

AEC 6229 (3 credits)
**Laboratory Instruction: Theory and
Practice**

Summer B 2021
Sections 42D2/43D2/RECA



Instructor

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Office Hours: By appointment via Zoom

Zoom link- (<https://ufl.zoom.us/j/2659487212>)

Time and Location

Asynchronous online via Canvas

Course Description

This course will focus on theoretical and practical approaches to teaching agriscience in laboratory settings. Research and theoretical foundations that underline the aspects of planning, management, teaching, evaluation, safety, and facility design will be discussed within the context of agriscience laboratory instruction.

Course Objectives

At the completion of the course, the learner will be able to:

- 1) Connect theoretical designs and empirical evidence guiding laboratory-based teaching and learning processes.
- 2) Establish instructional goals and define the nature of agriscience laboratory teaching.
- 3) Examine key learning constructs as they pertain to learning in agriscience laboratory settings.
- 4) Plan and deliver effective agriscience laboratory instruction.
- 5) Develop and implement an agriscience laboratory safety instructional program.
- 6) Establish strategies for effective management and supervision of student performance in the agriscience laboratory.
- 7) Integrate research on teacher effectiveness into the planning, teaching, and management aspects of agriscience laboratory teaching.
- 8) Evaluate agriscience laboratory facilities and develop plans for facility improvement and expansion.
- 9) Design strategies for effectively teaching agriscience in informal settings.

Readings (Available at the provided links) – any additional will be shared weekly.

- 1) Visit this link <http://nap.edu/9596> to download a free PDF of *Inquiry and the National Science Education Standards*
- 2) What is Inquiry-based Instruction - <https://edis.ifas.ufl.edu/pdffiles/WC/WC07500.pdf>
- 3) Evaluating Learning in Laboratory Settings – <https://edis.ifas.ufl.edu/pdffiles/WC/WC06000.pdf>
- 4) Teachers' Use of Agricultural Laboratories in Secondary Agricultural Education - <http://www.jae-online.org/attachments/article/1675/53.2.124%20Shoulders.pdf>

- [online.org/attachments/article/1589/52.4.175%20Thoron.pdf](http://www.jae-online.org/attachments/article/1589/52.4.175%20Thoron.pdf)
- 6) Effects of Inquiry–based Agriscience Instruction on Student Scientific Reasoning - <http://www.jae-online.org/attachments/article/1705/53.4.156%20Thoron.pdf>
 - 7) Effects of Inquiry–based Agriscience Instruction and Subject Matter–based Instruction on Student Argumentation Skills - <http://www.jae-online.org/attachments/article/1670/53.2.58%20Thoron.pdf>
 - 8) Students’ Perceptions of Agriscience when Taught Through Inquiry-Based Instruction - http://www.jae-online.org/attachments/article/1801/2013-0778_thorona.pdf
 - 9) Constructivism: The Career and Technical Education Perspective - <https://files.eric.ed.gov/fulltext/EJ598590.pdf>
 - 10) A Philosophical Examination of Experiential Learning Theory for Agricultural Educators - http://www.jae-online.org/attachments/article/243/Roberts_Vol47_1_17-29.pdf

Course Website

This course will use the UF eLearning platform (Canvas)

DESCRIPTION OF COURSE ASSIGNMENTS

Participation/Weekly Assignments [Objectives 1, 3, and 7]

Each week you will prepare a resource/reference for the discussion board that pertains to the topic(s) of the week. All students should share insights from their source and add to the overall discussion, no written summary will be required rather include overall thoughts about the resource on how it relates to the topics and your takeaways from the source. Additionally, other in-class activities will occur periodically which will also be included as participation credit.

Classroom Inquiry Vignettes [Objectives 1 and 3]

Read the classroom vignettes included in Chapter 3 "Images of Inquiry in K-12 Classroom" of *Inquiry and the National Science Education Standards* available as a free PDF download on-line at this link <http://nap.edu/9596>. Write a 2-3 page reflection and identify how to apply the principles and ideas of these vignettes in the School-Based Agricultural Education Classroom or area of importance/transfer specific to your background and interests.

Laboratory Instruction Written Lesson Plan [Objectives 2, 4, 7 and 9]

Prepare a unit of laboratory instruction lesson plans that will require approximately 3-5 hours of instruction appropriate to be used in a middle school or secondary school agriscience education program or postsecondary area agriculturally related topic based upon the content included in this course. These lessons must include laboratory instruction. At a minimum, the lesson plans should include the following:

- Describe the audience and/or situation for which instruction will be provided (i.e., middle school students, 10th graders, Agriscience Foundations, college students, agricultural communications, etc.)
- List the objectives, questions, or competencies that will guide the learning process
- Connect to Sunshine State Standards (SSS) and Student Performance Standards (SPS) [if applicable]
- Describe the interest approaches used
- Outline the subject matter to be taught as a daily format and include transitions from day to day as you move through the content of the Unit
- Describe the teaching techniques that will be used
- Describe the learning environment in which the activities will be conducted (i.e., classroom, land laboratory, ag mechanics laboratory, etc.)
- List all references and/or instructional materials that will be used
- Describe the application/evaluation procedures that will be used (include any device[s] and/or grading key[s])
- Include teaching materials (visual aids, handouts, presentations, etc.)
- Modifications that can be made for students with disabilities

A template will be provided for use, but you can use any format you are already comfortable with for the layout of this assignment, just make sure these bulleted components are present.

Lab-Based Instructional Moment [Objectives 2, 4, and 7]

During the designated timeframe on the course schedule, you will choose a 30-minute segment from your lesson plan assignment to deliver electronically for your peers via a recording. This segment should include interactive lab-based instruction where you can demonstrate effective teaching as discussed earlier in the course. Pro tip- find a willing audience to record your segment with (i.e., friends, family, stuffed animals, pets, plants, etc.)

Agriscience Facility Plan

Part One [Objective 8]

- a. Conduct a comprehensive evaluation of your assigned educational laboratory facility
- b. Submit a brief report explaining how this facility could be better utilized to address teaching agriscience content

Part Two [Objectives 7, 8, and 9]

- a. Design an indoor &/or outdoor "ideal" laboratory facility
- b. Indicate the subject areas the facility is designed to accommodate
- c. This is a "perfect world" and therefore money is no object for this design
- d. Your laboratory site should contain at least 10 different components
- e. Include a drawing/diagram of the area
- f. Complete a written narrative describing each component in your design and suggestions of activities that could be conducted using each component. Include connections to theoretical foundations for laboratory instruction.

Part Three [Objectives 5 and 6]

Using your design from Part Two create a safety and management plan, including,

- a. General safety protocols for all lab spaces
- b. Specific detailed safety procedures for one area of your design layout (may be useful to establish a safety incident scenario when creating these procedures)
- c. Laboratory management philosophy statement establishing your student management plan and how you believe these strategies will effectively help you supervise student performance

Assignment	Points	Due Dates
Participation/ Weekly Assignments	100	Weekly – See Schedule
Classroom Inquiry Vignettes	100	February 18 th
Agriscience Written Lesson Plan	150	March 4 th
Lab-based Instructional Moment	150	March 11 th
Agriscience Facility Plan Part 1	150	Draft- April 15 th / Final- April 28 th
Agriscience Facility Plan Part 2	200	Draft- April 8 th / Final- April 28 th
Agriscience Facility Plan Part 3	150	Draft- April 15 th / Final- April 28 th

Grading Scale

A = 970-1000

A- = 920-969

B+ = 880-919

B = 830-879

C+ = 780-829

C = 740-779

D = 650-739

E = 649 and below

Note: This Web address references the UF grades and grading policies: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Attendance and Assignments

Students are expected to be engaged each week through the designed modules. If students miss a weekly module it will result in an automatic 10% reduction of the associated assignments due that week, excluding weekly participation assignments which will result in a zero for missing the week.

Academic Honesty

In 1995 the UF student body enacted a new honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor 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.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior.

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court.
(Source: 2012-2013 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

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.

Campus Helping Resources

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS) Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints

- Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdfLinks to an external site.
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>Links to an external site.

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. 0001 Reid Hall, 392-8565, <https://disability.ufl.edu/>

U Matter, We Care

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

Tentative AEC 6229 Course Calendar

Date	Session Topics	Items Due
June 28 – July 2	What is laboratory-based instruction?	Weekly assignments due as assigned
	Purpose of lab-based instruction	
	Theoretical foundations	
July 5 – 9	Inquiry/problem-based instruction	Classroom Inquiry Vignettes
	Planning for lab-based instruction	
	Effective teaching in informal settings	
July 12 – 16	Evaluating students within lab-based instruction	Agriscience Lesson Plans
	Managing students within lab-based instruction	
July 19 – 23	Lab-based instruction teaching moments	Teaching Moment
	Maintaining safe practices within lab instruction	
July 26 – 30	Facility design and layout	Facility Plan Part 2 Draft
	Maintaining facility spaces	
August 2 – 4	Presentation of Facility Layouts (present drafts of all parts and receive feedback)	Facility Plan Part 1 & 3 Drafts
August 6	Final Draft of Agriscience Facility Plan all three parts	