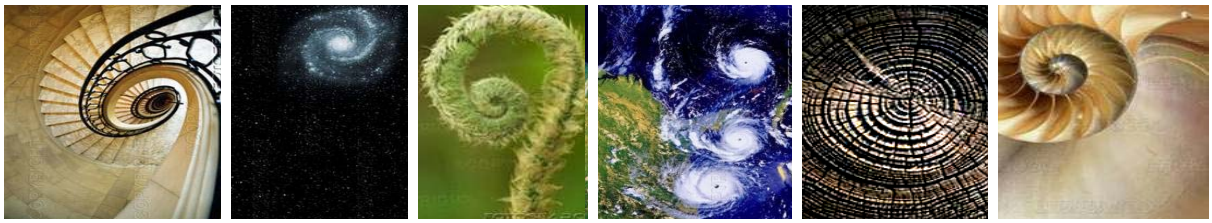
ARCH 8561 • Sustainable Design Theory and Practice • Fall 2011
SUSTAINABLE VISIONS FOR THE 21ST century



Syllabus

"The struggle to resolve global warming and today's other pressing environmental and social challenges reflects, more than anything, a crisis of thought…The most urgent need is for all of us to look inside and decide if our core beliefs and perceptions, and the behaviours that they spawn, match the nature of today's reality and if we are living up to our most deeply felt values and aspirations."
- Bob Doppelt, The Power of Sustainable Thinking

"It is perhaps not too much to say that, in the first decade of the new millennium, humanity has entered into a condition that is in some sense more globally united and interconnected, more sensitized to the experiences and suffering of others, in certain respects more spiritually awakened, more conscious of alternative future possibilities and ideals, more capable of collective healing and compassion, and, aided by technological advances in communication media, more able to think, feel, and respond together in a spiritually evolved manner to the world's swiftly changing realities than has ever before been possible."
- Richard Tarnas

Instructors

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Introduction

COURSE DESCRIPTION
Class hours and location: 2:30-5:00 p.m. Thursdays; room 109 Rapson Hall
Course credits: 3 credits

Sustainable Design springs from human and environmental ecology to go beyond the confines of conventional architectural practice. The common domain of architecture and design, as currently practiced, extends primarily to the consideration of space, form, structure, materials, human experience, social interaction, and engineering coordination, as well as fundamental issues of physical safety and well-being. The design solution is typically managed within a first-cost budget and the project time-horizon is primarily limited to design, construction, and the statute of legal limitations.

Sustainable Design, through its intention to generate long-term ecological solutions, greatly expands the current role of architecture by embracing a much needed whole systems, ecologically-based perspective that reconfigures both the fundamental scope of "Design" within social and ecological communities.

Taking the long-view is inherent to an ecological approach to design. *Sustainable Design* extends deep into the fabric of civilization and the whole of life, crossing artificial boundaries defined by discipline, education, convention or convenience. By engaging in a broad, deep, multi-dimensional intention and purpose sustainable design leaves few, if any, topics of human endeavor untouched in its dialogue. *Sustainable Design* blends philosophy, ethics, art, science, economics, engineering and contemporary architectural practice into a new framework of design prepared to take on the present ecological challenges faced by a global society and to imagine and create a new ecological future.

This course investigates the theory and practice of sustainable design methods and design processes for architecture. Emphasis is given to the direct application of sustainable design theories, processes, principles, and strategies into everyday practice to elevate design thinking and to meaningfully address pressing ecological, social, and economic challenges of our day. Discussions, brief lectures, readings, video, research, field studies, and case study investigations will enable students to understand the emerging theories and practice of sustainable design and how they directly inform architectural practice.

Course Objectives

The objectives of the course are to provide:

- Knowledge of sustainability theory and its connection to design practice.
- Design context, strategies, and tools for evaluating sustainable design theory and practice.
- Lessons from exemplary precedents and fieldwork.
- An opportunity for students to actively engage in developing sustainable design solutions working with a local client, building, and site.
- A framework for students to develop their own sustainable design theory and principles for practice.

Course Work

PROJECTS, GRADING, AND EXPECTATIONS

Ecology is from the Greek *oikos*, meaning *household*, which is the study of the relationship of organisms to their environments. The Earth and its natural systems are sometimes referred to as the first household. This semester, we will take stock of our own "household," how we live as individuals on this Earth, and how we frame our own ecological or sustainable theory and practice of design to work within the ecological patterns, processes, and structures of natural systems. A series of *Reading Reflections* and *Reading Discussions* coupled with *Projects* will be used to help you *define, reveal, and apply* sustainable design in your daily life and design practice for the 21st century.

Reading Reflections and *Reading Discussions* will be used for in-class exploration of writings by recognized sustainability theorists, practitioners, and philosophers. The class "Moodle" site will be used to post your weekly reading reflections. Students will be asked to lead reading discussions throughout the semester. Class participation for attendance, individual reading reflections, and discussions will be graded.

Project Overview

There will be three projects during the semester which are broken into a series of graded phases. Please see the related project assignments for detailed information and submission requirements (to be handed out during semester):

Project One: Parts A + B: will be a *Sustainability Assessment* of a local organization and their facility. This project will enable students to work with a real organization and staff through interviews, on-site evaluations, and a development of a project profile of the organization's sustainability mission, values, and goals in relation to the sustainability metrics of the site context and facility. Project One will be used to inform development of Project Two, a proposal for *Regenerative Design Interventions* to improve sustainability.

Project Two: Parts C+D+E: will involve development of a proposal for *Regenerative Design Interventions* (or suggested initiatives and physical changes) which the organization could make to their approach, operations, and facility to improve sustainability. Project Two offers teams the opportunity to make real-time connections between sustainability theory, architectural practice, and the built environment.

Project Three: will be involve conducting an *Ecological Footprint Study* of your personal lifestyle including the ecological implications of your energy consumption, waste production, materials resource consumption, pollution and greenhouse gas emissions, etc. based on your choices concerning food, transportation, housing, entertainment, material goods. You will be asked to conduct a preliminary audit and to make real changes to impact your footprint. This project will be developed incrementally over the semester.

Grading is *tentatively* weighted accordingly:

	In-Class (30% of total Grade)	
(Individual)	**Class Participation:**	
	Participation: attendance, individual reading reflections, discussions (each student will be asked to lead several reading discussions)	30%
	Out-Of-Class (70% of total Grade)	
	Projects:	
(Team)	PROJECT ONE: Regenerative Design Assessment *Part A: pass/fail* *Part B: 30%*	30%
(Team)	PROJECT TWO: Regenerative Design Interventions *Part C: pass/fail* *Part D: 10%* *Part E: 20%*	30%
(Individual)	PROJECT THREE: Ecological Footprint Study	10%
		Total: 100%

Class Outcomes

Anticipated outcomes for students in the course include knowledge and understanding of:

- *Theoretical and historical perspective on ecological design thinking and trends within and outside the design profession.*
- *Applied theory and sustainable design processes, principles, and strategies through fieldwork and case study assessments.*
- *Comparative understanding of sustainable design tools and assessment methods.*
- *Development of professional design theories, ethics, and values to inform research and practice.*

Grading

All projects are due *at the beginning of class* on the due date (or it will be considered late). Late projects will be lowered one grade for each calendar day that it is late (i.e. from an A to A- if it is late on the due date, from an A to a B+ if it is submitted the day following the due date, etc.). All projects and presentations must be completed to receive a passing grade. The following criteria will be used for grading:

Grading Criteria

- Clarity and accuracy of design thinking, research, and assessment.
- Completeness and thoroughness in response to project statement.
- Craft and overall presentation and research quality.

Grading Standards

University of Minnesota Grading Standards:

A Achievement that is outstanding relative to the level necessary to meet course requirements

B Achievement that is significantly above the level necessary to meet course requirements

C Achievement that meets the course requirements in every respect

D Achievement that is worthy of credit even though it fails to meet fully the course requirements

S Achievement that is satisfactory, which is equivalent to a C- or better

F (or N) Represents failure (or no credit) and signifies that the work was either: 1) completed but at a level of achievement that is not worthy of credit or 2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an incomplete.

I (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstance, e.g., hospitalization, a student Is prevented from completing the work of the course on time. Requires a written agreement between instructor and student.

Academic Dishonesty

Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.

Credit/Workload Expectations

One credit is defined as equivalent to an average of three hours of learning effort per week (*over a full semester*) necessary for an *average student* to achieve an *average grade* in the course. For example, a student taking a three-credit course that meets for three hours a week should expect to spend an additional six hours a week on coursework outside the classroom (over a semester) to receive an *average grade*.

Attendance

Attendance is required. It is critical that you fully participate and attend all class periods. Please be mindful of potential course conflicts with other courses and studio deadlines. Class periods will begin promptly on Thursdays at 2:30 p.m. in Rapson Hall 35. Class will recess at 5:00 p.m. Please make every effort to be to class on time. Punctuality is important in maintaining and building community and as a means of minimizing class disruptions.

Supporting Materials

READING & RESOURCES

The course readings are the foundation for in-class discussions providing information and insight on issues related to sustainable design theory and practice. Individual readings are assigned with the project statement for each of the sections of the course. Readings are on electronic reserve through the UMN Library system or in the Rapson Hall Library. A code will be provided for online access. A "Moodle" site is available online for posting your reading reflections and to access other class resources.

tentative schedule

Part One: DESIGN CHALLENGES
Integration: Designing as Part of an Ecosystem

Week 1	Mary/Doug	
Thurs.	Sept. 8	**Framing the Questions: State of the World/State of Design** *One Earth: A Brief History of Sustainable and Regenerative Design; Class Overview* *Case Studies and the Regenerative Design Process*
Week 2	Doug	
Thurs.	Sept. 15	**Field Study (Wilder Center): Finding your Projects Purpose &Essence** *Connecting with the 3 E's of Sustainability: Economics, Environment and Equity* *Fieldstudy: Meet at the Wilder Center (3:00 p.m.)*
Week 3	Doug/Mary (review only)	
Thurs.	Sept. 22	**Discovering Your Projects Potential: Introduction to Project Indicators & Goals** *Patterns, Pointers, Metrics, Audits and Rules of Thumb* **In-Process: *PROJECT ONE: PART A Due:*** *In-class presentations (no clients)*

Part Two: DESIGN PERSPECTIVES
Integration: Design and Ecological Intentions

Week 4	Doug	
Thurs.	Sept. 29	**Next Generation Design I: Whole Systems** *Scale Jumping + Connections + Pattern Recognition*
Week5	Mary	
Thurs.	Oct. 6	**Next Generation Design II: Deep Ecology and Biomimicry** *Case studies, readings, and guest visit with Blaine Brownell*
Week 6	Mary/Doug	**Final: *PROJECT ONE Part A + B Due: Regenerative Design Assessment; Room 109 Rapson***
Thurs.	Oct. 13	*Client presentations: PowerPoint and pin-up due at 2:15 in room 109*
Week 7	Mary	
Thurs.	Oct. 20	**Next Generation Design III: Bioregionalism** *Case studies, readings, and guest visit with Tom Fisher*
Week 8	Mary	
Thurs.	Oct. 27	**Next Generation Design IV: Environmental Justice and Ecofeminism** *Case studies, readings, and guest visit with Jim Lutz*
Week 9	Doug/Mary (review only)	
Thurs.	Nov. 3	**Next Generation Design V: Regenerative Economics** *Exploring the Value of Green Design Nature* **In-Process: *PROJECT TWO: Part C Due:*** *In-class presentations (no clients)*
Week 10	Doug	
Thurs.	Nov. 10	**Next Generation Design VI: Deep Ecology and Biomimicry Revisited** *Rethinking the Human Relationships with the Rest of Nature*
Week 11	Mary	
Thurs.	Nov. 17	**Next Generation Design VII: Biophilia** *Case studies, readings, and guest visit with Jonee Kulmann, CSBR* *Sign-up for "in-process" pin-up for Project Three (week 13)*

Week 12 **THANKSGIVING HOLIDAY**
Thurs. Nov. 24 *No Class*

Part Three: NEXT GENERATION PRACTICE
Integration: Synthesizing Purpose, Intent and Physical Expression

Week 13 Doug/Mary (review only)
Thurs. Dec. 1 **Present and Future Opportunities**
Giving Regenerative Design Clarity by Framing Our Options
In-Process: ***Outside of class: PIN-UP: PROJECT TWO –Part D Due (sign-up)***

Week 14 Mary/Doug
Thurs. Dec. 8 **Ecological Footprint Workshop and Discussion**
Final: ***PROJECT THREE: Ecofootprint Due; Room 109 Rapson***
In-class team workshop and discussion: Pin up in room 109 at 2:15
One Earth: Class wrap-up and discussion

Week 15
Thurs. Dec. 15 **FINALS WEEK: no class (last official day of class is Wednesday, Dec. 14)**
No class

Week 16
Mon. Dec. 19 **Final:** ***PROJECT TWO – Parts C+D+E Due: (due at 8:30 a.m.); Room 225 Rapson***
Client presentations: Pin up in room 225; PowerPoint and pin-up due at 8:30 a.m.
Review from 9:00-12:00 in room 225 (due at 8:30 a.m.)

If we understand that design leads to the manifestation of human intention and if what we make with our hands is to be sacred and honor the earth that gives us life, then the things we make must not only rise from the ground but return to it, soil to soil, water to water, so everything that is received from the earth can be freely given back without causing harm to any living system. This is ecology. This is good design.

- William McDonough
Sermon, Cathedral of St. John the Divine, New York, New York, 1993