MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
COURSE OUTLINE

Faculty is required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT. SOLR  COURSE NUMBER: 1030

NUMBER OF CREDITS: 2 (Lab)

COURSE TITLE: Solar Energy Construction Projects

CATALOG DESCRIPTION: This course introduces students to basic construction skills and molting methods used in solar air, water, and electric systems. Topics include how to safely and carefully work with roofing, how to plan and assemble racking, how solar modules and panels are mounted, and how the remaining solar components are incorporated.

AUDIENCE: Solar Technicians

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: None

LENGTH OF COURSE:
One Semester

THIS COURSE IS USUALLY OFFERED:
Every other year  fall  spring  summer  undetermined

Four goals are emphasized in course at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT: The academic objectives of this course are:
   a. Identify Photovoltaic Electrical Designs
   b. How to measure the solar window with a Solar Pathfinder
   c. Identify the strengths and weaknesses of different types of PV systems

2) THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:
   a. Completing homework (reading, reports, and worksheets).
   b. Participating in classroom and or lab discussions
   c. Taking quizzes and tests
3) COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:
   a. Participating in classroom discussions and reports
   b. participating in assignments, worksheets
   c. Communicating with other students on solar components

4) HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:
   a. Working with other students from other cultures
   b. Working with other students from different colleges
   c. Working on effective communication to complete assigned task given to them.

TOPICS TO BE COVERED:
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1. Reading technical drawings
2. Balance of system function and mounting
3. Operation and maintenance
4. Racking and mounting, Structural considerations, Hardware options, Design and assembly
5. Roofs and roofing, Roofing care, penetration and water-proofing, Roof attachment options, Safety
6. Solar air heating
7. Solar photovoltaic
8. Solar water heating
9. Wire, pipe and duct work entering a structure UV and weather protection mounting and support

STUDENT LEARNING OUTCOMES (SPECIFIC):
Upon course completion, each student shall:
1. describe metal compatibility and identify metal fasteners and supports that work together.
2. present options for mounting collectors.
3. demonstrate appropriate fastener choices.
4. assemble systems according to technical drawings.
5. explain strengths and weaknesses of solar photovoltaic, hot water and air heating systems.
6. describe support structures commonly used in solar installations.
7. describe major components of solar air, water and photovoltaic systems.
8. practice working safely with power tools and roofs using personal protective equipment.
9. demonstrate proficiency in the use of solar site selection tools.
10. describe insulation, support and ultraviolet protection for solar plumbing and wiring.
11. describe the basic bonding methods for pipes, ducts and wires in solar systems.
12. identify common roofing materials.
13. describe the compatibility of common roofing material with roof attachment hardware.
14. explain when a structural engineering inspection of a roof is required
LEARNING/TEACHING TECHNIQUES used in the course are:

- [x] Collaborative Learning
- [x] Problem Solving
- [x] Student Presentations
- [x] Interactive Lectures
- [x] Creative Projects
- [x] Individual Coaching
- [ ] Lecture
- [ ] Films/Videos/Slides
- [ ] Other (describe below)
- [x] Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

- [x] Reading
- [x] Tests
- [x] Oral Presentations
- [x] Individual Projects
- [x] Textbook Problems
- [x] Collaborative Projects
- [x] Group Problems
- [x] Papers
- [x] Other (describe below)
- [ ] Term Paper

**Veteran Services:** Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

The information in this course outline is subject to revision

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or via your preferred Telecommunications Relay Service.

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Revised 10/1/16