Reedley College AgNR Department

Timothy E. Smith Ph.D. Plant Science 14

E-mail: tim.smith@reedleycollege.edu

 **Plant Science 14 – Plant Nutrition**

**Course Description**

The study of soil, plant, and nutrient relationships. The composition, value, selection and use of fertilizer materials, soil amendments, and cover crops.

**Units and Hours**

3 units; 1.5 hours Lecture - M 6:00 p.m. to 7:30 p.m.

 1.5 hours Online - TBA

 Final: May 17, 2021 – 6:00-7:50 p.m.

**Textbook**

A. Western Fertilizer Handbook, 9th Edition, 1990

**Assignments and Grading**

Three major tests will be given that correlate to the assigned readings and course lecture notes. Quizzes will be given weekly on the discussed subject matter.

 Point Distribution

1. Assignments/Quizzes 200

2. Online Assignments 200

3. Examinations 600

 Total 1000

90% = A 80% = B 70% = C 60% = D Less = F

**Important Dates:** Last Day to Drop Class with Refund: January 22, 2021

 Last Day to Drop w/o Transcript Record: January 29, 2021

 Last Day to Change CR/NR: February 12, 2021

 Last Day to Drop w/o Letter Grade Assigned: March 12, 2021

**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.

**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. A student may be dropped after an excessive number of absences have occurred.

**Office Hours - Ag 4**

Monday 9:00 Wednesday 9:00 Thursday 9:00 – Email Friday 9:00 – Email

 **Lecture Schedule**

Week Lecture Topics Reading Assignments

1 Introductions / Administration

1 Soil and Plant Growth Chapter 1

1 Water and Plant Growth Chapter 2

1 Principles of Plant Growth Chapter 3

2 Essential Plant Elements Chapter 4

3 Holiday – MLK

4 Essential Plant Elements Chapter 4

5 Essential Plant Elements Chapter 4

6 Fertilizers – A Source Plant Nutrients Chapter 5

7 Holiday – Presidents’

8 Fertilizers – A Source Plant Nutrients Chapter 5

9 Mid-term Exam 1

10 Fertilizer Formulation, Storage, Handling Chapter 6

11 Fertilizer Application Chapter 7

12 Fertilizer Application Chapter 7

12 Site/Crop Specific Fertilizer Management Chapter 8

13 Site/Crop Specific Fertilizer Management Chapter 8

14 Mid-term Exam 2

15 Soil and Tissue Testing Chapter 9

16 Soil and Tissue Testing Chapter 9

16 Soil Correction with Amendments Chapter 10

17 Soil Correction with Amendments Chapter 10

18 Final Exam

**Course Outcomes**

1. Explain the needs of plants for elements in key metabolic processes.
2. List the essential elements and the forms used by plants
3. Apply materials that satisfy nutritional requirements in safe, effective, and economical methods.
4. Interpretation of soil and plant tissue analyses results and recommend effective corrective solutions.
5. Minimize fertilizer side-effects to the environment.

**Course Objectives**

1. Develop an understanding of the plant nutrients necessary to sustain plant growth.
2. Understand the economics of proper plant nutrition, including cost per unit equations.
3. Calculate the nutrient cost per unit and determining the most economic fertilizer material and rate.
4. Link theory to practical application in selecting nutrient materials to specific soil types, irrigation methods, and crop types.
5. Review chemical reactions and processes associated with fertilizer elements.
6. Perform analyses of plant and soil nutrients and interpret the levels relative to crop needs.
7. Relate nutrient rates and timing to climatic conditions and cultural operations to avoid fertilizer pollution in the environment.
8. Identify nutrient deficiency symptoms in plants.
9. Discover GIS, GPS, and precision agriculture applications to fertilizer application and nutrient sampling.