

**California State Polytechnic University San Luis Obispo Architecture Department
Fifth Year Design “Thesis” Course Syllabus 2008-2009**

Sandy Stannard, Associate Professor

E-mail: stannard@calpoly.edu

Office Hours: TuTh 8:30 – 11:00; or by appointment* (email or call mobile number to confirm)

Telephone: (805) 756-2076 (office),

Office: #21-214

Architecture 481 + 492

These two courses are intertwined by design. This syllabus covers both courses and spans the academic year. The Cal Poly Catalog describes the two courses as follows [*note that meeting times may be adjusted*]:

ARCH 481 Senior Architectural Design Project Studio (5) Class meets MWF 9:10am-1:00pm. in Rm. #05-305.

Comprehensive building design and research project in an architectural concentration area.

Demonstration of professional competency in integration of architectural theory, principles and practice with creative, organizational and technical abilities in architectural programming, design and design research.

Miscellaneous course fee may be required- see Class Schedule. Total credit limited to 15 units.

Prerequisite: ARCH 407, ARCH 441, ARCH 442, ARCH 451, ARCH 452, ARCH 453 and 5th-year standing.

ARCH 492 Senior Design Thesis Seminar (3) Class meets F 2:10 – 5:00 p.m. in Rm. #05-305 U.O.N.

Development of the framework and format of a thesis project proposal related to the specific design option. Work to include: research topic, intent, scope, methodology, assumptions, outline of work program and documentation.

To be taken concurrently with first quarter of ARCH 481. Prerequisite: 5th year standing or consent of instructor.

It is my feeling that living things and non-living things are dichotomous....But I feel that if all living plants and creatures were to disappear, the sun would still shine and the rain still fall. We need Nature, But Nature does not need us.

- Louis Kahn

“Resident” vs. “Inhabitant:” “A resident is a temporary occupant, putting down few roots and investing little, knowing little, and perhaps caring little for the immediate locale beyond its ability to gratify.....The inhabitant, in contrast, ‘dwells,’ as Illich puts it, in an intimate, organic, and mutually nurturing relationship with a place. Good inhabitation is an art requiring detailed knowledge of a place, the capacity for observation, and a sense of care and rootedness.”

- David Orr, *Ecological Literacy*

Study nature, love nature, stay close to nature. It will never fail you.

- Frank Lloyd Wright

Nature doesn't have a design problem. People do....Instead of using nature as a mere tool for human purposes, we can strive to become tools of nature who serve its agenda too.....What would it mean to become, once again, native to this place, the Earth - the home of all our relations?

- William McDonough and Michael Braungart, *Cradle-to-Cradle*

Responsive, Responsible

Humans and all their associated artifacts are an immutable fact in nature. However, on our current consumptive trajectory, we are on a collision course with the environment. If we accept the definition of sustainability as “the triple bottom line” (i.e., the three E’s of “economy, ecology, equity” OR the three P’s of “people, planet, profit”), at its practical root, sustainable architecture is about how we come to terms with our place in nature. (We might also overlay onto our sustainability definition Vitruvius’ maxims of “utilitas, firmitas, venustas” to remind ourselves of the timelessness and applicability of these lessons).

Faced with increasingly diminishing resources, creating appropriate architectural environments is beyond choice: it is essential. Ecological luminaries such as architect Ed Mazria have re-analyzed the statistics, revealing that architecture with all of its associated technologies and materials consume nearly 50% of the energy generated in the United States. Architects are thus strategically poised to positively intervene to effect change in our culture’s insupportable, consumptive trajectory. With this resurgent need for ecologically responsive design, designers no longer have the luxury to ignore the affects of their architectural creations on the global environment and its inhabitants. Buildings are the mediator between man and nature; the designer is the artistic intermediary charged with creating a responsive, responsible architecture.

In this context, ideas that will be considered in this thesis sequence will include:

Architecture + The Landscape

Place-making is essential in the creation of meaningful architecture, no matter what the scale. Scale of settlement patterns and appropriateness of setting are vital issues in any successful architectural endeavor. The specifics of any given place, its

genius loci, must be understood and respected. In addition to phenomenology and place, creating symbiotic relationships with the land should be the goal of all of our built artifacts.

Architecture + The Environment

Sensitive architectural solutions respect and should celebrate the environment. This includes an appreciation for the local (geographies, bioregions, seasons, micro-climates, etc.) as well as a response to the global (energy sources and resources, etc.). Because buildings are energy consumptive, this is an arena in which architects have the opportunity to innovate, with the aim of achieving “carbon neutral” buildings by 2030 as posed by the Architecture 2030 Challenge. Learning from the past, learning from other cultures, and taking advantage of technological innovations, architects can design resourceful, delightful environments.

Architecture + Its Inhabitants

Even the best sustainably designed environment will not be useful unless it elicits “delight” in its users. Creating spaces that allow people to experience joy, health, comfort, and well-being is essential. Exploring material tactility, thermal delight, and inspiring luminous environments are a few of many methods to this end, moving toward a multi-sensory architecture.

Architecture + Materiality

Materials are the basic building blocks of an architect’s language. Exploring the poetic potential of structure and materiality is the goal here. Further, it is our responsibility to understand the pivotal cradle-to-grave-to-cradle issues related to material choices, with consideration for the energy consumption involved in extraction as well as recycling. Thus, a designer manipulating any given palette of materials must balance issues of material source with appropriate and inspiring form and structure.

Architecture + Technology

The appropriate use of technology should be the aim of any project. This includes not only the technology used in the design process but also in construction, operation, and maintenance.

Architecture + the Social-Cultural-Economic-Political Context

All architecture is physically contextual (whether consciously conceived or not); it is also always political (whether consciously calculated or not). The primary goal should be to make architectural proposals that are strategic rather than reactive, appropriate to the space and time of the given situation.

The Paradigm of Architecture

The ultimate aim of this topical sequence is to understand how our creative work reflects upon, questions, and relates to the broader field of architecture. Are we advancing the discipline or simply replicating the past? Are we improving our relationship with nature, or settling for the status quo? Are we creating stimulating, responsible environments or? To paraphrase Corbusier, we should aim to make the bad difficult and the good easy.

Naturally, these topical issues are not discreet and they should overlap. The iterative design process will be a guiding principle. “Architecture + Nature” projects might develop in a multitude of scales and uses.

Planning in the Present for the Future

Buildings are among the more durable artifacts that a society produces with causal affects on the environment that far outlive their makers. As thoughtful, educated designers, we are the stewards not only of creating meaningful spaces for people but also for respecting the environmental setting of these places. Man’s existence within the earth’s fragile ecosystems (of which we are a part) calls for sensitive, responsive, appropriate design. It is our responsibility to search for a fitting co-existence, a symbiotic relationship that neither impoverishes the planet nor our human experience on it.

This is potentially one of the most challenging periods of architectural innovations in history. While many of the established architects today seem intimidated by the accelerating momentum of change – fearing their stylistic commitments may be under attack – there is no reason why the environmental revolution cannot be welcomed as the threshold of a great creative era. Here is an opportunity to invent the future on terms that are sociologically and ecologically responsible.

- James Wines, “The Art of Architecture in the Age of Ecology

Some Useful Definitions

What is a “thesis” and why do we use this word to describe the project you will undertake?

A few definitions from Webster’s Dictionary may be helpful.

hypothesis, n. **1.a:** An assumption or concession made for the sake of argument. **b:** An interpretation of a practical situation or condition taken as the ground for action.

thesis, n. **1.** A position or proposition that a person (such as a candidate for scholastic honors or academic degree) advances and offers to maintain by argument **4.** The first stage of dialectic...

dialectic, n. **1.** discussion and reasoning by dialogue as a method of intellectual investigation, the Socratic techniques of exposing false beliefs and eliciting truth. **5.a:** any systematic reasoning, exposition, or argument that

juxtaposes opposed or contradictory ideas and usually seeks to resolve their conflict; 5b: an intellectual exchange of ideas...

synthesis, n. 2.a: deductive reasoning **b:** the dialectic combination of thesis and antithesis into a higher stage of truth.

Tasks

Students present and defend their design projects to the studio, to the faculty, and to the public in **at least** six formal juried presentations and two exhibitions.

At the end of *each* quarter students submit project documentation “books” in both hard copy and digital form.

The final (spring 2008) submittal (deliverables) of the Design Thesis Project will be in four forms.

All four are required. They are:

1. **Two public presentation/exhibitions** of your completed design thesis project (drawings, models, animations, books, etc).
2. **Two** complete copies of a well-written, informative, illustrated, and interesting Design Thesis Project documentation “books.”
3. A copy of the Design Thesis Project documentation “book” in electronic/digital format on a **CD**.
4. Two page illustrated Design Thesis Project summary/abstract.

Field Trips

For an architect, travel is always a form of research. It is essential and transformative to experience other places and buildings firsthand. Students will have the option to participate in at least two and possibly three field trips during the year. Field trip destinations will be selected by studio consensus in conjunction with the instructor.

Trip participants will share the responsibility for travel planning, organization, and costs.

Students are also encouraged to travel individually to do research for their projects if necessary and feasible.

Schematic Schedule (more detailed schedule to be handed out separately)

Fall Quarter 2008:

Exploration/Ideation

Research & Presentation of Topic, Issues, Precedents, Site, Design Constraints and Possibilities

Seminar (Fall):

- This is a course (leading to the development of a project) about *ideas*.
- Read a series of writings relating to the topic “architecture + nature” and participate in discussions with the group.
- Select and research an appropriate topic of interest around which you will develop and complete an architectural design thesis project.
- Write a series of abstracts on the topic and then develop the thesis program/proposal through a series of drafts and outlines to culminate in a document setting forth the critical position, precedents, and program.
- Present the project informally for “peer review” and discussion by the group.
- Submit the first edition of the Design Thesis Project documentation “book:” Book #1 + CD.

Pre-Design and Schematic Design Studio (Fall):

- Begin with a series of short design charrettes to investigate issues (including a full scale, finely finished material study).
- Do thorough research on and prepare presentation of topic, issues, and precedents.
- Do thorough site documentation, analysis and modeling. Determine size and scope of project (programming).
- Complete enough schematic design to illustrate constraints and possibilities.
- Present/defend the thesis project and research in juried review(s).

Winter Quarter 2009: Design and Design Development Studio:

Evolution/Development

- Develop design thesis project and present/defend in (at least) three juried reviews.
- Submit second edition of thesis “book” to include design work to date: Book #2 + CD.

Spring Quarter 2008: Design Development, Presentation, and Documentation Studio:

Exposition/Synthesis

- Complete design thesis project and present it in at least two public exhibitions.
- Submit final edition of thesis “book” in both two physical and one digital form including documentation of all design work: Two copies of Book #3 + CD.

Abilities

Successful completion of the architectural design thesis project will rely on the following:

Written and Verbal Presentation:

Successful completion of the thesis project depends on ability to complete a clear well-written and illustrated document as well as to make a successful graphic and verbal presentation to the public.

Students will write, revise and rewrite thesis abstracts, outlines, proposals, and programs. Students will read and edit each other's thesis abstracts, outlines, proposals, and programs. Students will verbally present their thesis abstracts, outlines, proposals, and programs and critique each other's presentations.

Graphic Skills:

Successful completion of the thesis project depends on ability to complete a clear well-written and illustrated document as well as to make a successful graphic and verbal presentation to the public.

All drafts, presentations, and final documents are required to include drawings, diagrams, sketches, photos, and other illustrations as appropriate.

Architectural design thesis documents and public presentations are to generally be graphically sophisticated, employing appropriate graphics techniques of digital imaging, sketching, hand drawing & drafting, computer aided drawing and drafting, physical and digital 3-D modeling, energy simulation/modeling, and animation.

Research Skills:

The success of the thesis depends on your ability to research the topic, site, and precedents. Research methods include site visits, field trips, interviews, library research, and research using the internet. The existing literature related to the topic should be reviewed and an annotated bibliography should be produced and included in each quarter's final submittal.

Critical Thinking:

Architectural design projects typically require "ability to make a comprehensive analysis, and evaluation, of a building, building complex, or urban space." (NAAB)

"Broadly speaking, critical thinking is concerned with reason, intellectual honesty, and open-mindedness, as opposed too emotionalism, intellectual laziness, and closed-mindedness. Thus, critical thinking involves: following evidence where it leads; considering all possibilities; relying on reason rather than emotion; being precise; considering a variety of possible viewpoints and explanations; weighing the effects of motives and biases; being concerned more with finding the truth than with being right; not rejecting unpopular views out of hand; being aware of one's own prejudices and biases, and not allowing them to sway one's judgment." Kurland, Daniel J. *I Know What It Says . . . What does it Mean?* 1995.

Students will formally critique each other's work as a method of honing their understanding and fluency with the topic. Success depends on the ability to critically sift information from a variety of sources to focus on the issues and actions relevant to the student's selected topic.

Collaborative Skills

One of the great strengths of design education and the design studio is the emphasis on collaboration as a tool. In the case of the design thesis project students are encouraged to take advantage of the fact that they are working alongside others trying to accomplish a similar task by collaborating. This collaboration may involve sharing research sources and techniques, sharing cost of supplies, and sharing ideas and criticism so that each project gets the benefit of multiple points of view. Students are also encouraged to build a team of consultants outside the studio that can assist with feedback about the thesis project. These outside consultants may be other students, professors, professionals, or others. Building a network is a crucial skill for architects to practice.

Use of Precedents:

"Ability to provide a coherent rationale for the programmatic and formal precedents employed in the conceptualization and development of architecture and urban design projects." (NAAB)

Because thesis design proposals are usually hypotheses, which for the most part will not be tested materially at full scale, students are required to cite relevant precedents and to have the ability to assess their projects in relation to precedents.

Investigation of Cultural Issues and the Context of Architecture

The design thesis project should demonstrate some understanding of the theoretical, social, political, technological, ecological and economic factors that shape architecture, relevant to the selected thesis project, and given the student's perspective as people who are just about to enter the profession.

Students should address the question of how architecture can become an instrument to change the non-physical environment as well as the physical environment.

Consideration of Values, Ethics and Professional Judgment

Students should seek some understanding of the ethical issues, motivations, and value systems involved in the formation of professional judgments in architecture design and practice.

Programming

Design thesis students should demonstrate the ability to assemble a comprehensive program for an architecture project, including an assessment of client and user needs; a critical review of appropriate precedents; an inventory of space and equipment requirements; an analysis of site conditions; a review of the relevant laws, codes, and standards; an assessment of the implications for the project; and a definition of site selection and design assessment criteria.

Understand Legal Responsibilities

The architectural design thesis should demonstrate understanding of architects' legal responsibilities with respect to public health, safety, and welfare; zoning and building codes (HOTFEAT); accessibility and other legal issues

relevant to the particular project.

Comprehensive Design

The architectural design thesis project should be comprehensive, presenting significant planning and design challenges (as would be expected of a capstone course) as well as a range of design solution alternatives.

The thesis project should demonstrate ability to produce an architectural design project informed by a comprehensive program, from schematic design through the detailed development of programmatic spaces, that responds to the relevant cultural issues,

that demonstrates consideration of patterns of human activity, user & client needs and expectations,

that responds to natural and built site conditions and context,

that responds to environmental challenges as outlined by Architecture 2030,

and that includes integrated design of structural and environmental systems, life-safety provisions, wall sections and building assemblies illustrating credible envelope systems and finishes.

Students should be able to assess the completed project with respect to their program's design criteria.

Detailed Design Development

The architectural design thesis should demonstrate ability at detailed design development relevant to the selected projects.

Technical Documentation

The architectural design thesis should demonstrate ability to make technically precise descriptions and documentation of the proposed design for purposes of review relevant to the selected projects.

Grading

Students must meet a very high standard of expectation for inquiry, production, and documentation in order to pass these courses of study. Please feel free any time to ask for an updated assessment of progress.

Minimum requirements to pass the course are:

1. Attendance and participation in every class.
2. Completion of assignments on time.

Assignments will be graded per the Cal Poly catalogue and as follows:

A = Exemplary work which others will want to see and learn from.

B = Good work which demonstrates competent control of the subject.

C = Did the project. Nothing special

D = Did the project but it was not very good.

F = Incomplete work, work other than task assigned, work not completed on time, lack of attendance and participation in scheduled class meetings.

Inc. = Per University policies.

RP = Work in progress over several terms. Assignment of final grade awaiting completion of additional work.

Final grades will be based on a pro-rated assessment of all the work done.

A trajectory of improvement in the quality of the work will count heavily in the determination of the final grade in the course.

Treat the Earth well. It was not given to you by your parents.

It was loaned to you by your children.

- Kenyan Proverb

We shall not cease from exploration

And the end of all our exploring

Will be to arrive where we started

And know the place for the first time.

- T.S. Eliot

Partial Bibliography

Alexander, Christopher, *A Pattern Language* (New York: Oxford University Press, 1977).

Carson, Rachel, *Silent Spring* (Boston: Houghton Mifflin Co., 1962).

Drew, Philip, *Touch This Earth Lightly: Glenn Murcutt in His Own Words* (Duffy & Snellgrove, 2000).

Earth Pledge, *Sustainable Architecture White Papers* (New York: Earth Pledge, 2000).

Friedman, Thomas, *Hot, Flat, and Crowded* (New York: Farrar, Straus, and Giroux, 2008)

Guzowski, Mary, *Daylighting for Sustainable Design* (New York: McGraw Hill, 1999).

Heschong, Lisa, *Thermal Delight in Architecture* (MIT Press, 1979).

Kwok, Allison, and Walter Gronzik, *The Green Studio Handbook* (Architectural Press, 2006).

McDonough, William and Michael Braungart, *Cradle To Cradle: Remaking the Way We Make Things* (New York: North Point Press, 2002).

Leopold, Aldo, *A Sand County Almanac and Sketches From Here and There* (New York: Oxford University Press, 1989).

Mau, Bruce, *Massive Change* (London: Phaidon Press, 2004).

Mazria, Edward, "It's the Architecture, Stupid!" (*Solar Today*, May/June 2003, p. 48-51).

Mazria, Edward, *Passive Solar Energy Book* (Emmaus: Rodale Press, 1979)

McHarg, Ian, *Design With Nature* (Garden City: Doubleday/Natural History Press, 1969).

McPhee, John, *The Control of Nature* (New York: Noonday Press, 1989).

Miller, David, *Toward a New Regionalism* (Seattle: University of Washington Press, 2005).

Millet, Marietta, *Light Revealing Architecture* (New York: Wiley + Sons, 1996).

Orr, David, *The Nature of Design: Ecology, Culture, and Human Intention* (New York: Oxford University Press, 2002).

Pallasmaa, Juhani, *The Eyes of the Skin: Architecture and the Senses* (London: Academy Group Ltd., 1996).

Pollan, Michael, *In Defense of Food* (New York: Penguin Press, 2008)

Portoghesi, Paolo, and Erika Young, *Nature and Architecture* (Milano: Skira, 2000).

Reisner, Marc, *Cadillac Desert: The American West and Its Disappearing Water* (New York: Penguin Books, 1993).

Steffen, Alex, Ed., *World Changing: A User's Guide for the 21st Century* (New York: Abrams, 2006).

Stein, Reynolds, Gronzik, Kwok, *Mechanical and Electrical Equipment for Buildings*, 10th Ed. (New York: John Wiley + Sons, 2006).

Tanizaki, Junichiro, *In Praise of Shadows* (Stony Creek: Leete's Island Books, 1977).

Thompson, D'Arcy, *On Growth and Form* (London: Dover, 1992).

Van der Ryn, Sim and Stuart Cowan, *Ecological Design* (Island Press, 1995).

Wells, Malcolm, *Gentle Architecture* (New York: McGraw Hill, 1992).

Wines, James, *Green Architecture* (Koln: Taschen, 2000).

Yeang, Ken, *Ecodesign: A Manual for Ecological Design* (Academy Press, 2006).

Zelov, Chris, Ed., *Design Outlaws on the Ecological Frontier* (Easton: Knossus Publishing, 1997).