

EID/ENV 384 COURSE SYLLABUS

Class hours: Tu/Th 1:00-2:30
Office: Eiben 211
Office hours: By appointment

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Zoom Course ID#: 943 3983 9602
Zoom Course Password: EID384

COURSE DESCRIPTION

EID 384 Sustainability in Design (3cr) This course examines principles of sustainable design from a systemic perspective, focusing on environmental issues and how they relate to economics, social equity, and human health. Topics in the course include: cradle-to-cradle principles, biomimetic design, passive building design, renewable energy, water and waste, sustainable materials, and indoor environmental quality. Course culminates with a review of applications in the building industry. Emphasis is on developing sustainable solutions to current problems.

COURSE FORMAT

Because sustainable design is a rapidly developing field, with new technologies and practices constantly emerging, the course will be reading and research intensive. Along with regular exams that cover the information presented in lectures, there will also be several in-class activities, exercises, and assignments. Any online sessions will be synchronous (in real-time), so you must attend the online classes during the class period via Zoom.

At the end of the semester, students will have the option to either present a design project from a previous or current studio that has been reconsidered in a sustainable design context, integrating the technologies, principles, practices, etc., they have learned about in the course; or write an in-depth (4000 word) research paper on a topic of your choice (to be approved by instructor). The student may propose other alternatives for a final project, such as building (or inventing) a sustainable technology prototype. Through these various assignments, students are expected to make an active contribution to the knowledge base of the course.

COURSE LEARNING OUTCOMES

Student work will be assessed by evidence of achievement in the following course outcomes. In the first half of the course—which will establish a theoretical foundation in the field—students are expected to:

- **Environmental Factors** - Identify the historical, sociopolitical, and economic factors that have contributed to the global environmental crisis we find ourselves at present.
[CIDA 4, 10] [PO3,6] – EMERGING
- **Concepts & Principles** - Describe the concepts, principles, and theories of sustainability, and how they pertain to human welfare and the building industry.
[CIDA 7] [PO3,4,6] - EMERGING
- **Industry Impacts** - Recognize how the fields of environmental and interior design have been influenced by, and in turn can help advance, the goals of the sustainability movement.
[CIDA 6, 13, 14] [PO1,6] - DEVELOPING

In the second half of the course—which will examine practical applications within the design profession—students are expected to:

- **Design Standards** - Reference sustainability guidelines and regulations established by professional organizations in the field.
[CIDA 16] [PO3] - DEVELOPING
- **Building Systems** - Apply sustainable principles in the areas of passive design, lighting design, thermal design, acoustic design, indoor environmental quality, renewable energy, building materials, waste management and water conservation.
[CIDA 14, 15] [PO4,6] - DEVELOPING
- **Emerging Technologies** - Scan for new or emerging technologies, materials, and products, and evaluate them based on a range of properties and performance criteria.
[CIDA 13, 14] [PO2] - EMERGING

GRADE EVALUATION

Your final grade will be weighted as follows:

| | | |
|-------------------------|------------|---------------|
| Exams (3) @ 15% | 45% | A = 91-100% |
| Design/Research project | 15% | B = 81-90% |
| Future Scenarios | 5% | C = 71-80% |
| Tech Slam | 5% | D = 65-70% |
| Fieldwork | 10% | F = below 65% |
| In-class exercises | <u>20%</u> | |
| TOTAL | 100% | |

COURSE MODULES

Module I: Problem Overview

- Week #1 Environmental Issues
- Week #2 Climate Change
- Week #3 Legislative Initiatives
- Week #4 Futures Scenarios; Exam #1

Module II: Systemic Approaches

- Week #5 Sustainability Paradigms
- Week #6 Passive Design
- Week #7 Economic Perspectives; Exam #2

Module III: Design Strategies

- Week #8 Renewable Energy
- Week #9 Waste & Water Management
- Week #10 Building Materials
- Week #11 Indoor Environmental Quality
- Week #12 Field work; Exam #3

Module IV: Industry Standards

- Week #13 LEED standards
- Week #14 LBC, WELL Standards

REQUIRED TEXT:

Sustainable Solutions, Richard Niesenbaum

REFERENCES (to be provided):

An Inconvenient Truth, Al Gore

Cradle to Cradle, M. Braungarten & W. McDonough

Biomimicry: Innovation Inspired by Nature, Janine Benyus

Natural Capitalism, Paul Hawken

Thinking Ecologically, Marilyn Chernow

Green Hawaii, Ira Rohter

Green Building and LEED Core Concepts, USGBC

E+ID PROGRAM OUTCOMES

Students are expected to:

- Understand, and operate within, the dictates and standards of the design profession/industry (PLO #1: **Professionalism**) - CIDA 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14
- Explore and apply the design process from project inception to realization (PLO #2: **Process**) - CIDA 4, 6, 9, 10, 11, 12, 13, 14
- Integrate principles of design in order to synthesize and optimize design solutions (PLO #3: **Principles**) - CIDA 2, 3, 4, 5, 6, 8, 9, 10, 12, 13, 14
- Safeguard the welfare of occupants and the public at large, and promote the ecological balance between the natural and built environments (PLO #4: **Protection**) - CIDA 2, 3, 4, 7, 8, 10, 12, 13, 14
- Communicate design concepts, design solutions, and problem-solving rationales through written, oral, and visual media (PLO #5: **Presentation**) - CIDA 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14
- Evaluate, articulate, and actualize the social, environmental and ethical impact of design on the health, safety and welfare of the public to further service, justice and peace (PLO #6: **Marianist Values**)

| Marianist Values | Native Hawaiian Values |
|--|--|
| Education for formation in faith | (Mana) E ola au i ke akua ('Ōlelo No'eau 364) - May I live by God |
| Provide an integral, quality education | (Na'auao) Lawe i ka ma'alea a kū'ono'ono ('Ōlelo No'eau 1957) - Acquire skill and make it deep |
| Educate in family spirit | ('Ohana) 'Ike aku, 'ike mai, kōkua aku kōkua mai; pela iho la ka nohana 'ohana ('Ōlelo No'eau 1200) - Recognize others, be recognized, help others, be helped; such is a family relationship |
| Educate for service, justice and peace | (Aloha) Ka lama kū o ka no'eau ('Ōlelo No'eau 1430) - Education is the standing torch of wisdom |
| Educate for adaptation and change | (Aina) 'A'ohe pau ka 'ike i ka hālau ho'okahi ('Ōlelo No'eau 203) - All knowledge is not taught in the same school |