

AG/VEN 315: Fertilizers and Plant Nutrition

CRN: 40339/40877 | Semester: Spring 2023 |

Instructor: Dr. Rita Abi-Ghanem

Lecture: Monday 4:30 pm – 7:35 pm, classroom M-106

Laboratory: Wednesday 4:30 pm – 7:35 pm, classroom M-106

Email: rita.abighanem@hancockcollege.edu (please allow 24 business hours for response)

Office Hours: Wednesday 2:30 pm – 3:30 pm, (Jan. 25 to May 10th) via zoom:

<https://hancockcollege.zoom.us/j/5334288658>

I. Course Description:

Introduction to fertilizers and plant nutrients, determination of deficiency symptoms, management, and application methods to improve plant nutrition and optimize yield production.

II. Course Objectives:

Upon successful completion of the course, the student will be able to identify the role of plant nutrients and their deficiency symptoms, and to develop nutrient management plans for successful agricultural production.

III. Student Learning Outcomes

1. AG315 SLO1 - Identify the 17 essential plant elements.
2. AG315 SLO2 - Design a soil sampling strategy and collect samples.
3. AG315 SLO3 - Choose appropriate tests to run to analyze for nutrient deficiencies.
4. AG315 SLO4 - Read and interpret a soil and plant test report.
5. AG315 SLO5 – Select appropriate fertilizers & amendments and calculate appropriate rates of application.
6. AG315 SLO6 - Identify variability within a field and select strategies to account for the variability.
7. AG315 SLO7 - Conduct basic plant nutrient tests.
8. AG315 SLO8 - Choose appropriate methods of fertilizer application.
9. AG315 SLO9 - Construct plant nutrient management
10. AG315 SLO10 - Identify plant nutrient deficiency symptoms.

IV. Grades (total 500):

1. Weekly in class quizzes to cover lab and lecture materials: 10 points each x 10 quizzes (total 100 points)
2. Mid-Term and final exams: 100 points each (200 points total)
3. Acknowledgment of attendance and being on time: 50 points
4. Lab notebook: 50 points
5. Final project: 100 points (70 pts written 30 pts presentation)

Please note that the instructor doesn't curve the grade or give extra credits since there are 50 points for attendance and being on time that help improving the grade.

The following grading scale will be used to determine final course grade:

90 – 100 % = A 80 – 89 % = B 70 - 79 % = C 60 - 69 % = D below 60 % = F

V. Texts and Other Instructional Materials:

1. Adopted Text:

- Havlin J.L., Tisdale S.L., Nelson W.L., and Beaton J.D., Soil Fertility and Fertilizers: An Introduction to Nutrient Management, 8th Edition. Pearson, 2013.

2. Recommended text:

- International Plant Nutrition Institute, Soil fertility Manual, 23rd Edition. The Fertilizer Institute, 2019.
- Western Fertilizer Handbook, Tenth Edition. Western Plant Health Association (WPHA), 2022

3. The instructor will also provide other reading resources.

VI. Tentative Course Schedule: (tentative schedule is subject to changes)

Date	Lecture Topic	Lab Topic
Week 1 January 23, 25	Introduction to students and course materials	Introduction to lab rules/notebook Soil sampling/preparation lecture
Week 2 January 30, February 1	Introduction to soil, soil fertility, and soil productivity	Soil sampling and preparation from the garden at AHC
Week 3 February 6, 8	Nutrient Cycling, pools, and transformation Nutrient movement to roots Quiz #1	Finish soil preparation Navigating the NRCS website Set up water content determination
Week 4 February 13, 15	Soil organic matter and soil fertility evaluation Quiz #2	Introduction to nutrient management project Scientific writing/citation (librarian guest speaker) Finish water content determination
Week 5 February 20, 22	College closed	Soil organic carbon analysis Set up nutrient deficiency experiment
Week 6 February 27, March 1	Nitrogen plant nutrition Quiz #3	Soil texture determination
Week 7 March 6,8	Phosphorus plant nutrition Quiz #4	Submission/review of nutrient management program outline
Week 8 March 13, 15	Potassium plant nutrition Mid-term exam review and study guide Quiz #5	Nitrogen, Phosphorus and Potassium analysis
Week 9 March 20, 22	Spring Break	Spring Break

Week 10 March 27, 29	Midterm exam, classroom M 106 at 4:30 pm	Lab tour
Week 11 April 3, 5	Other macronutrients Quiz#6	Leaf analysis Go to AHC garden for sample collection Evaluate nutrient deficiency experiment
Week 12 April 10, 12	Micronutrients Quiz #7	Guest speaker: Soil and plant report interpretation, calculations, and recommendations
Week 13 April 17, 19	Soil Acidity/Alkalinity and soil Salinity/Sodicity Quiz #8	pH and EC determination
Week 14 April 24, 26	Guest speaker: Organic fertilizers and composting Quiz #9	Presentations on nutrient management program
Week 15 May 1, 3	4R's nutrient management Liquid vs solid fertilizers Quiz #10	Presentations on nutrient management program
Week 16 May 8, 10	Guest speaker: Overview of the soil nutrient management in California.	Presentations on nutrient management program
Week 17 May 15, 17	Final exam review and study guide	Presentations on nutrient management program
Week 18 May 23	Final Exam, classroom M 106 at 4:30 pm	

*Please note that the instructor will also assign readings, and class activities.

VII. Classroom/Lab Rules and Expectations to Succeed and Fulfill the Class Objectives:

1. Attend lectures and laboratory sessions
2. Be on time
3. Take notes
4. Participate
5. Pay attention and avoid disruption
6. No cell phone use unless indicated by the instructor
7. No food in the lab
8. For your own safety no shorts or open-toe shoes in the lab only long pants and closed-toe shoes

VIII. Absence Policy

Attendance and being on time for the lecture/lab is mandatory unless valid excuses are presented to the instructor if possible 24 hrs before the lecture/lab. In case of a valid absence please arrange with the instructor a day/time to retake the quiz. After 3 unexcused absences students will be dropped from the class. If missing a mid-term or a final exam, an official note needs to be presented to retake the test. Students are responsible for taking notes from classmates if missing the class.

IX. Late Work Policy

Late assignments and/or quizzes will not be accepted unless the students contact the instructor with valid excuse requesting time extension.

IX. Academic Integrity

Honesty and integrity are essential to the academic community. Students who violate these principles by cheating, plagiarizing, or acting in other academically dishonest ways are subject to disciplinary (<https://catalog.hancockcollege.edu/current/policies/honesty.php>).

Below are examples of academically dishonest behaviors:

Copying from another student's work without instructor approval.

Giving answers to another student without instructor approval.

Using notes, books or other unauthorized materials during an exam.

Taking a test for someone else.

Submitting someone else's work as one's own.

Completing an assignment for another student.

Using other people's ideas, words, images or artistic works – from any medium, including the Internet – without acknowledging them with proper documentation.

if an instructor determines, after a conference with the student, that the student has been academically dishonest, the instructor at his/her discretion may issue a failing grade on the assignment or take other measures that are reasonable and appropriate. The student may also be subject to further disciplinary action through the associate superintendent/vice president, Student Services.

X. Americans with Disabilities Act

Any personal learning accommodations that may be needed by a student covered by the Americans with Disabilities Act (ADA) must be made known to the instructor as soon as possible. This is the student's responsibility. Information about services, academic modifications and documentation requirements can be obtained from the Learning Assistance Program (LAP).

For more information about services available to AHC students with disabilities, contact:

(805) 922-6966 ext, 3274 (Santa Maria Campus)

(805) 922-6966 ext, 5274 (Lompoc Valley Center from Santa Maria)

(805) 735-3366 ext, 5274 (Lompoc Valley Center from Lompoc)



<https://i.pinimg.com/originals/1d/99/f4/1d99f4c724b34fe72baa75d0a803819e.jpg>