

COCONINO COMMUNITY COLLEGE

COURSE OUTLINE

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Permanent

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A. Identification:

1. Subject Area: Construction Technology
2. Course Number: CTM 133
3. Course Title: Solar Green House Design
4. Credit Hrs: Lecture Hrs: 1 Lab Hrs: 0
5. Catalog Description:

Solar Greenhouse Design is a course that will lead students through basic passive solar design for solar greenhouses. Solar orientation, Home site evaluation and Energy Efficient design & Construction approaches will be considered for the architectural integration of the passive solar design and construction of a “solar” greenhouse. May be taken for S/U credit with instructor approval. One lecture.

B. Course Goals:

The student will learn to Understand the fundamental principles of : **Orientation, Insulation, Glass & Mass as they apply to Solar Greenhouse design** , the numerous considerations involved in passive solar greenhouse design.

C. Course Outcomes/Competencies:

Students will:

Learn the fundamental principles of : **Orientation, Insulation, Glass & Mass as they apply to Solar Greenhouse design**
Understand how the Solar Greenhouse differs from a Conventional Green House

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:

1. Background to Passive Solar Building Design
 - A. Definition of “Passive “ Solar.
 - B. Solar Position, Angles & Sun Paths - Orientation
 - C. Siting & Shadows
 - D. Some Passive design building blocks
 - E. Length / Width / Height ratios
 - F. Heat Transfer and Energy Conservation
 - G. Glass & Glazing Qualities that affect the SGH
 - H. Thermal Storage Mass & Sizing Strategies
2. Basics of Solar greenhouse Design :
 - A. Attached Sunspaces (Greenhouses)
 - B. Introduction & Uses
 1. Design & Attaching SGH to existing Buildings
 2. Using Net Solar Income.
 3. Reducing Heat Loss

4. Glass & Glazings
5. Thermal Mass & Storage
6. Ventilation & Controlling Heat Flows
7. Methods of Seasonal Heat Transfer from SGH to Building