


AGR 4214c

Applied Field Crop Production

Spring 2026 (in person) 3 credits

Course Hours and Location

Period 3 – Monday, Wednesday, Friday (9:35am to 10:25am)
Conference Room - Weed Science Field Building (#258) – https://campusmap.ufl.edu/#/index/0258

Instructor

Dr. Greg MacDonald
Office: 2059 McCarty Hall D – McCarty Drive
Office Phone: 352-294-1594; Cell: 352-262-8393
Email: pineacre@ufl.edu
Office Hours: After class (10:30am MWF), or by appointment

Teaching Assistant

There will not be a teaching assistant associated with this course this semester

Course Description

Explores biology, production, utilization of major food crops. Emphasis on tillage systems and basic agronomy; soils and fertility, irrigation, and pest management; crop growth and development, cultivars, biotech and yield potential.

Course Learning Objectives

After completion of this course, you will be able to:

1. Identify major food crops and describe their stages of growth and development
2. Explain the role of soil fertility, irrigation, and pest management in crop production systems.
3. Apply knowledge of crop biology to select appropriate cropping systems for specific climatic zones, including strategies to maximize yield.
4. Design a cropping system plan that integrates climatic factors, soil fertility, irrigation, pest management, and economic considerations.
5. Evaluate decision-making processes in selecting cropping systems under real-world constraints, including practices to maximize sustainability and long-term economic resiliency.

Course Overview and Purpose

This 3-credit course will provide students with a better appreciation of, and competencies needed for a fundamental understanding of production cropping systems. This course will have a combination of lecture, field and hands-on projects. Students will gain basic knowledge of the major food crops – origin and development to modern cultivars, basic production technologies, and utilization as a food or industrial component. The climatic zones where differing cropping systems are practiced will also be discussed. Topics covered will include tillage systems and equipment, crop rotations, soils and fertility management, irrigation management, crop growth and development as a function of climatic zone and temperature, pest management including weeds, plant diseases and insects, strategies to maximize yield potential, breeding and cultivar selection, factors influencing decision making/economics.

Course Prerequisites

Principles of Plant Science (PLS 3004c)

Textbooks, Learning Materials, and Supply Fees

No textbook required but students will be provided with assigned readings from various sources including websites, journal articles, and extension publications. There will be a $15.00 lab fee to cover planting materials – pots, soil media, seeds, fertilizers.

Course Communication

Announcements related to the course will be made through the Canvas page under Announcements. Direct communication with the instructor can be made through canvas email or Gatorlink and I will respond to emails within 24 hours. All course material including presentations, reference materials and selected assignments will be posted on the canvas page. Quizzes will be given in person during class, and grades posted on canvas. Assignments will be due in class or submitted through canvas, and grades posted in canvas. Due dates for quizzes and assignments can be found in the weekly topics table posted at the end of this syllabus.

AI – Artificial Intelligence Policy

The use of artificial intelligence is allowed, but not required, for assisting in completing lab assignments and the crop profile, however any written submission must be in your own words. You must also cite how you used AI to assist in each assignment. For assistance in using AI please see this link https://ai.ufl.edu/for-our-students/guidance-for-students/. You must also adhere to UF polices regarding AI usage and a list of AI provided and approved tools can be found here - https://it.ufl.edu/ai/

Grading Policy

Course grading is consistent with UF grading policies.

Course Grading Structure

Assignment Type*	Point Value	Percent of Final Grade
Topic quizzes (11) one drop = 10 counted quizzes	100 points each (10 x 100) = 1000 points	67%
Lab Assignments (5)	50 points each (5 x 50) = 250 points	17%
Discussions (2)	50 points each (2 x 50) = 100 points	6.5%
Crop Profile	100 points	6.5%
Crop Presentation	50 points	3%
	1500 points total	**100%**

**There will be points deducted for late submission of assignments (to be determined), and students are allowed to make up one quiz only. Students must also be present for in-class discussions.*

Assignment Details

****note – all due dates can be found on the weekly outline table at the end of this syllabus***

1. Quizzes – short quizzes (approximately 20 minutes) will be given during class on specific topics covered during lectures. Format for the quizzes and details will be discussed during the first day of class. There are 11 quizzes, with the lowest score dropped. Quizzes are 100 points each for a total of 1000 points.
2. Lab Assignments – there are 5 labs that will cover a specific topic of crop production. These will be discussed during class and posted on the canvas page a minimum of one week prior to the due date. Assignment details, including grading rubric will be posted on canvas. These are 50 points each, for a total of 250 points.
3. Discussions – there are 2 class-led discussions that will be held during class. Details will be discussed in class and posted on the canvas page, including grading rubric. These are 50 points each for a total of 100 points.
4. Crop Profile and Presentation - for this assignment students are asked to develop a crop profile in the format of an EDIS extension publication that includes the following information:
    a. Where and when to grow the crop in Florida
    b. Integration as part of a cropping system, other crops as rotation
    c. Varieties – include differing maturities, where you will get seed, can you save seed?
    d. Fertility requirements, including rates and application timings
    e. Plant density – seeding rate, row spacing
    f. Tillage requirements
    g. Pest management – options, IPM strategies, etc._____
    h. Harvesting – when, how/equipment
    i. Storage options, processing – if any
    j. Marketing and/or utilization

    For the presentation, students will be playing the role of an extension agronomist at a field day demonstration and will be introducing your crop as a new crop to the region. Your profile can be

used as a handout during your presentation and there will an easel if you want to have a poster board as well. Due to time considerations, you will have 5-10 minutes each to talk on your crop. This 'event' will take place in the field area at the Weed Science Field Building on April 22 where you will be asked to provide information about your crop to your 'farmers'. ***The crop profile is worth 100 points and the presentation is 50 points.*** Additional details about these combined assignments will be posted on the canvas page. Your crop profile will be due at the time of your presentation on April 22, 2026.

Grading Scale

Grade	Points	Percentage
A	≥ 1393	92.9 - 100
A-	1350-1392	90.0 – 92.9
B+	1305 – 1349	87.0 – 89.9
B	1200 - 1304	80.0 – 86.9
C+	1155 - 1199	77.0 - 79.9
C	1050 - 1154	70.0 – 76.9
D+	1005 - 1049	67.0 – 69.9
D	900 - 1004	60.0 – 66.9
E	< 900	< 60

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. https://helpdesk.ufl.edu/ | 352-392-4357

Academic Policies and Resources

Academic policies for this course are consistent with university policies. See https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

Campus Health and Wellness Resources

Visit https://one.uf.edu/whole-gator/topics for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact UMatterWeCare for additional and immediate support.

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.

Privacy and Accessibility Policies

[required for online courses, list all technology used]

- Instructure (Canvas)
  - Instructure Privacy Policy
  - Instructure Accessibility
- Zoom
  - Zoom Privacy Policy
  - Zoom Accessibility

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Weekly Course Schedule

Week	Topic	Assessment	Due Dates	Points*
January 12 - 16	Introduction to course, instructor; History of Crop Production	In class discussion	January 23	50
January 21 – 23	Current trends and overview of modern production	Quiz 1	January 26	100
January 26 – 30	Soils, fertility management, nutrient deficiencies	Soil Test Interpretation Quiz 2	January 30 February 2	50 100
February 2 – 6	Tillage Practices, Equipment and Implements	Soil Erosion Calculations Quiz 3	February 6 February 9	50 100
February 9 – 13	Seed Physiology and Storage, Seed systems	Seed Systems Assignment Quiz 4	February 13 February 16	50 100
February 16 – 20	Temperature, planting date, growing degree days (GDD)	GDD Calc. Assignment Quiz 5	February 20 February 23	50 100
February 23 – 27	Water use, drought, irrigation systems and management	Quiz 6	March 2	100
March 2 – 6	Biotic stressors – weeds, disease, insects, nematodes	IPM Crop Plan Quiz 7	March 6 March 9	50 100
March 9 – 13	Small grains, rice	Quiz 8	March 13	100
March 16 -20	***SPRING BREAK – no class***	***No assessment***	----	----
March 23 – 27	Corn, sorghum, millets, sunflower	Quiz 9	March 30	100
March 30 – April 3	Soybeans, dry beans, peas, peanuts	Quiz 10	April 6	100
April 6 – 10	Cotton, potato and tuberous crops	Quiz 11	April 13	100
April 13 – 17	Sugar, canola and specialty crops	In class discussion	April 17	50
April 20 - 22	Wrap-up, crop presentations	Crop Profile Crop Presentation	April 22 April 22	100 50

** 1500 points total, lowest quiz score is dropped, so only 10 quizzes count towards final grade*