COCONINO COMMUNITY COLLEGE
COURSE OUTLINE

Prepared by: Date: Feb09
Status: (Permanent) Expires:
Revised by: Joe Costion Date: March 31, 2009

A. Identification:

1. Subject Area: Construction Technology Management

2. Course Number: CTM 138
3. Course Title: Introduction to Solar Design Applications
4. Credit Hrs: 1
5. Catalog Description:
   Basic introduction to the concepts and principles related to Solar Energy Applications. A survey of the many ways that Solar Energy can be used in your home & life. One lecture.

B. Course Goals:

1) Heating & Cooling Your Home
2) Natural Day lighting
3) Solar Water Heating Systems
4) Solar Greenhouses
5) Solar Cooking
6) Solar Electric (Photovoltaics) Systems
7) Solar Water Pumping
8) Solar Water Distillation
9) Other Applications

C. Course Outcomes:

Students will:

1) Be introduced to the wide variety of Solar Applications available for use in their lives.
2) Be shown how to read a Sun Path Diagram and terminology to increase their awareness of annual Sun movement and uses.
3) Be taught Basic 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 and how they are used for solar applications will be presented for student use.
4) Be presented with the purpose being to differentiate the various Solar systems available in an Introductory Type of Survey of a variety of Solar Application.
5) Be presented several further applications allow students to understand the variety of potential applications that they could put to use in their lives.

D. Assessment of Course Outcomes.

Assessment will include:

1. Department & faculty level review of student results from a variety of testing instruments.
2. Department level review of class integration with Renewable Energy programs current and future for student preparedness.

E. Course Content:

Will include:

Course Objectives:

1) Why Use Solar Anyway?
2) Guiding Principles of Sustainability.
3) Solar Past & Present
4) Understanding the Sun's Cycle and angles
5) Passive & Active Systems approach to Solar
6) This course will introduce students to the wide variety of Solar Applications available for use in their lives.
7) Students will be shown how to read a Sun Path Diagram and terminology to increase their awareness of annual Sun movement and uses.
8) Basic 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 and how they are used for solar applications will be presented for student use.
9) An Introductory Type of Survey of a variety of Solar Applications will be presented with the purpose being to differentiate the various Solar systems available. This allows students to understand the different "Solar Panels" they see on a building. Solar water heaters verses PhotoVoltaic systems will be described.
10) Several further applications will be presented to allow students to understand the variety of potential applications that they could put to use in their lives. This section presents solar reflectors, concentrators, cookers, solar power towers & furnaces, Parabolic dishes, food dehydrators, distillers, lumber kilns, solar thermal applications & refrigerators and their uses.