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### CSTN 283.01: Green Building Concept and Design II

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**THE UNIVERSITY OF MONTANA  
COLLEGE OF TECHNOLOGY  
DEPARTMENT OF INDUSTRIAL TECHNOLOGY**

**COURSE SYLLABUS**

**COURSE NUMBER AND TITLE:** CSTN 283 Green Building Concepts and Design II

**DATE REVISED:** January 2013

**SEMESTER CREDITS:** 3

**CONTACT HOURS PER SEMESTER:** Lab hours per week - 3

**PREREQUISITES:** CSTN 282 Green Building Concepts and Design I

**FACULTY:**

**E-Mail:** john@riverworksinc.com

**Phone:** (406)370-1660

**Office:**

**Office Hours:** By appointment or as posted on Faculty office door

**RELATIONSHIP TO PROGRAM(S):** This course is in the second year of the Carpentry program.

**COURSE DESCRIPTION:** Building on concepts of sustainability and green construction practices covered in CSTN 282, students will attain further knowledge of green building techniques, materials and practices. Utilizing costs/benefits analysis, life cycle costs, embodied energy evaluation, and overall sustainability of various materials and methods students will learn basic methods of green building design, technique, documentation and certification. Students will gain valuable project experience utilizing one or more national green rating systems to register, evaluate and document an actual green building project. Preparation for the LEED Green Associate Exam will be covered in this course.

**STUDENT PERFORMANCE OUTCOMES:**

Occupational Performance Objectives

Upon completion of this course, the student will be able to:

1. Identify and compare existing energy codes, green building codes and green rating systems.
2. Identify and compare cost and performance of building materials with recycled components, non-petroleum based materials, materials with low volatile organic compounds, materials with low embodied energy and salvaged materials and incorporate them into design.
3. Identify and use construction materials and methods that more easily allow for salvage and re-use of building materials.
4. Perform demolition in ways that allow for salvage of re-usable building materials.
5. Understand the techniques and benefits of building performance testing, monitoring and metering.
6. Identify and make use of techniques for weatherization and sustainable remodeling of existing structures.

7. Recognize and demonstrate methods for green project management, certification registration and documentation and green rating system compliance.

## **STUDENT PERFORMANCE ASSESSMENT METHODS AND GRADING PROCEDURES:**

### **Grading Scale:**

90 - 100%	=	A
80 - 89%	=	B
70 - 79%	=	C
60 - 69%	=	D
0 - 59%	=	F

**NOTE: Courses must be passed with a 'C minus (C-)' or greater to count toward degree/certificate requirements.**

### **Grade Breakdown:**

<b>Lecture:</b>	Tests	90%
	Attendance	10%

### **Note:**

1. Tests will be as required.
2. Safety glasses are required when in the lab.
3. Hearing protection is required in lab.
4. Hardhats are required in the lab and on jobsites.

## **HOW VARIOUS ASSESSMENT METHODS WILL BE USED TO IMPROVE THE COURSE:**

1. Student course evaluations
2. Peer feedback
3. Advisory committee feedback

## **ATTENDANCE POLICY:**

**REQUIRED TEXT:** ICC 700 National Green Building Standard 2012

LEED Green Associate Candidate Handbook

Understanding Green Building Guidelines: For Students and Young Professionals. Levine, Karen

Understanding Green Building Materials: Levine, Karen

**ACADEMIC INTEGRITY:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at <http://www.umt.edu/SA/VPSA/index.cfm/page/1321>.

**DISABILITY ACCOMMODATION:** Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please contact me after class or in my office. Please be prepared to provide a letter from your DSS Coordinator. For more information, visit the Disability Services website at <http://www.umt.edu/dss/> or call 406.243.2243 (Voice/Text).

**NOTE: Faculty reserves the right to modify syllabi and assignments as needed based on faculty, student, and/or environmental circumstances.**

## **COURSE OUTLINE:**

1. Green Rating Systems
  - 1.1 Codes and Certification Programs
  - 1.2 Green Rating Registration, Documentation and Management
2. Alternative Construction Materials
  - 2.1 Building and Material Reuse
  - 2.2 Salvaged Materials
  - 2.3 Material Content
    - 2.3.1 Manufactured Materials
    - 2.3.2 Recycled Content
    - 2.3.3 Volatile Organic Compounds (VOC's)
    - 2.3.4 Natural Non-Petroleum Based Materials
3. Alternative Construction Methods
  - 3.1 Alternative Systems
  - 3.2 Waste Management and Recycling
  - 3.3 Design For Deconstruction
4. Performance Testing (New and Existing)
  - 4.1 Cost and Performance Comparisons and Benchmarking
    - 4.1.1 Building Modeling & Energy Analysis
    - 4.1.2 Cost Benefit Analysis
  - 4.2 Testing and Verification
    - 4.2.1 Energy, Shell and Systems Installation Testing
      - 4.2.1.1 Blower Door
      - 4.2.1.2 Duct Tightness
      - 4.2.1.3 Thermal Imagery
      - 4.2.1.4 Air Quality
      - 4.2.1.5 Moisture Testing
  - 4.3 Commissioning, Metering, Monitoring
5. Existing Buildings
  - 5.1 Weatherization
    - 5.1.1 Air Sealing
    - 5.1.2 HVAC
    - 5.1.3 Moisture Control
6. Energy Retrofits and Green Remodels
  - 6.1 Inspection and Evaluation
  - 6.2 Deep Energy Retrofits
  - 6.3 Green Remodel Ratings
7. Green Project Management and Certification
  - 7.1 Documentation and Certification
  - 7.2 Methods and Management Practices

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