Reedley College AgNR Department

Timothy Smith, PhD Plant Science 5

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 **Plant Science 5 - Irrigation Management**

**Units and Hours**

3 units; 2 hours lecture: M W 10:00 a.m. - 10:50 a.m. AGR 2

3 hours laboratory: W 3:00 p.m. - 5:50 p.m. AGR 1

**Catalog Description:** A study of soil-plant-water relationships, consumptive use of water as required by various crops, irrigation water application systems, scheduling, and the management and evaluation of on-farm irrigation systems.

**Textbooks:**

Blane Hanson, Larry Sshwankl and Allan Fulton.2004. ***Scheduling Irrigations: When and How Much Water to Apply***. Division of Agriculture and Natural Resources, University of California, Davis.

Plant Science 5 Irrigation Management Laboratory Manual, Reedley College

**Basic Skills Prerequisites Advised:** Eligible for English 25, English 26; completion of Math 1.

**Course Objective:** To give students the management skills necessary to achieve the best possible utilization of limited and costly water supplies.

**Student Learning Outcomes:**

1. Describe and debate the current water-related issues between agricultural, urban, and environmental sectors facing California.
2. Evaluate irrigation systems for advantages, disadvantages, efficiency, and application rates.
3. Develop irrigation management plans and schedules for row crops, permanent crops, and forage crops.

**Skills to be Obtained:**

1) Develop an awareness of the problems facing California agriculture as competition for the state's water supply becomes increasingly intense and understand the consequences of management decisions on the water supply.

2) Understand the importance of irrigation water to agriculture and the state's economy.

3) Be able to correctly define the most common irrigation terminology.

4) Demonstrate thorough understanding of soil-plant-water relationships by completing required lecture/laboratory assignments.

5) Determine evapotranspiration rates for many crops common to California agriculture.

6) Be able to compare all three of the major water supply systems (gravity-flow, sprinkler, and drip).

**Assignments**:: All assignments are due at the beginning of class on the date due. Late submission of assignments will be assessed a penalty of 50%. No exceptions are made.

**Academic Dishonesty**: Plagiarism and cheating are serious offenses and may be punished by failure on exam, paper or project; failure in course; and or expulsion from the University. For more information refer to the "Academic Dishonesty" policy in the College Catalog.

**Need for Assistance:** If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it, or which will require academic accommodations, please notify me as soon as possible.

**Posting of Grades:** Final grades will not be posted. If you wish to have your final grade sent to you, please bring a self-addressed, stamped envelope to the final exam.

**Attendance:** Attendance of lectures and labs is required and roll will be taken at each meeting. A "tardy" is considered an absence unless the student contacts and explains the incident. Students must make prior arrangements with the instructor to be excused from lectures and labs, make-up of missed tests and labs are permitted only with excused absences.

**Grades and Achievement**

Grades will be based on

1) Laboratory reports - 15%

2) Quizzes (announced) - 15%

3) Examinations (2 midterms and a final - 70%

**Grading Scale**

90-100% Total Points = A

80-89 % Total Points = B

70-79 % Total Points = C

60-69 % Total Points = D

< 60 % Total Points = F

**Last Day To:** Last Day to Drop Class with Refund: August 21, 2020

 Last Day to Drop w/o Transcript Record: August 30, 2020

 Last Day to Change CR/NR: September 11, 2020

 Last Day to Drop w/o Letter Grade Assigned: October 19, 2020

Final Exam: December 7, 2020

**Office Hours - Ag 4**

Monday 11:00 Wednesday 11:00 Friday 9:00 Online

**Course Outline**

A. The Importance of Irrigation Management B. Irrigation Terms

C. Sources of Irrigation Water D. Water Rights and Water Law

E. Plant-Soil-Water Relationships F. Systems Management/Evaluation

G. Irrigation Water Management H. Crop Irrigation

I. Salinity and Drainage

**Lecture/Laboratory Schedule**

Week Lecture Topic Laboratory

1 Introduction/Administration

Irrigation Importance/History Water Calculations

2 Irrigation Issues Soil Water Calculations

California Water

3 Holiday Soil Moisture by Feel

Water Law/Rights

4 Irrigation Pumps Irrigation Wells and Pumps

Ground Water Hydrology

5 Ground Water Hydrology

Continued/Review Power, and Energy

6 Exam I

Water Function/Properties Seasonal System Planning

7 Cell Water Relations

Soil and Water Soil Based Scheduling

8 Soil and Water

Root Systems Water Budgeting

9 Transpiration

Irrigation Scheduling I Furrow Evaluation

10 Irrigation Scheduling II

Irrigation Scheduling III Drainage

11 Review

Exam II Sprinkler Evaluation

12 Irrigation Evaluation I

 Irrigation Evaluation II Chemigation/Fertigation

13 Salinity Introduction

Effects of Salinity Drip Evaluation

14 Specific Ion Toxicity

Salinity Management I Plant Based Scheduling

15 Salinity Management II

Landscape Irrigation I Salinity & Water Quality

16 Landscape Irrigation II

Landscape Irrigation III Drip Irrigation Installation

17 Guest Speaker Landscape Irrigation

 Final Review