

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: 134
3. Course Title: Rainwater Harvest Systems
4. Credit Hours: 1
5. Catalog Description: This class introduces students to rainwater harvesting as a source of domestic potable drinking water and/or landscape use. All rainwater collection components for proper and safe use of potable water will be presented and discussed. Components include: roofing materials, gutters and gutter sizing, first flush diverters and downspouts, plumbing piping to and from tank, tanks, water purification, and filtration. Water analysis issues, contamination, pumps and control devices, water conservation and plumbing fixtures strategies are discussed, explored, and applied. Guiding principles for water conservation and best practice regarding conserving domestic potable water are examined. One lecture. One lab. May be taken for S/U credit.

B. Course Goals: To provide students with the information of all necessary considerations for the installation of a rainwater harvest system; a single or multi-family unit for domestic potable drinking water and land/plant irrigation use.

C. Course Outcomes:

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

1. understand the necessary system components of a rainwater harvest system;
2. understand water analysis and potential contaminants;
3. understand the benefits of operating and maintaining a rainwater harvest system;
4. understand local weather data and environmental elements in order to properly size rainwater system components with demand.

D. Course Outcomes Assessment will include a variety of quizzes, tests, and hands-on demonstrations.

E. Course Content will include:

1. rainwater as a source of water for domestic use;
2. rainwater as a source of water for landscape use;
3. system components for proper and safe use of rainwater;
4. present and discuss all system components including:
  - a. roofing materials;
  - b. gutter type and gutter sizing;
  - c. first flush diverters;
  - d. water Storage Capacity;
  - e. downspouts and water evacuation;
  - f. plumbing piping to & from tank;
  - g. tanks;
    - i. different types of tanks and different materials for use as tanks;

- ii. pros and cons of each type;
  - h. water purification and contamination depletion;
  - i. filtration;
    - i. different types of filters and different materials for use as filters;
    - ii. pros and cons for each type;
  - j. water pumps and control devices;
  - k. water conservation fixtures.
5. water analysis issues- typical sampling and analysis report, where to get a sample analysis done, frequency of sampling intervals.
  6. sources of water contamination, operation and maintenance issues.
  7. system sizing factors and selection criteria for storage tanks.
  8. water conservation strategies for domestic potable drinking water use.
  9. water conservation strategies for landscape and plant use.
  10. guiding principles and best practices for water conservation.
  11. variety of rainwater harvest systems will be provided, discussed, examined, and studied.
  12. possible hands-on rainwater harvest activities.
  13. possible tours to local rainwater harvest various sites, weather permitting.