

SWS 4116
Environmental Nutrient Management
3 credits
Fall 2020

INSTRUCTOR: Dr. Samira Daroub

Professor, Soil and Water Sciences Dept.

sdaroub@ufl.edu

Office: University of Florida,

Everglades Research and Education Center, 3022 E. Palm Beach Rd.,
 Belle Glade, FL 33430; Tel: (561) 993-1593

**TEACHING ASSISTANTS:**

**Amanda
Rodriguez**

**Students with last
names: A-Mc**



**Jessica (Arielle)
Taylor-Manges**

**Students with last
names: Me-Z**

**LECTURE:**

All lecture materials are posted on class website.

We will be meeting for chat time every Tuesday starting September 8, 2020 (unless otherwise indicated) from **6-7:30 pm ET** using Zoom. The chat will be used to go over calculations and answer any questions you may have on HW, quizzes and class materials. Chat time is HIGHLY RECOMMENDED

TEXTBOOK:

*The following textbook is **recommended**:* Soil Fertility / Edition 2 by Boyd Ellis and Henry Foth. 1996; ISBN 1566702437, Taylor & Francis publishers.

PREREQUISITES: SWS 3022

COURSE DESCRIPTION:

The course will cover the basic principles of plant nutrition, fertilizer use, and environmental management of nutrients. Essential plant nutrients will be examined in relation to their function and deficiency symptoms in plants and their chemistry in the soil. The course will cover the properties and use of fertilizers for supplying plant nutrients, chemical reaction of fertilizers in soils and agronomic and economic criteria for determining fertilization. The class will cover environmental issues with the over use of fertilizers, best management practices to reduce impact of conventional agriculture on environment, soil and plant tissue testing, sustainable agriculture and organic farming.

COURSE GOALS

- a. To understand the chemistry of essential elements in the soil in relation to their functions in plant nutrition
- b. To learn about the different types of fertilizers, when and how to use appropriately.
- c. To recognize the impact of conventional agriculture including use of fertilizer and amendments on water and air quality.
- d. To identify best management practices (BMPs) and practices used in sustainable agriculture and organic farming

COURSE LEARNING OBJECTIVES

1. Identify the essential elements, their functions in the plant and deficiency symptoms.
2. Classify and categorize the different sources of fertilizer materials and their suitability of use in various soils and cropping systems.
3. Solve for fertilizer application rates and fertilizer formulation
4. Discuss the environmental impacts of agriculture, use of fertilizers and amendments
5. Compare practices used in organic farming and sustainable agriculture

INTERNET ACCESS:

Lectures of the class (power point presentations and pdf files), assignments and handouts are posted on the class website on Canvas. Go to <http://elearning.ufl.edu/> log on using your Gatorlink. You need to have a gatorlink account <http://www.gatorlink.ufl.edu/> to be able to log on to the class.

CHAT SESSIONS:

The chat will be online using Zoom on Tuesdays 6-7:30 pm ET unless otherwise indicated on lecture schedule. **The zoom URL for all chat meetings for Fall 2020 is posted on class website.** Our chat sessions are audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

HW, Class Discussions, Quizzes and Exams:

This class has required HW, discussion posts, quizzes and exams listed in Table below. HW is submitted under **Assignments** tab. Please do not email HW – emailed HW is not accepted.

GRADING:

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Grading	Points	
8 HW Assignments	105	
6 Discussions	90	
5 Quizzes	135	
Exam 1	85	
Exam 2	85	
Total	500	
<i>Bonus Points</i>	22	

There are opportunities to earn 22 bonus points for a total of 522 possible points.

Grade Scale:

A ≥ 450 points	C+ ≥ 380 points
A- ≥ 440 points	C ≥ 360 points
B+ ≥ 425 points	C- ≥ 335 points
B ≥ 405 points	D+ ≥ 315 points
B- ≥ 395 points	D ≥ 300 points

Attendance and Make-Up Work

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Online Course Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.a.a.ufl.edu/students/>. Students will be notified when the evaluation opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.a.a.ufl.edu/public-results/>.

Academic Honesty

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code. You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Campus Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

1. *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
2. *U Matter We Care, www.umatter.ufl.edu/ U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.*
3. *Career Resource Center, First Floor JWRU, 392-1601, <https://career.ufl.edu/>*

Student Complaints:

Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>

Online Course: Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See : <http://www.distance.ufl.edu/student-complaint-process> for more details.

Module and Lecture Schedule

- Chats every Tuesday 6-7:30 pm ET using zoom. Link on class website, *First Chat Tuesday September 8, 2020*
- HW Assignments and Discussions are due on Sundays @11:55 pm ET (24 h grace period till Mondays @11:55 pm with 5% penalty on grade)
- Quizzes and exams are available Fridays 6 am through Monday @11:55 pm ET
 ___ *Exceptions (designated by *E) are noted below* ___

Week	Module #	SUBJECT	CHAPTER textbook	Assessment
		<i>Introduce yourself under Discussions</i>		Bonus Discussion 1
1	Review	Chemistry and Calculations Review	-	HW # 1
8/31	1	History of soil fertility	1	Discussion #1
2 9/8	2	Introduction to soil fertility and plant nutrition a. Essential elements, Macronutrients, Micronutrients b. Nutrient movement and uptake by roots Holiday: Labor Day 9/7	1	Quiz #1 Module 2
3 9/14	3	Nitrogen Chemistry and Environmental Issues a. Function in plant; Deficiency symptoms b. Chemistry & biochemistry in soil c. Environmental issues with N	6	HW #2
4	4	Nitrogen Fertilizers	11.1	Quiz # 2 Module 3 & 4
9/21	5	Nutrient Content in fertilizers The Florida Fertilizer Label		Bonus Activity 1 exercise handout HW # 3
5 9/28	6	Phosphorus Chemistry and Environmental Issues a. Function in plant; Deficiency symptoms b. Chemistry & biochemistry in soil	7	HW #4
6 10/5	7	Environmental issues with P Phosphorus fertilizers	11.2, 11.3, 11.4	Discussion #2 Quiz # 3 Module 6 & 7
		Exam 1 (Modules 2 -7); Oct 9-12, 2020 Chat for exam review/questions: Tuesday Oct. 6 @ 6 – 7:30 pm ET		
7 10/12	8	Potassium: a. Function in plant; Deficiency symptoms b. Chemistry & biochemistry in soil c. K fertilizers	8	HW #5

<i>Week</i>	Module #	SUBJECT	CHAPTER textbook	Assessment
8 10/19	9	Soil fertility evaluation	13	Discussion #3
9 10/26	10	Fertilizer application rates calculation		HW # 6
10 11/2	11	Calcium, Magnesium, Sulfur: a. Function in plant; Deficiency symptoms b. Chemistry & biochemistry in soil c. Fertilizer sources: Lime, Sulfur	9	HW # 7 Quiz # 4 Modules 8 &11
11 11/9	12	Micronutrients a. Function in plant; Deficiency symptoms b. Chemistry & biochemistry in soil c. Micronutrient fertilizers	10	HW #8 Quiz # 5 Module 12
12 11/16	13	Nutrition of Florida crops: Turfgrass (Guest speaker- Dr. Snyder)		Bonus Discussion 2
		Exam 2 (Modules 8-12) Nov 20-23, 2020 Chat for exam review/questions: <u>Tue. Nov 17,</u> @ 6 – 7:30pm ET		
13 11/23	14	Environmental issues Trace elements Climate change greenhouse gases NO chat Tuesday Nov. 24 Thanksgiving Holiday Nov. 25-27		Discussion #4 Bonus Discussion3
Will not be covered this year	15	Fertilizer formulations calculations: Rules of working fertilizer problems Mixed fertilizers; Fertilizer application method	14	HW #9
14 11/30	16	Sustainable Agriculture & Organic Farming		Discussion #5 Bonus Activity 2
16 12/7	17	Nutrition of Florida Crops: Palm trees (Guest speaker)		Discussion #6
		Last chat Tuesday Dec. 8, 2020: Questions for Quiz 6 Classes end Dec 9 Reading Days Dec 10-11		Quiz #6 (Modules 14-16)

DUE DATES: HW Assignments and Discussions are due on SUNDAYS @11:55 pm ET (24 h grace period till Mondays @11:55 pm with 5% penalty on grade)

__ Exceptions (designated by *E) are noted below __

NOTE: Updated schedule is on class website under Syllabus and listed on CALENDAR

DISCUSSIONS	DUE DATE Sundays	HW	DUE DATE Sundays
Introduction Bonus Discussion 1	9/6	HW #1 Chem review	9/13
Discussion #1 Module 1	9/6	HW #2 Module 3	9/20
Discussion #2 Module 7	10/11	Bonus activity 1 Module 5	9/27
Discussion #3 Module 9	11/1	HW #3 Module 5	10/4
Bonus Discussion 2 Module 13	11/29	HW #4 Module 6	10/11
Discussion #4 Module 14	12/6	HW #5 Module 8	10/25
Bonus Discussion 3 Module 14	12/6	HW #6 Module 10	11/1
Discussion #6 Module 16	12/9 *E- Wednesday (No grace period)	HW #7 Module 11	11/8
Discussion #7 Module 17	12/9 *E- Wednesday (No grace period))	HW #8 Module 12	11/22
		Bonus activity 2 Module 16	12/6

DUE DATES: Quizzes & exams are DUE on Mondays at 11:55 pm ET and available for 4 days: Fridays through Mondays

		Due- Mondays
Quiz #1	Module 2	9/14
Quiz #2	Module 3 & 4	9/21
Quiz #3	Module 6 & 7	10/12
EXAM 1	Modules 3-7	10/12
Quiz #4	Modules 8 & 11	11/8
Quiz #5	Module 12	11/16
EXAM 2	Modules 8-12	11/23
Quiz #6	Modules 14-16	12/9 *E