

**Systems Thinking for Sustainable Design**

**Course Objective**

Creating a sustainable future is not possible without systems thinking. Sustainable design is too complicated, with many interacting systems, to be tackled in a linear fashion. However, as with many disciplines, we try to force sustainable (design) into a way of thinking that is generally compartmentalized. If we want to sustain planetary and human systems for future generations, we need to develop our capabilities to think beyond simplistic or linear solutions. Our goal in this class is to explore holistic thought processes, and challenge our standard ways of thinking.

For students who are keenly interested in new ways of thinking about sustainable solutions to the issues of our time, we will explore ideas, methodologies and frameworks that transcend commonly used tools such as LEED, which can turn sustainable design into a series of checkboxes. Rather, we need to understand how projects fit into, affect and are affected by the larger context of their environment. Each project requires new and holistic thinking to ensure its success in the broader context of its eco-system. Living systems, regenerative design principles and case studies will comprise some of the core discussions.

During the quarter, students will explore systems thinking together. The course will include individual and group exercises, and we will work on a development project together. Lectures will be based on the text as well as various articles and case studies that students will be expected to read ahead of each class and be prepared to discuss. We will have guest speakers who are working in the context of large systems and who will discuss the opportunities of using a systems process and the pitfalls of not thinking in terms of systems. Students are expected to attend and participate in every class.

**WEEKS 1-3  Introduction to Systems Thinking Paradigms, and Regenerative Design and Development**

The purpose of these sessions is to introduce history, terminology, and principles of systems thinking in a way that contrasts mechanistic thinking and living systems so that students are prepared to approach subsequent case studies and course materials from a living systems lens.

- What is a System?
- Mental models
- Holistic thinking
- Quantitative vs. qualitative
- Introduction of frameworks
- Pattern thinking
- Regenerative Design & Development
- Introduction to Course’s Sample Development Project

**WEEK 4  Developmental Processes for People and Places**

The purpose of this session is for students to understand and experience their potential role in projects beyond the common perceptions of sustainable design and development in a way that promotes co-evolution of healthy ecosystems and human communities.
WEEK 5  Living Systems
The purpose of this unit is to delve deeper into living systems in a way that emphasizes life’s principles of resilience, adaptation, self-organization, and emergence so that students can apply nature’s genius to non-living systems.

WEEK 6  Wicked Problems: Climate Change, and the Commons
This session is designed to apply the lessons of the previous weeks to big and complex sustainability problems so that students can recognize and develop approaches to solving such problems.

WEEK 7  Discovering Project Potential
In this session, we will dive deeper into our sample development project in order to discover its true potential. Project stakeholders will participate in this workshop.

WEEKS 8-9  Practice with Systems Thinking in the Real World
The purpose of these sessions is to apply the tools introduced in earlier sessions in a way that instills confidence so that students have a firm understanding of systems thinking and regenerative design and development principles and methodologies.

WEEK 10 (plus Exam week if required)  Final Project Paper and Presentations
In lieu of a final exam, students will write a paper and give a presentation based on systems thinking principles and frameworks.

Time: Thursdays, 3:00 p.m.- 6:00 p.m.


Canvas Discussion: In this course students should not expect to be given answers. Students will participate in a graded discussion based on their own thought processes as they work through the concepts discussed in the class and in the homework. Specific assignments will be provided and students are expected to reflect and write about those assignments during the week. Daily participation is anticipated.

Course Grade: The course grade will consist of the following areas:

Canvas Graded Discussion 20%
Class Participation and Attendance 20%
Quizzes/Homework 20%
Systems Thinking Individual Paper (in lieu of final exam) 20%
Presentation (in lieu of final exam) 20%

Instructors:
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