

Lassen Community College Course Outline

AGR-42 Farm Surveying, Irrigation and Drainage

3.0 Units

I. Catalog Description

Student will be involved in irrigation and drainage problems concerning pumps, motors, sprinkler systems, pipe lines, ditches, and wells. The use of survey or leveling equipment will be applicable to this course as fields are prepared for irrigation systems. This course has been approved for hybrid delivery.

Transfers to CSU only
17 Hours Lecture 102 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Take 1 Time
Grading Option: Graded
Credit Type: Credit - Degree Applicable
TOP Code: 011600

III. Course Objectives

A. Course Student Learning Outcomes

1. Students will be able to properly address irrigation concerns and implement solutions
2. Students will be able to implement at least two irrigation systems

B. Course Objectives

Upon completion of this course the student will be able to:

1. Explain the effects of poor drainage
2. Explain four different types of irrigation systems
3. Explain land preparation for different irrigation systems
4. Explain water distribution
5. Demonstrate farm equipment safety
6. Demonstrate proper use of surveying and laser leveling equipment
7. Develop a plan to solve poor drainage problems
8. Demonstrate an understanding of soil moisture
9. Operate different irrigation systems
10. Repair, maintain and modify irrigation and drainage systems

IV. Course Content

- A. Theory of leveling
- B. Type of leveling methods used
- C. Land preparation for irrigation
 1. Surveying
 2. Contours
 3. Checks
- D. Distribution and conveyance of water
 1. Pipelines
 2. Ditches, canals

3. Control devices
4. Pivot systems
5. Basic movement of water
- E. Soil-moisture relations
 1. Properties of soil
 2. Characteristics of water
 3. Soil moisture levels
 4. How moisture is held in the soils
 5. How soil moisture is measured
- F. Plant moisture, soil relations
 1. Identifying drainage problems
 2. Soil type and water holding capacity
- G. Application of irrigation water
 1. Principles, efficiencies
 2. Furrow irrigation
 3. Flood irrigation
 4. Sub irrigation
 5. Sprinkler irrigation including pivot systems
 6. Irrigation of specific crops
- H. Drainage of irrigated lands
 1. Principles of drainage
 2. Field layout
 3. Liners and drainage devices
 4. Construction of gravity flow systems

V. Assignments

A. Appropriate Readings

Primary sources for course reading will include 'California Farmer' trade journals on water control, and agricultural extension bulletins.

B. Writing Assignments

Students will keep records of irrigation schedules accomplished, record of hours required for completing each task, and records of vapor-transpiration rates. Written evaluation is required.

C. Expected Outside Assignments

1. Student will evaluate neighboring irrigation systems and note deficiencies.
2. Discuss with irrigation specialists possible solutions to problems encountered.
3. Critically evaluate the efficiency of the systems operated.

D. Assignments that Demonstrate Critical Thinking

Student will develop hypothesis using all previously acquired knowledge of why: 1) Some of the crop is producing less in a given area, 2) Variations in crop relative to irrigation system (ex.: highs and lows in sprinkled fields).

VI. Methods of Evaluation

Traditional Classroom Evaluation

- A. Written and practical Tests
- B. Ability to follow instructions intelligently.
- C. Ability to use different irrigation equipment.
- D. Effectiveness in problem solving.

