage. Recycling of waste is the mantra for sustainability. However, this knowledge is yet to seep into the depths of communities across India.

The proposed curriculum on **Sanitation, Hygiene and Waste Management** takes a leaf from the concept of 'Swachhta as a way of life' and transforms it into a wealth of opportunity for the youth of India. With government support, community awareness and united effort, waste resource management can play a major role in protecting the **health of citizens** in India. Involving the youth into this movement is the need of the hour.

The concept of *swachhta* is deeply intertwined with the protection of our environment. In 2004 the Hon'ble Supreme Court of India directed the University Grants Commission to make Environmental Studies compulsory for all undergraduate courses for one semester. Wherever it is being offered, the emphasis laid on it is far less than the core subject, thereby diluting its importance. Hence, there is a need for an elective course at undergraduate level on Swachhta to improve employability while emphasizing the practicalities of maintaining a standard of hygiene at community level.

Introduction:

The Proposal here is to prepare a curriculum for a single-semester elective course in **Sanitation, Hygiene and Waste Management** of theoretical input followed by term end 4 week practical field level project work. The focus of the course will be on practical implementation of sanitation techniques to improve community environmental hygiene thereby empowering the students to guide communities towards adopting the best practices in clean and green living, while making them aware of the hazards posed by certain practices that they are habituated to.

The curriculum will include theory classes, case studies of exemplary practices in India and a field visit to a nearby village or slum or township to study in detail their current sanitation/ cleanliness issues and the environmental impacts of the same. In this manner, the course will bridge the gap between the textual knowledge and evolving contextual practices in India. It will make us look at sanitation & waste management as resource recovery management and train us in this direction of seeking career opportunities and self employment.

Curriculum Design

- Objectives
- Rationale

- Proposed Model of Curriculum
- Practicum Details
- Assessment
- Outcomes

Learner Objectives

The following are the Objectives for the proposed curriculum on Sanitation, Hygiene and Waste Management.

1. To understand the changing pattern and profile of Sanitation, Hygiene and Waste Management in India.
2. To study and understand the changing profile of Sanitation, Hygiene and Waste Management in India in terms of consumption patterns, land use patterns, lifestyles, living standards, usage and location.
3. To study and understand waste identification, segregation, collection, transport and management and issues in waste management.
4. To study and understand water budget, water use, sewerage, wastewater recycling and management and issues in wastewater management.

Rationale

Higher education which is generally organized into highly specialized disciplines requires a paradigm shift towards a more systemic perspective, emphasizing collaboration, cooperation and partnership (UNESCO Chair, 2015). There is an urgent need to promote community-student engagement through the Community Survey, Community Environmental Audit, PRA in Community, Community Waste Management Process Study while providing inputs for Sustainability and Eco Responsibility.

In course of transacting this course various forms of community engagement could be utilised:

1. *Linking 'formal' learning on waste & wastewater management with local community environmental hygiene*
2. *Researching with the community for resource recovery*
3. *Sharing Sanitation, Hygiene and Waste Management knowledge with the community*
4. *Designing new Sanitation, Hygiene and Waste Management curriculum and course*
5. *Involving local waste recyclers as trainers*
6. *Social Innovation by students for waste and wastewater recycling and environmental hygiene sector*

Proposed Model of Curriculum

The curriculum is for one semester. It is interdisciplinary in nature and more practice oriented.

S. No	Module Title	Module Content	Teaching/ Learning Methodology	Number of classes
1	Environmental Hygiene (EH), Waste and Wastewater: Perspectives	Prevailing scenario in EH, Waste and Wastewater- Urban and Rural- Risk Factors, Challenges & Work Opportunities in the district, city and state in India	Checklists, Classroom, Reports, Group Exercise	4
2	Environmental Hygiene and Sociology of environmental hygiene management, waste and wastewater and impacts	Community consciousness and engagement on sanitation aspects, Roles & Responsibilities, Job Charts, Frequency, Schedules and Timelines in Swachhta Management, Culture of Cleanliness (Swachh Bharat Abhiyan), Behaviour Change Communication, Role of Habits and Attitudes in Environmental Hygiene Management, Waste and Wastewater Disposal; Change Management.	Checklists, Case Studies Lecture, Field Visit, Participative Learning and Action, Preparation of Aids and Coaching for Awareness Programmes	6
3	Sanitation /EH, Waste, and Wastewater Management as Participatory Learning.	Sanitation / EH Sanitation infrastructure Status evaluation Waste Social Mapping, Resource Mapping of Waste infrastructure Wastewater Audit and feasibility study for management practices.	Field Visit, Mapping, Demonstration, Participation, Interaction with Adjunct Faculty (NGOs, Industry, ULBs, Private Sector Service Providers)	8
4	Sanitation Audit	Evaluation of Construction and Maintenance of Community, Public, Institutional and Individual Sanitation Infrastructure Toilets- Proportion and Number of toilets, Gender sensitive sanitation facilities, Ramps for differently abled, types – Indian, Western, Faecal Sludge treatment- Single / twin pit, Eco San, Septic tank, Formal sewerage.	Class room, Survey formats, field visits, web tools	6
5	Waste & Wastewater Audit	Waste Audit Environmental Impact Assessment, Waste characterisation, Quantity Determination, Primary Collection Methods, Secondary Transportation	Neighbourhood Field visit, Classroom Interaction and Group Exercise	8

		Wastewater Audit Water Budget, Types of Wastewater, Survey of Distribution network and feasibility of various Wastewater treatment methods		
6	Technology for toilets and sanitation; Construction and maintenance, Recovery of resources from Waste and treatment of Wastewater	Toilets Latest technologies in Toilet infrastructure with emphasis on feasibility of usage, maintenance and sustainability Waste Robust decentralised / centralised solutions including, source segregation, composting and recycling (3R), Zero Waste Institution Wastewater Technologies to separate black and grey water, wastewater treatment methods, Quality of treated water (3R) Soil Soil Restoration and Night Soil Management	Case Study, Films, Interview, Field Visits Adjunct Faculty(NGOs, Industry, ULBs, Private Sector Service Providers)	8
7	Management and Administration of Environmental Hygiene, Swachhta, Waste to wealth programmes and Wastewater treatment programs	Management of Collectives (Kutumbasree Kerala and Swachh Pune), IHHL procedures, Community Sanitation, Maintenance of Community Toilets, Waste Management methods and techniques, government priorities, local involvement, political will, community mobilization, resolving bottlenecks, addressing environmental hygiene and safety.	Classroom teaching, case studies, interviews, research. Adjunct Faculty(NGOs, Industry, ULBs, Private Sector Service Providers)	8
8	Internship	Participative Life Cycle Analysis of Wastewater Management Participative cradle to grave approach to Solid Waste management operations of a facility in the neighbourhood	Field Placement	1 Month

Practicum details

The Course includes practical field engagement where students are engaged in projects and activities related to waste recovery and resource management or wastewater management or sanitation and environmental hygiene management issue-based work and complex emergencies. The students are required to engage in an on-going waste and wastewater management programme in the respective locations. For this a field area, such as a village or slum or a township nearby will be identified for engagement. Students will need to visit periodically (once in a week) along with field engagement during the term end vacations. This is attained with prior agreement with the waste management facility,

wastewater management facility, and community engagement with the Nagar as well as the Gram Panchayat and local administrative bodies. The field training will include:

1. Conducting waste and wastewater audit for collection, collation and use of information on waste quantities for planning material recovery and composting.
2. Interactive community exercise with experts and formal / informal community leaders on Waste Recovery and Management Planning.
3. Interactive community exercise with experts and formal / informal community leaders on Wastewater treatment, diversion and reuse management planning.
4. Interactive behavior change communication involving community experts, opinion makers and opinion leaders.
5. Involving students in the waste segregation programmes campaigns on drainage and sewer management and facilitating public health campaigns.
6. Preparing seasonal maps and timeline maps to understand and ready the community on the seasonal public health hazards due to improper disposal and improper waste and wastewater management.
7. Organizing behavior change communication programmes relating to Sanitation, Hygiene and Waste Management.
8. Reporting the health concerns of the residents, waste and wastewater management system of the community and community public health habits as well as public health concerns of the residents to the concerned communities and facilitating address of these concerns.
9. Identifying opportunities for waste and wastewater management as well as resource harvesting through improved local infrastructure under relevant schemes.

Assessment

The course will be modeled in the same pattern as other compulsory courses, with 50% marks for coursework and written assessment, 30% for field work and 20% for presentations and report-writing.

Outcomes

After completion of the course the student will be able to:

- Study the social, economic, political and cultural environments of waste and wastewater habits as well as waste and wastewater management in a village/ township/ slum under study.
- Identify potential for developing different waste recovery, resource conservation and waste management methods using appropriate technology.
- Identify potential for developing different wastewater management, treatment and recycling methods using appropriate technology.
- Address the challenges in waste and wastewater management in a given scenario looking at technological and community support based initiatives.
- Engaging in community mobilization to initiate behavior change communication to make the waste to wealth model successful for managing waste and wastewater.

Career Options

- Career in Community Waste and Wastewater Management Projects

- Career in Corporate Social Responsibility Projects
- Entrepreneurship in sanitation and hygiene, wastewater management and waste facility management
- Career as Nodal Officer for Sanitation, Hygiene and Waste Management areas

Framework for Faculty Development Programme

This broad framework is suggested based on the structure of courses offered in the universities in the CBCS pattern. Universities organizing these Faculty Development Programmes could adopt or make changes as per the priorities and resource availability. The modules can be devised based on the expertise, experience and strengths.

Day 1

Community: Dynamics of Sanitation, Hygiene and Waste Management

Day 2

Participatory Learning and Social Mapping: Approaches and Methods, Community Project Proposal and Project Management, Concept and Steps, Thematic Maps, Social Maps, Transect Walk, Seasonal Map, Resource Mapping: Natural and Human Resource Mapping and Management and audit.

Day 3

Hygiene in Communities, Waste and Wastewater Management Process audit

Day 4

Field Visit: PRA Exercise and Mapping Waste and Wastewater Management in the Community:

Day 5

Field Visit: Waste and Wastewater Management Facility

Day 6

Study of Community Waste Streams and their life cycle analysis as well as extended producer responsibility: Engagement with RWA/ SHGs/ Health & Sanitation Department in Municipality/ School/Vendor Committee/Health Centre/Hospital

Awareness : Health & Hygiene/ Duties / Waste and Wastewater Management Policies & Programmes/Transparency/

Day 7

Preparation, Implementation of Sanitation, Hygiene, Waste and Wastewater Management Plan and Sustainability Issues: Schemes, Programmes, Sources of support and funding, Role and Responsibilities in Waste and Wastewater management

Professional Intervention: Partnership with public, Private and non-governmental organizations in waste management Projectising/ Proposals/ Plans/ Evaluations/ Implementation and Sustainability

Transaction Resources:

The Faculty Development Programme would enable identification and preparation of relevant course transaction resources. These resources include Reference Books, Films, PPTs, Caselets and Case Studies, Community Project Work and Field Work; Preparation of Community Resource, Waste Maps and Green Community Development Plans.

Course material and caselets will be prepared by Mahatma Gandhi National Council of Rural Education, Ground Floor Shakkar Bhavan, backside of LB Stadium, Hyderabad.

References:

Suitable video and text resource material along with case studies will be identified and a copy will be provided where they are available free of cost in open source.