Name of the Programme: M.Sc. Biotechnology

Course Code: GBT-604

Title of the Course: LAB IX: ENVIRONMENTAL BIOTECHNOLOGY

Number of Credits: 2

Effective from AY: 2022-23

Pre-requisites for the Course:	No prerequisite is required.	
Course Objectives:	1) To impart students with the hands-on experience in basic experimental analysis and the use of biological agents. 2) To understand emerging treatment processes carried out for the wastewater and organic solid waste analysis	
Content:	**MODULE I** **Analysis of Solid waste** 1. Estimation of Total solids and Volatile solids in organic waste 2. Biochemical methane potential assay 3. Analysis of Biogas using Gas Chromatography 4. Vermicomposting of organic waste	**No. of hours** 30
	MODULE II **Analysis of wastewater** 1. Chemical Oxygen demand of wastewater 2. Biological Oxygen demand of wastewater 3. Total Phosphorus analysis in wastewater 4. Total Kjeldahl Nitrogen analysis in wastewater 5. Struvite precipitation from wastewater and its analysis by XRD. 6. Microbiological analysis of wastewater	30
Pedagogy:	Hands-on experiments in the laboratory, online videos.	
References/ Readings:	1. APHA. "Standard Methods for Examination of Water and Wastewater", American Public Health Association WWA, Washington, D.C., 2005 2. Angelidaki I , Alves M, Bolzonella D, Borzacconi, L. Campos, J.L., Guwy, A.J., Kalyuzhnyi, S., Jenicek P., and Van Lier, J.B., Defining the Biomethane Potential (BMP) of Solid Organic Wastes and	

	Energy Crops: A Proposed Protocol for Batch Assays. Water Science & Technology, 2009.
Course Outcomes:	1. The students will be able to analyse municipal wastewater 2. The students will be able to analyse solid organic waste. 3. Students will understand the process of organic waste treatment. 4. Student will be able to relate the knowledge of Environmental Biotechnology with organic waste analysis.

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