

Materials, Energy and Environment, 99-238A

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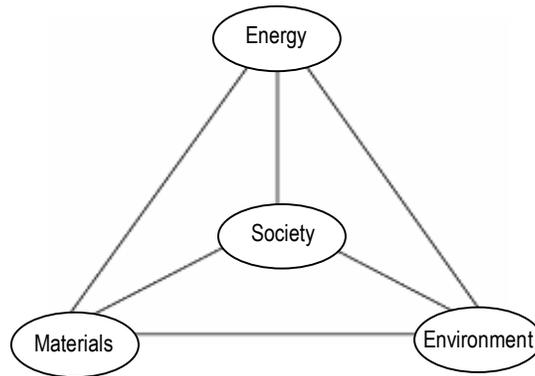
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Office Hours: Office hours are by appointment or by chance meeting between the hours of 9 and 4:30. I am usually in the office or near by if the door is open. Please feel free to arrange a visit or come by to discuss any topics or concerns.

Course Description

The course builds a relationship between materials and energy in the context of a society's consumption and then illustrates the influence this has on the environment. This interdependence is represented by the figure below.



Material selection and application have major ecological implications on energy consumption, material resources and have direct environmental impact. These, in turn, impact society. Awareness of the complicated interaction is paramount for continued advancement of civilization. With the scale of industrialization that exists on our planet, consideration of resource management, ethical material selection choices, energy management, and final disposal are all necessary to ensure a sustainable future.

After completing this course you will recognize the relationships between materials and energy consumption, and the interplay of materials availability, energy availability and social development.

You should be able to appraise environmental lifecycle implications of material use and energy sources and develop a self awareness of the influence consumers have on the material and energy consumption by a society.

Skills Required

- Basic math skills such as graphing and correlation
- Ability to research and synthesize information relating to a topic

Learning Outcomes

By the end of the course, you should be able to;

- Differentiate between material and product lifecycles and be able to discuss these with relation to the environment
- Explain limits and constraints to material selection and use and the effect on the environment
- Rank common materials by production energy requirements and environmental impact.
- Evaluate the influence social and personal choices have on energy and material use and evaluate the environmental impact of these choices
- Interpret trends in energy and material use over time

Textbooks

Steven Sass *The Substance of Civilization*

Suggested Reading

D. Nye *Consuming Power*

T. Graedel, B. Allenby, *Design for Environment*

W. McDonough , M. Braungart, *Cradle to Cradle, ReMaking the Way We Make Things*

FAQS

Is attendance required? Yes, this is a course which we will examine and discuss the topics in class whenever possible. You are expected to participate in this learning experience. Lateness is also not acceptable. If you are late more than once, then this will be considered in the attendance and participation evaluation. Attendance and participation is worth 20% of the final grade.

Must I participate in discussions? Yes. I will do my best to have everyone give their input to a problem. You will also have to lead one discussion during the course.

What about reports and deadlines? You will have to submit one major paper as part of this course. It will involve critical analysis and must have at least 10 references to primary research. No plagiarism will be tolerated.

What happens if I plagiarize? I have a zero tolerance position. If you plagiarize, the assignment will be given a Zero (0) grade.

What about grammar and spelling? I assume that excellent writing skills have been developed. I will not correct writing style errors. If there are spelling mistakes and or grammatical errors, up to 25% of the mark for the assignment may be deducted.