Date: February 15, 2011
Course Number: CME565
Course Title: Sustainable Innovations in Residential Construction

☒ New Course  ☐ Changes in existing course (check all that apply):
☐ Prefix
☐ Number
☐ Credits
☐ Title
☐ Description
☐ Pre-requisite(s)
☐ Co-requisite(s)
☐ Shared Resources
☐ Course Format
☐ Content
☐ Semester Offered

This course meets the General Education standards in the following knowledge and skills area (check all that apply):

☐ American History
☐ The Arts
☐ Basic Communication
☐ Humanities
☐ Mathematics
☐ Natural Sciences
☐ Other World Civilizations
☐ Social Sciences
☐ Western Civilization

Prerequisites or co-requisite requirements:

☐ Prerequisites: none  ☐ Co-requisites:

Institutional Impact:

Anticipated Enrollment: 20 per semester

Technology and Classroom Resource Demands: classroom with projector and computer

Computing Resources:

Library Resources:

Transportation Requirements: field trips to construction sites

Forest Properties or Field Practicum Facilities Required:
Health and Safety Considerations:

Conditions or situations present in association with the course?

1. Will substances with any of the following properties be used during instruction: flammability, toxicity, corrosivity, reactivity, registered pesticide, legally controlled, or other characteristics with the potential to cause harm or injury? No

2. Will any physical hazards be present during instruction? (e.g., machines that need safety guards; razor blades or syringes; compressed gases, etc.) No

3. Will any biological hazards be present during instruction? (e.g., handling animals (rabies or hantavirus); cultures or stocks of infectious agents (fungal spores, viruses, bacteria, etc.). No

4. Will any radiation hazards be present during instruction? (e.g., radioisotopes, X-rays, ultraviolet rays, lasers, etc.). No

5. Will any electrical equipment that, due to its design, location, or method of use, pose any threat to safety during instruction? (Give considerable thought to electrical use outdoors, or any potentially wet location.). No

6. Will there be any personal safety issues related to the class? (e.g., due to time of day or location, at the end of any organized class exercise, will students be in danger of physical assault, etc.). No

7. Will any students be driving official state or research sponsored land or water vehicles during any class or instructional exercise? No

8. Will any type of personal protective equipment be necessary during class exercises? (e.g., hard-hats, eye/face protection, hearing protection, hand/foot protection, lab coat, visibility clothing, etc.) Yes

If the answer was “Yes” to any of the HEALTH AND SAFETY questions, please explain:

Field trips to housing construction sites may require hard hats and other safety equipment which will be provided by the department.

CATALOG DESCRIPTION (Please provide using the precise format currently used in the ESF catalog, please do not exceed 1000 characters):

CME 565 Sustainable Innovations in Residential Construction (3)
Three hours of lecture per week. Principles of sustainable residential construction; the adaptation of biological, ecological, and cultural elements into building performance standards, practical building specifications, standards and systems. Spring.
DETAILED COURSE DESCRIPTION

COURSE: CME 565–Sustainable Innovations in Residential Construction
3 Credit Hours – Spring Semester
3 Hours Lecture Per Week
Prerequisite(s): none

SCOPE:

1. Level of Instruction:
   a. CME 565 is an advanced undergraduate/ introductory graduate level course intended as an elective for lower division and to fulfill graduate elective coursework requirements

2. Relation to curriculum or to other ESF or Syracuse University courses:
   a. CME 565 is an elective course offered by the Sustainable Construction Management and Engineering Faculty. This course is open to advanced undergraduate students and graduate students in all disciplines at ESF and SU if space allows.
   b. Shared resource requirements: none, this course is open to both undergraduate students and graduate students.

STUDENT LEARNING OUTCOMES:

After completing this course the student should be able to:

1. Understand how ecological principles are used to develop ecological performance standards for buildings, communities, and projects
2. Understand aspects of design for beyond net-zero buildings and designs that mimick biological systems
3. Knowledge of introductory principles of building science and the laws of physics as the basis to design high-performance, healthy buildings.
4. Be ecologically literate in the built environment, having knowledge and a basic understanding of how to practically design and build restorative projects
5. Understand how to capture the performance of natural systems (e.g., purifying air, water and earth; utilizing only current local sunlight for energy; recycling or reusing all materials)
6. Understand the leading Green Rating Systems and financial incentives to green building

MAJOR CONCEPTS OR METHODOLOGIES:

This course develops a practical eco-literacy in the human-built environment, based on biomimicry, building science, and ecology. The aim of the course is to provide students with sustainable constructability knowhow and an appreciation of the scale and nature of the impacts of the anthropogenic-built environment on living systems.

This course describes the essential framework of ecological design and building, building in nature’s image. This includes learning to adapt and translate biological, ecological, and cultural elements into “ecological performance standards,” practical building specifications, standards and systems based on natural systems. Classes will include guest presentations by leading ecological and building science practitioners.

The course will focus on how to apply different elements and frameworks of sustainability science to: translate ecology and ecological principles to develop ecological performance standards for buildings, communities, and projects, design beyond net-zero buildings; introduce building science and the laws of physics as the basis to design high-performance healthy buildings.

This course uses architectural software innovations e.g. parametric building information modeling, in ecological design. Goals of the course include developing ecological literacy pertaining to the built environment, forming knowledge and a basic understanding of how to practically design and build restorative projects, and understanding how to capture the performance of natural systems (e.g., purifying air, water and earth; utilizing only current local sunlight for energy; recycling or reusing all materials). The course includes green rating systems and financial incentives for using rating systems.

**CATALOG DESCRIPTION** (Please provide using the precise format to be included in the ESF catalog, please do not exceed 50 words)

CME 565. Sustainable Innovations in Residential Construction (3)

Three hours of lecture per week. Principles of sustainable residential construction; the adaptation of biological, ecological, and cultural elements into building performance standards, practical building specifications, standards and systems. Spring.

**COURSE HISTORY:**

This course has been taught at ESF for four years as ERE 596 Special Topics: Sustainable Innovations in Residential Construction.
Last approved: never.