

ARE 297SB Sustainability for Buildings



Winter 2012 – first offering

January 10 – May 2, 2012
Tuesday 6:30pm – 9:30pm
Michigan Alternative & Renewable Energy Center (MAREC)
200 Viridian Drive, Muskegon, MI
Room 200

Course Description:

This course will provide a comprehensive review of the 5 core components of LEED (Leadership in Energy and Environmental Design) for buildings. In addition to learning how the LEED prerequisites and credits define the quality of buildings energy and environmental efficiency students will be involved in the use of the Energy Star Portfolio Manager.

General Course Objectives:

The overall objective of this course is to familiarize the student with the specific aspects and objectives of sustainability as it relates to buildings within a community. Upon completion students will have a solid grasp of each of the core components, prerequisites, and credits the US Green Building Council has identified for LEED evaluation. Through the study of these prerequisites and credits participants will define the aspects that create a sustainable building. In addition the lab component of the course will teach students the use of the Energy Star Portfolio Manager. This freely available product is the basis for Energy Star evaluation of buildings.

Topical Outline:

Sustainable Sites

- Construction Activity Pollution Prevention
- Site Selection
- Development Density and Community Connectivity
- Brownfield Development
- Alternative Transportation
- Site Development
- Storm water Design
- Heat Island Effect
- Light Pollution Reduction

Water Efficiency

- Water Use Reduction
- Water Efficient Landscaping
- Innovative Wastewater Technologies
- Water Use Reduction

Energy and Atmosphere

- Fundamental Commissioning of Building Energy Systems
- Minimum Energy Performance
- Fundamental Refrigerant Management
- Optimize Energy
- On-Site Renewable Energy
- Enhanced Commissioning
- Enhanced Refrigerant Management
- Measure and Verification
- Green power

Materials and Resources

- Storage and Collection of Recyclables
- Building Reuse
- Construction Waste Management
- Materials Reuse
- Recycled Content
- Regional Materials
- Rapidly Renewable Materials
- Certified Wood

Indoor Environmental Quality

- Minimum Indoor Air Quality Performance
- Environmental Tobacco Smoke (ETS) Control
- Increased Ventilation Construction IAQ management Plan
- Low-Emitting Materials
- Indoor Chemical and Pollutant Source Control
- Controllability of Systems
- Thermal Comfort
- Daylight and Views

Student Needs Met by the Course:

Everyone in today's society needs to have an appreciation of the concept of sustainability and a basic understanding of how it is implemented. For example the following is MCC's statement of Sustainability. "Muskegon Community College is committed to being a leader in sustainability and is a resource for the community. Using a multi-disciplinary and multi-institutional approach, Muskegon Community College endeavors to meet the needs of the present without compromising the future by operating within a sustainable environmental, social, and economic framework."

Methods of Instruction:

Lecture and Lab (actually will involve field work with the Adopt-A-Township Project sponsored by the Muskegon Sustainability Coalition)

Methods of Evaluation:

Tests, topic readings, reports, and projects.