ICM 6682 Construction Ecology & Metabolism
SYLLABUS

This course has the objective of determining how to apply ecological theory and developments in industrial ecology to create what has often been described as Ecological Design for the built environment. Although Ecological Design or Ecologically Sustainable Design has been one of the key aspects of sustainable construction or green building, contemporary approaches lack any true understanding of or incorporation of ecological principles, research, approaches, or key ideas. This course examines the major schools of thought in present day ecology to determine what can be applied either as model or metaphor for green buildings. The new discipline of Industrial Ecology, which applies ecology to industrial operations such as manufacturing, is examined for approaches that can be applied to Ecological Design. The work of architects attempting to apply ecology in their work will be examined to determine the state of environmentally friendly buildings being created using current approaches. Throughout the course subsidiary issues of materials, energy, water, land use, and the integration of the natural and built environments will be examined. Specific directions will be provided during the course several weeks prior to the Due Date.

GENERAL DIRECTIONS
The reading assignments in are keyed to books, papers, the textbook, or Environmental Building News (EBN). When the assignment is to Read the reference, it is intended that you gain a thorough understanding of the book, paper, or other material. Scan means to obtain a cursory understanding or familiarity with the subject matter of the assignment. View means that the student is to view the Powerpoint lecture or video.

COURSE MATERIALS
This course has one required textbook and the online monthly journal, Environmental Building News, is also used.

Textbook

Environmental Building News
There are two ways of accessing Environmental Building News:

(1) Through the UF Library e-journal system. Log to www.uflib.ufl.edu and log into the library system. Click on Online Journals in the catalog and search for Environmental Building News. When the www.buildinggreen.com website you will
have access to current and past issues of the journal.

(2) Log into the UF network using VPN and then go to www.buildinggreen.com and click on News to get to the current and previous issues.

COURSE ASSIGNMENTS
You will have four major requirements for this course that are designed to integrate in the course readings and other materials as follows:

1. **Quizzes:** Each week you will have a quiz on the assigned Activities, focused on the readings but including other assigned activities such as viewing videos. There will be 10 questions and you will have 20 minutes to answer them. Recommend you take notes during your Activities so you will have them at hand. Each quiz is worth 20 points and there will be 12 weekly quizzes. Quizzes will be open on Sunday at 7:00 pm EST for 20 minutes for you to complete. (240 points)

2. **Assignments:** Each week, except for the Semester Project, you will have an assignment which may be either an essay, Powerpoint, or an oral response to the questions posed. You will turn these in each week by midnight EST on Sunday at Sakai. Assignments are 50 points each and there will be 10 of these. The specific requirements are posted in the weekly modules. (500 points)

3. **Semester Research Project:** You will be assigned a Semester Research Project on an assigned topic posted on the course Canvas site. Additional information on each project will be provided during the course. The semester project is worth 200 points. You will also produce a narrated 10 minute Powerpoint presentation regarding your research. It will be worth 50 points.

**Grading:** The final student grade will be a letter grade based on the percentage of the Total Points Achievable. The grades based on the percentage are as follows:

- 94-100   A
- 90-93.9   A-
- 87-89.9   B+
- 84-86.9   B
- 80-83.9   B-
- 77-79.9   C+
- 74-76.9   C
- 70-73.9   C-
- 67-69.9   D+
- 64-66.9   D
- 60-63.9   D-
- < 60      E

**Points Available:**
1. Quizzes: 12 x 20 points: 240 points
2. Assignments: 10 x 50 points: 500 points
3. Semester Research Project: 200 points
4. Narrated Powerpoint: 50 points

**TOTAL POINTS:** 990 points

**Attendance:** There are no mandatory attendance requirements for this course.

**Grading Method:** Grading will be based foremost on the quality of the written and oral submissions and presentations by the students, to include organization, graphics/models, grammar, spelling, punctuation, originality, and attention to detail.

**Instructor:**
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COURSE MODULES

Module Theme
Module 1 – Introduction
Module 2 - Defining an Ecology of Construction
Module 3 – Material Circulation, Energy Hierarchy and Building Construction
Module 4 – On Complexity Theory, Exergy, and Industrial Ecology
Module 5 – Applying Ecological Emergence to Design and Construction
Module 6 – Ecological Dynamics and Adaptive Architecture
Module 7 – Minimizing Waste Emissions From the Built Environment
Module 8 – Industrial Ecology and The Built Environment
Module 9 – Construction Ecology and Metabolism I
Module 10 – Construction Ecology and Metabolism II
Module 11 – Ecologic Analogues and Architecture
Module 12 – Semester Research Paper and Presentation