



Solid Waste Management (0941774)

Course Outline

Course Description

Strategies, policies, legislations, and hierarchy of integrated solid waste management, characterization and properties of municipal solid waste, waste generation, collection, transfer and transport. Waste recycling, reuse, recovery, treatment and disposal and life cycle analysis. Landfill siting, design, operation and closure. Waste-to-energy concepts and transformations.

Instructor: Dr. Shadi Moqbel

Office hours: Thursday 3:30 pm - 6:30 pm

Textbook:

- 1- Handbook of Solid Waste Management, 2nd Edition by Frank Kreith, George Tchobanoglous
- 2- Sustainable Practices for Landfill Design and Operation by Timothy G. Townsend, Jon Powell, Pradeep Jain, Qiyong Xu, Thabet Tolaymat, and Debra Reinhart.
- 3- Reading material handout provided through the UJ e-learning portal

References

- 1- Municipal Solid Waste Management in Developing Countries by Sunil Kumar
- 2- Handbook of Advanced Industrial and Hazardous Wastes Management by Chen, Jiaping Paul Hung, Yung-Tse Shamma, Nazih K. Wang, Lawrence K. Wang, and Mu Hao Sung
- 3- Sustainable Solid Waste Management by Ni-bin Chang and Ana Pires

Learning objectives

- 1- Describe the components of integrated solid waste management source reduction, recycling and reuse, composting, or landfilling and combustion
- 2- Discuss the environmental and economic impacts of solid waste management, control laws and regulations.
- 3- Analyze the processes of waste generation, collection, and disposal.
- 4- Explain the chemical processes that govern the degradation of solid waste

Topics

- Introduction to Integrated Solid Waste Management
- Laws and Regulations
- Solid Waste types and characteristics
- Solid waste generation pattern and sources
- Solid waste collection: storage and transport
- Waste disposal: biological degradation
- Landfill siting and design
- Waste disposal: Waste to Energy
- Waste recycling, reuse, and recovery
- Life cycle Assessment

Grading system

Midterm exam	30%
Short exam and assignments	30%
Final exam	40%