

COCONINO COMMUNITY COLLEGE  
COURSE OUTLINE

Revised by: Ken Myers  
Status: Permanent  
Effective Term: Fall 2018

January 19, 2018

A. Identification:

1. Subject Area: Construction Technology Management (CTM)
2. Course Number: 138
3. Course Title: Introduction to Solar Design Applications
4. Credit Hours: 1
5. Course Description: Basic introduction to the concepts and principles related to solar energy applications. A survey of the many types of systems that solar energy can be used in single and multi-family dwellings. One lecture. May be taken for S/U credit or with written consent of the instructor. Fall, Spring.

B. Course Goals: Develop a general understanding and the differences between passive and active solar systems.

C. Course Outcomes:

Upon successful completion of this course, students will be able to:

1. understand a wide variety of solar applications available for use in single and multi-family dwellings;
2. utilize Sun Path Finder Equipment and terminology to increase their awareness of daily, monthly, and annual sun movement;
3. demonstrate knowledge of solar terminology and constructs such as differences in altitude, azimuth, angle of incidence, orientation, latitudes, time of day uses, isogenic (magnetic) verses true north orientation maps, and solar radiation measurements and how these constructs are used for solar applications.
4. identify solar industry systems, including passive and active;
5. understand solar, electric, and solar thermal designs, installations, and maintenance and equipment operations.

D. Assessment of Course Outcomes will include:

1. Department and faculty level review of a variety of testing equipment and instruments, including wattmeter, volt, ohm and ampere meters.
2. Review of class integration with renewable energy and alternative energy incentives of local, state and Federal programs

E. Course Content will include:

1. solar feasibility, economic, social, and political;
2. guiding principles of sustainability;
3. solar energy's history and predicted future;
4. understanding the sun's cycle and angles;
5. passive and active solar systems;
6. wide variety of solar applications available for use in single and multi-family dwellings;

7. Solar Path Finder Equipment, sun path diagram and terminology to increase their awareness of annual sun movement;
8. solar terminology, differences in altitude, azimuth, angle of incidence, orientation, latitudes, time of day uses, isogenic (magnetic) verses true north orientation maps, solar radiation measurements;
9. an introductory to a variety of solar systems and applications will be presented with the purpose being able to differentiate the various solar systems available;
10. exposure to a variety different solar panels used on single and multi-family dwellings, including solar electric and solar thermal systems;
11. presentations to allow a variety of applications, including: solar reflectors, evacuated tube concentrators, cookers, solar power furnaces, parabolic dishes, food dehydrators, distillers, lumber kilns, solar thermal water pump methods and other equipment appropriate for demonstration.