



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Sustainability and the Circular Economy

ENVENG 5170

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate

Course Components:

Lecture

Course Description:

An introduction to life-cycle thinking and the circular economy with emphasis on quantitative sustainability assessment and decision-making.

Prerequisites and Co-requisites:

Prereq: 3200 (511), or Grad standing, or permission of instructor.

Course Goals / Objectives:

- Develop, explain, and situate a personal definition of sustainability within frameworks drawn from engineering, natural science, social science, and the humanities;
 - Apply life-cycle thinking in order to analyze the impacts of a product or system from cradle-to-grave;
 - Develop the expertise to design a thermal or biological energy recovery process from solid waste
 - Develop the expertise to design a landfill
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Course Topics:

- History of sustainability: Sustainability frameworks, Industrial ecology; Life cycle assessment
 - Design for the environment; Green chemistry; Design for disassembly
 - Residuals Management; Waste water treatment; Air pollution control; Solid waste disposal
 - Introduction to solid waste management: Regulations; History of solid waste; Solid waste generation and disposal rates
 - Refuse collection systems
 - Solid waste recycling and processing operations
 - Material recovery processes
 - Incineration and energy Recovery processes
 - Biological processes for energy recovery
 - Solid waste disposal and landfill design
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Designation:

Required