**2019-2020**

**Ag & Soil Chemistry (UCCI)**

**COURSE SYLLABUS**

# Course Description

This course explores the physical and chemical nature of soil as well as the relationships between soil, plants, animals and agricultural practices. Students will examine properties of soil and land and their connections to plant and animal production. Using knowledge of scientific protocols as well as course content, students will develop an Agri-science research program to be conducted throughout the first semester of the course. To complete that whole project each student will investigate and test an Agri-science research question by formulating a scientific question related to the course content, formulating a hypothesis based on related research, conducting an experiment to test the hypothesis, collecting quantitative data, and forming a conclusion based on analysis of the data.  The result of this research program will be an in-depth research and experimentation paper that is technically written, based on scientific protocol, and cited using APA formatting. Additionally, students will develop and present a capstone soil management plan for agricultural producers, using the content learned throughout the course. Throughout the course, students will be graded on participation in intra-curricular FFA activities as well as the development and maintenance of an ongoing Supervised Agricultural Experience (SAE) program.

**Course Overview and Structure**

The class involves interactive lectures with plenty of room for questions from students participating in classroom, garden and greenhouse activities. The class is divided into seven units Agri-Science Practices, The Nature of Soil, Water and Soil Management, Animal and Soil Management, Soil Sustainability Soil Management Capstone Project. The topics we will cover are listed below:

Soil Structure & Composition

Soil Fertility and Testing

Soil Quality/Nutrients

Periodic Table

Atomic Models

Chemical Properties

Data analysis

Stoichiometry

Gas Laws

Solutions & Solubility

Water Quality/Management

**Learning Objectives**

At the end of this course, students should be able to:

1. Utilize agricultural applications as a relevant vehicle to teach scientific principles and improve the science literacy of students.
2. Strengthen instruction in science for students pursuing professional level careers in agriculture.
3. Integrate mathematical standards, language arts standards, and career employability standards, including creative thinking and problem-solving skills, and technological literacy related to the agricultural industry.
4. Meet a portion of the laboratory science requirement for admission to the University of California and California State University systems.
5. Develop a sense of interrelationships between life, earth, and physical science and their relationship to agricultural applications.
6. To motivate under represented populations to study and pursue careers in science and agriculture.

# Textbooks

Principles of Soil Chemistry. 4th edition. Kim Tan. CRC Press.

**Assignments and Grading**

Assignments for this class include homework assignments, a sustainable garden project, and an in class, closed and open book quizzes and exams, garden and greenhouse work.

Labs 30%

Assignments 30%

Quizzes and Tests 20%

FFA participation 10%

Sustainable Project (SAE) 10%

Note: The final exam will be a closed book, closed notes, two hour exam that will take place in class that will have elements of the greenhouse and garden mixed in.