

COCONINO COMMUNITY COLLEGE

COURSE OUTLINE

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Date: 03/07/06

Status: Permanent

A. Identification:

1. Subject Area: Construction Technology
2. Course Number: CTM 132
3. Course Title: Solar Water Heater Workshop
4. Credit Hrs: 2
5. Catalog Description This course will describe the basics of heating domestic hot water via the sun. The basic parameters of solar design and system sizing will be described. Various components of a solar water heating system will be described and each of these functions presented. Several solar water heater systems diagrams will be presented, discussed, with advantages and disadvantages of each system discussed. The workshop will include hands-on disassembly of a flat plate collector and a "Batch Heater. System pumps, differential controllers and heat exchangers will be shown in a shop setting. A Batch solar water heater will be assembled from common materials in the shop using a hands-on approach.
Prerequisite: CTM 110 recommended. One lecture. One Lab. May be taken for S/U credit.

A. Course Goals:

Student will learn the design basics for solar water heaters and systems, Materials & Components. The students will use knowledge gained to design, install, maintain and repair various solar water heating systems and fixtures in field installation situations.

B. Course Outcomes:

Students will:

1. Perform calculations in fundamental Sizing, Design, and Operation of a Solar water heating system
2. Correctly identify via testing procedures the various components of a solar water heating system and each of their functions
3. Differentiate between the various freeze protection techniques available for various solar water heater systems

D. Course Content:

Will include:

1. Basic parameters of solar design and system sizing will be described.
2. Various components of a solar water heating system will be described and each of these functions presented.
3. System pumps, tanks, differential controllers and heat exchangers will be illustrated.
4. A variety of solar water heater systems diagrams will be presented and differentiated.
5. A "Batch" solar water heater will be presented to students which describes the common materials used to assemble.
6. Hands-on disassembly & analysis of the components of a flat plate collector.

7. Solar System pumps, differential controllers and heat exchangers will be shown in a shop setting.