

AOM 4461 (3 credits)
Sustainable Agricultural Systems
Agricultural Operations Management
University of Florida

Spring 2024 Tuesday periods 5-6 (11:45-1:40) and Thursday period 6, (12:50-1:40), Room 129
Frazier Rogers Hall

Instructor: Dr. Dan Hofstetter
Assistant Professor
Frazier-Rogers Hall, Rm 263,
Phone: 352-294-6702
Email: d.hofstetter@ufl.edu
Office hours: Tuesday and Thursday 2:00pm-3:00pm or by appointment

Catalog Description

Minimizing energy and costs in agricultural and natural resource systems and industries. Students explore ways to enhance sustainable systems by improving efficiency. Topics include agricultural machinery, pumps, motors, fans, refrigeration, lights, and construction methods.

Pre-requisites/Co-requisites:

Senior standing & PHY 2004 or PHY 2020 or PHY2048 or PHY 2053.

Course Objectives

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

1. Explain best practices for efficient operation of agricultural machinery, lighting, ventilation systems, electric motors, internal combustion engines (stationary and non-stationary), pumps, refrigeration systems, and building systems and technology.
2. Explain how sustainable practices can help reduce fixed costs and increase profitability.
3. Analyze efficient operation of agricultural operations and natural resource systems and industries.
4. Evaluate methods to enhance sustainability of systems through efficient best practices.
5. Calculate efficient operations plans for agricultural and natural resources systems and industries.
6. Estimate the economic performance of systems to reduce fixed costs or increase profitability.

Course Outline

- Module 1. Review of current energy and water issues affecting the nation, the Southeast, and Florida.
- Module 2. Energy overview of diverse agricultural operations such as nurseries, cattle ranches, row crops, and groves.
- Module 3. Efficient operation of non-stationary agricultural machinery.
- Module 4. Upgrading lighting technology to minimize cost and maximize efficiency.

Module 5. Ventilation systems for both plant and animal needs will be analyzed and optimized for efficient operation.

Module 6. Electric motor systems for agricultural uses will be presented.

Module 7. Stationary internal combustion engines for agricultural and natural resource uses.

Module 8. Agricultural refrigeration systems.

Module 9. Efficient operation of pumping systems.

Module 10. Building systems and certifications such as LEED.

Module 11. Case Studies.

Date	Topic	Assignments	
Tuesday, January 09, 2024	Orientation to class, class requirements, Module 1	Assign Mod1 HW1	
Thursday, January 11, 2024	Begin Module 2	Assign Mod2 HW2	
Tuesday, January 16, 2024	Module 2	Assign Mod2 HW3	Mod1 HW1 due
Thursday, January 18, 2024	Wrap-up Mod 2, begin Mod 3	Assign Project 1	Mod2 HW2 due
Tuesday, January 23, 2024	Continue Mod 3, Begin Mod 4 lighting	Assign Mod3 HW4	Mod2 HW3 due
Thursday, January 25, 2024	Continue Mod 4, lighting in animal ag examples		
Tuesday, January 30, 2024	Module 4 lighting	Assign Mod4 HW5, Project 2 Lighting	Mod3 HW4 due
Thursday, February 01, 2024	Continue Mod 4, Begin Mod 5 ventilation		
Tuesday, February 06, 2024	Continue Mod 5 ventilation		Mod4 HW5 due
Thursday, February 08, 2024	Continue Mod 5 ventilation		
Tuesday, February 13, 2024	Continue Mod 5 ventilation, Begin Mod 6		
Thursday, February 15, 2024	Continue Mod 6 electric motors	Assign Mod5 HW6	
Tuesday, February 20, 2024	Student Project 1 meeting to present findings, Continue Mod 6	Assign Mod6 HW7	Project 1 due
Thursday, February 22, 2024	Continue Mod 6		Mod5 HW6 due
Tuesday, February 27, 2024	Wrap-up Mod 6, Begin Mod 7 engines	Assign Mod7 HW8	Mod6 HW7 due
Thursday, February 29, 2024	Student Project 2 meeting		Project 2 Lighting due
Tuesday, March 05, 2024	Mod 8 refrigeration systems, Begin Mod 9 pumping systems	Assign Final Project	Mod7 HW8 due

Thursday, March 07, 2024	Continue Mod 9 pumping systems	Assign Mod8 refrig HW	Assign Project 3: Audit or BMP
Tuesday, March 12, 2024	<i>Spring break</i>		
Thursday, March 14, 2024	<i>Spring break</i>		
Tuesday, March 19, 2024	Continue Mod 9 pumping systems, Begin Mod 10		
Thursday, March 21, 2024	Mod 10 Building systems	Assign Mod9 Pumping HW	Mod8 Refrig HW due
Tuesday, March 26, 2024	Wrap-up Mod 10, Begin Mod 11 case studies		
Thursday, March 28, 2024	Mod 11 case studies		Mod9 Pumping HW due
Tuesday, April 02, 2024	Mod 11 case studies		
Thursday, April 04, 2024	Wrap-up Mod 11 case studies		Project 3 due
Tuesday, April 09, 2024	Presentations day 1, nine presentations		Final Project presentation due
Thursday, April 11, 2024	Presentations day 2, four presentations		
Tuesday, April 16, 2024	Presentations day 3, nine presentations		
Thursday, April 18, 2024	Presentations day 4, four presentations		
Tuesday, April 23, 2024	Presentations day 5, remaining presentations		Final Project report due
Thursday, April 25, 2024	Reading days		

This syllabus is subject to change depending on student progress and scheduling.

Time does not permit **everything** to be covered in the lectures and labs therefore, reading and homework will be assigned. Assignments will include outside reading material as well as that provided in the lectures.

Texts: There is no formal text for this subject. Select readings will be assigned.

Grading

Homework:	10 @ 10 pts each	100 pts
Projects	3 at 50 pts each	150 pts
Attendance:	25 @ 4 pts each	100 pts
Presentation/Final Project:		100 pts
Total points		450 pts

450-414 pts	=	A
413-405	=	A-
404-392	=	B+
391-369	=	B
368-360	=	B-
359-351	=	C+
350-324	=	C
323-315	=	C-
314-302	=	D+
301-279	=	D
278-270	=	D-
<270	=	E

Class participation is expected.

Grades and Grade Points

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>.

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/UGRD/academic-regulations/attendance-policies/>.

Online Course Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. 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.aa.ufl.edu/students/>. 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 <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.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."* 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, <https://disability.ufl.edu/>

Campus Helping 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.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Wellness Coaching
- U Matter We Care, www.umatter.ufl.edu/
- *Career Connections Center, First Floor JWRU, 392-1601, <https://career.ufl.edu/>.*
- Student Success Initiative, <http://studentsuccess.ufl.edu>.

Student Complaints:

- Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>.
- Online Course: <https://pfs.tnt.aa.ufl.edu/state-authorization-status/#student-complaint>