

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Solid waste management
Course number	GEOL4307
Faculty	
Department	
Course type	Major Needs
Course level	4
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

- 1 - A solid waste management course aims to provide students with a comprehensive understanding of the principles, practices, and policies related to the management of solid waste. The specific objectives: 1. Waste Generation and Characterization: Explain the factors influencing waste generation, composition, and characteristics. Introduce methodologies for waste characterization, including waste audits, sampling techniques, and data analysis. Highlight the importance of waste characterization in designing appropriate waste management systems. 2. Waste Collection and Transport: Explore the different methods and technologies used for waste collection and transportation. Discuss the factors influencing collection route planning, equipment selection, and optimization of collection systems. Emphasize efficiency, cost-effectiveness, and environmental considerations. 3. Waste Treatment and Disposal: Provide an overview of various waste treatment and disposal methods. Discuss the principles and processes of landfilling, incineration, composting, anaerobic digestion, and recycling. Address the environmental, health, and social impacts associated with each method.

Intended Learning Outcomes

Knowledge and Understanding

- * Knowledge and Understanding: Students will acquire a solid understanding of the principles, theories, and concepts related to solid waste management. They will gain knowledge about waste generation, composition, collection, transportation, treatment, recycling, disposal methods, and relevant policies and regulations.
- * 1. Introduction to Solid Waste Management • Definition and scope of solid waste management • Historical perspective and evolution of waste management practices • Waste management hierarchy and the 3R approach (Reduce, Reuse, Recycle) 2. Waste Generation and Composition • Factors influencing waste generation rates • Characterization of solid waste streams • Classification of waste types (municipal, industrial, hazardous, etc.) • Estimation of waste generation and composition data 3. Waste Collection and Transportation • Waste collection systems (curbside, container-based, etc.) • Collection route planning and optimization • Equipment and technologies used in waste collection • Transfer stations and transportation logistics 4. Waste Treatment and Disposal • Landfilling: principles, design, and operation • Incineration: combustion processes, energy recovery, and emissions control • Composting: organic waste decomposition and compost production • Anaerobic digestion: biogas production and waste stabilization
- * PowerPoint lectures, and videos,