

NEW COURSE DEVELOPMENT OR EXISTING COURSE ASSESSMENT REPORT

PREPARED BY: Perry Spring

DATE: August 28 2012

COURSE TITLE: Living Building Renovations through Energy Management

New course: X or Existing course: _____ Department: _____

Credit Hours: 5 Lecture Hours Per Week: 5 Lab Hours Per Week: 3

Is this course required for a Degree or Certificate? If so, list which ones below.

Energy Management Specialist Certificate / Bachelors Degree in Sustainable Human Habitat

COURSE DESCRIPTION:

The Living Building Challenge, developed in the Cascadia region, is an international performance standard and framework for designing, constructing, retrofitting, and operating buildings. Course will explore how energy management can be used to achieve the standard's imperatives. Net Zero Energy, biomimicry building system design, biophilic community planning, and car free living will be highlighted.

PREREQUISITES:

Required: One of the following or equivalent

- ENERGY 105: Introduction to Sustainability
- ETSP 101: Introduction to Environmental Technology & Sustainable Practices
- NRG 110: Introduction to Energy in the Built Environment

Recommended:

- 1 design course (ENERGY 120: Energy Efficiency Design, Construction, & Retrofit / ETSP 120/130/140/170 or NRG 200: Net Zero Energy Design)
- 1 energy management course (ENERGY 130: Energy Assessment & Analysis, or ETSP 190: Documenting & Reporting Energy Use, or NRG 121: Energy Audit 1)

RESOURCES USED TO PREPARE THIS COURSE:

Material and concepts from:

- Living Building Challenge V2.1
- International Living Building Institute website resources

TEXTBOOKS USED BY STUDENTS

- International Living Future Institute resources for community members (fee per student)
- The Integrative Design Guide to Green Building by Bill Reed
- Zugunruhe- The Inner Migration to Profound Environmental Change by Jason McLennan:

GENERAL COURSE GOAL:

Students gain knowledge in how energy management retrofit work can reduce building carbon footprint, increase occupant health, and take concrete steps to make

COURSE OUTCOMES:

At the conclusion of this course, students will be able to:

- Interpret appropriate application of the Living Building Challenge to different energy management scenarios

- Articulate the energy saving benefits of individual petals within the LBC
- Develop metrics for a baseline scenario versus application of the Living Building Challenge
Articulate for specific imperatives within the standard

METHODS OF ASSESSMENT:

- In class participation
- Online quizzes
- Out-of-class “lab” assignments
- Group project
- Mid-term & final exam
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METHODS OF INSTRUCTION MAY INCLUDE:

- Lectures
- Guest Presenters
- Group exercises
- Building walk-thru “field trips”
- Assignment of online videos
- Student presentations

TOPICAL OUTLINE:

INSTRUCTIONS: In the spaces below, develop instructional units and show the topics that support each unit. Note: For each topic, indicate which industry-derived skills are addressed by the topic. To do this, you must first choose which skill set you are using. The choices are below. Please place an “x” by the skill set you will use. (Choose only one.)

Energy Project/Program Management

Commercial Building Analyst

Cite the code number for each skill from the Skill sheet. Put it AFTER each topic description.

Unit 1:

- Living Building Challenge – philosophical and component building blocks [PM-C3](#), [PM –C7](#), [BA-A8](#)
- Energy Management components of the LBC – petals and imperatives [PM-A17](#), [BA-C4](#)

Unit 2:

- Formation of Design Teams and defining scope of work [PM-G7](#), [PM-C7](#), [PM-E8](#), [BA-E7](#)
- Typology and landscape transects – defining a project [PM-H3](#), [BA-A3](#)

Unit 3:

- Petals overview: Site & Water – EM of Urban Agriculture & Car Free Living [PM-H5](#),
- Petals overview: Energy – EM of Net Zero Energy & Civilized Environment [PM-H12](#),

Unit 4:

- Petals overview: Health & Materials- EM of Healthy Air & Embodied Carbon Footprint [PM-E4](#), [BA-A5](#), [BA-B13](#)
- Petals overview: Equity & Beauty – EM of Humane Places & Rights to Nature [PM-C7](#),

Unit 5:

- Applying the LBC to an existing building: concepts & case studies [PM-H12](#), [BA-A10](#)
- Review of design team proposals [PM-G3](#), [PM-C14](#), [PM-C8](#), [BA-F4](#), [BA-A6](#)

Unit 6:

- Mid-term exam [PM-G1](#), [PM-E5](#), [PM-H5](#), [PM-C11](#),

- Quantify Energy associated with different LBC imperatives – part 1 [PM-E5](#), [PM-E7](#), [BA-D7](#)
- Unit 7:
- Quantifying energy associated with different LBC imperatives – part 2 [PM-E13](#), [PM-F3](#), [BA-C4](#), [BA-C10](#)
 - Biomimicry: nature as a model, mentor, and measure for sustainable design [PM-C7](#),
- Unit 8:
- Biophilia: overview of the theory, science, and practice of bringing buildings to life [PM-C11](#), [BA-D8](#)
 - Smart Growth: energy management opportunities in urbanizing re-development [PM-A14](#), [PM-A17](#), [BA-A9](#)
- Unit 9:
- Net Zero Energy Certification process [PM-B11](#), [PM-C3](#), [BA-C7](#), [BA-C2](#)
 - Living Building Collaboratives: a process for paradigm shift [PM-G8](#), [PM-H6](#), [BA-G6](#), [BA-G7](#)
- Unit 10:
- Project Team Presentations & class review [PM-D11](#), [PM-A8](#), [BA-F5](#)
 - Project Team Presentations & class review [PM-D11](#), [PM-A8](#), [BA-F5](#)
- Unit 11:
- Course review session [PM-D3](#), [BA-D7](#)
 - Final Exam [PM-D12](#), [BA-G1](#), [BA-C4](#)

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