16:375:534 ENVIRONMENTAL SUSTAINABILITY: LIFE-CYCLE ASSESSMENT TOOLS

Description: Theory of analytical tools to assess environmental sustainability of goods and services including sustainability metrics; material flow analysis; SETAC-EPA life-cycle assessment (LCA), Economic Input-Output life-cycle assessment and benefit-cost analysis. Application of LCA to real-world problems.

Instructor: Dr. Uta Krogmann
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Schedule: Tuesday/Friday 10:55 am -12:15 pm.
ENR 323

References:

References will be available on Sakai.

Preliminary Schedule:

1. Introduction
2. Major environmental issues
3. Life cycle assessment - overview
4. Life cycle assessment - inventory
5. Introduction to SimaPro
6. Life cycle assessment - impact assessment and interpretation
7. Introduction to environmental toxicology (presentation by guest speaker)
8. Global warming (presentation by guest speaker)
9. Life cycle assessment - uncertainty analysis
10. Energy consumption and its environmental impacts (presentation by guest speaker)
11. Work on final project
12. Streamlined LCA and Economic Input-Output LCA
13. Midterm exam (1 hr)/Work on final project
14. Carbon and water footprinting
15. Work on final project
16. Sustainability metrics and Material Flow Analysis
17. Work on final project
18. Critical review of LCA articles
19. Walk-up activity of a LCA concept or idea related to buildings or energy in the Liberty Science Center (Note: This class will be on a Saturday.)
20. Critical review of LCA articles
21. Work on final project
22. Critical review of LCA articles
23. Work on final project
24. Benefit-cost analysis (presentation by guest speaker)
25. Work on final project
26. Eco-efficiency analysis (presentation by guest speaker)
27. Work on final project
28. Final project presentation

Notes:

1. Check your e-mail regularly for important notices about the course. Class notes and resources will be available on Sakai.
2. Office hours for help with SimaPro will be announced.
3. Final grade determination
   Individual SimaPro project 1 - 10%
   Individual SimaPro project 2 – 10%
   Midterm exam about major environmental issues and LCA basics - 10%
   Walk-up activity of a life-cycle assessment concept or idea related to buildings or energy in the Liberty Science Center in Jersey City on 11/5 – 10%
   Critical review of LCA article – 10%
   Group project report (incl. LCA in SimaPro) – 20%
   Group project oral presentation – 20%
   Class participation – 10%