COCONINO COMMUNITY COLLEGE
COURSE OUTLINE

Prepared by: Joseph Costion MA August 2000
Revised by: Joe Costion March 4, 2004
Status: Permanent

A. Identification:

1. Subject Area: Construction Technology Management
2. Course Number: CTM 250
3. Course Title: Innovative & Alternative Building Techniques
4. Credit Hrs: 3

5. Catalog Description:
Innovative & Alternative Building Techniques such as Steel Framing, SIP, Integra block, Rastra Block etc, adobe, earth brick, rammed earth, Cast Earth, sand bag, papercrete, Straw Bale and, "Earth ship" will be presented along with environmental and aesthetic design considerations. These concepts will be integrated with a "Pattern Language " and passive solar design approach for student design projects. Recommended: CTM 123/124, CTM 235, CTM 120, or prior construction-related experience. Three lecture. One Lab. May be taken for S/U credit.

B. Course Goals:

Innovative & Alternative building techniques is a course that will lead students through the phases of applying a variety of different building techniques to a residence. Solar orientation, Home site evaluation, alternative design approaches will be considered for the architectural integration of these building techniques into the design and construction of houses with consideration given to utilizing passive solar design concepts and systems.

C. Course Outcomes:

Students will:

1. Describe and differentiate between the numerous building applications and systems involved in residences and their performance characteristics.
2. Design and evaluate construction projects for these various systems.
3. Evaluate the different performance characteristics of the systems listed below.
4. Differentiate the advantages and disadvantages of the listed systems for:
    A. Thermal performance
    B. Labor involved
    C. Procedures of assembly
    D. Materials availability and delivery
    E. Structural performance and integrity
    F. Finishes and appearance
5. Design 2 Residential Projects using methods from class & give oral presentations.

D. Course Content:

Will include:

1. Basics of Solar Building Design:
    A. Passive Design and Energy Conservation
    B. Solar Position
    C. Siding
    D. Length / Width / Height ratios
    E. Daylighting

2 Steel Framing Systems

a. Introduce and investigate the various steel framing systems available and currently in use.

b. Demonstrate a steel framing application and visit a current job site where used.

3. Masonry , CMFU and Integra Block systems :
Introduce & investigate similarities and differences of theses systems.

4. Structural Insulated Panels (SIP) systems:
Introduce & investigate the various manufactured products on the market.
5. Adobe and Earth Brick, Cob
6. Rammed Earth
7. Papercrete
8. Earth Ships
9. Straw Bale
10. Cast Earth
11. Sand Bag
12. Indoor Air Quality
13. Modular Manufacturing
14. Rastra Block, ICF