

**Agricultural and Biological Engineering Department
University of Florida**

**Agricultural Operations Management 5334C
Agricultural Chemical Application Technology
Fall, 2019 (Class Number 10709)**

Catalog Description: AOM 5334C Agricultural Chemical Application Technology. F. Credits: 3. Equipment and methods used to apply pesticides in agriculture. Emphasis on techniques to avoid misapplication and pesticide drift.

Instructor: Dr. Wonsuk "Daniel" Lee
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ABE Machine Shop (Steel Building)
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Class Hours : M W 1:55 PM – 2:45 PM (7th period), Frazier Rogers Hall Room 129

Laboratory Hour: W 3:00 PM – 4:55 PM (8th-9th periods), Frazier Rogers Hall Room 129, and various other locations.

Course homepage: <https://elearning.ufl.edu>. Course lecture notes will be available in the course website.

Office Hours: I have an open door policy. You are welcome to visit me whenever I am available, or by appointment.

Text: *SM 53 Private Applicator Agricultural Pest Control*, 4th Edition, by Frederick M. Fishel, UF/IFAS Communication Services, Revised 2019. (<http://ifasbooks.ifas.ufl.edu/p-118-private-applicator-agricultural-pest-control.aspx>)

SM 1 Applying Pesticides Correctly: A Study Guide for the General Certifications Standards (Core) Exam, 7th Edition, by Frederick M. Fishel, UF/IFAS Communications Services, 2014 (Revised for 2015, <http://ifasbooks.ifas.ufl.edu/p-104-applying-pesticides-correctly-a-guide-for-pesticide-applicators-core.aspx>)

: You will summarize each chapter every week during the first 9 weeks, so that you can use the summary to (1) learn the basic knowledge by yourself and (2) take a license exam in the future. Every Wednesday, **starting Sep. 4th**, you will need to submit a hardcopy of the summary of each chapter. Start with "Terms to Know" and include all sub-sections of each chapter. A hand-written summary will not be accepted.

Course Objectives:

1. To be familiar with agricultural pests and the measures for controlling them
2. To understand different sprayer components and learn how they work
3. To be able to properly calibrate different types of spray equipment. Special emphasis will be placed on using the proper equipment and techniques for applying pesticides.
4. To become familiar with pesticide laws, labels, and safety

Lecture Topics:

Pest identification and control	Pumps
Nozzles and flow rate formula	Granule applicators and calibration
Sprayer components	Spray drift
Calibration of farm sprayers	Aquatic weed control
Pesticide formulation and arithmetic	Pesticide laws, labels, and safety
Variable rate application (VRA)	

Laboratory Topics:

General purpose boom sprayer	Airblast sprayer	Variable rate application (VRA)
Nozzles and spray patterns	Pumps	
Sprayer calibration	Granule applicator	
Different types of sprayers	Aerial application	

Course grading will be based on the following items:

1. **Quizzes** will be given every Monday at the end of lecture. The quiz problems are from the previous week's lecture, lab exercise and/or homework. Quizzes cannot be made up.
2. **Lab assignments** will be handed out every laboratory session.
3. **Homework** – Approximately 3 sets of problems related to the calibration of pesticides application equipment will be assigned. The problems will be similar to calibration problems given on the quizzes and tests. The support numbers needed to arrive at the problem answer must be shown on homework paper. As long as you have tried to solve them, you will receive a credit.
4. **Tests** – There will be three (3) tests. There will not be a comprehensive final examination. The test could have calculation problems similar to those in the previous test(s), but any verbal questions will be tested only once.
5. **SM1 Summary and Review Paper**
6. **Email submissions for all assignments will be NOT accepted.**
7. **Late submission policy: All assignments are due at the beginning of the class.** Thereafter 10% reduction/business day.

Tests: Test 1: Wed, Sep. 25 Test 2: Wed, Oct. 30 Test 3: Thu, Dec. 12, 10am-12pm

Grading will be based on the following assignment of weights:

Tests:	20% each	91 – 100%	A	72 – 76%	C
Quiz:	10%	89 – 91%	A-	69 – 72%	C-
Homework:	5%	86 – 89%	B+	66 – 69%	D+
Lab assignment:	10%	82 – 86%	B	62 – 66%	D
SM1 summary:	5%	79 – 82%	B-	59 – 62%	D-
Review paper:	10%	76 – 79%	C+	Below 59%	E

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

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: 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: 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc. 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.

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/>.

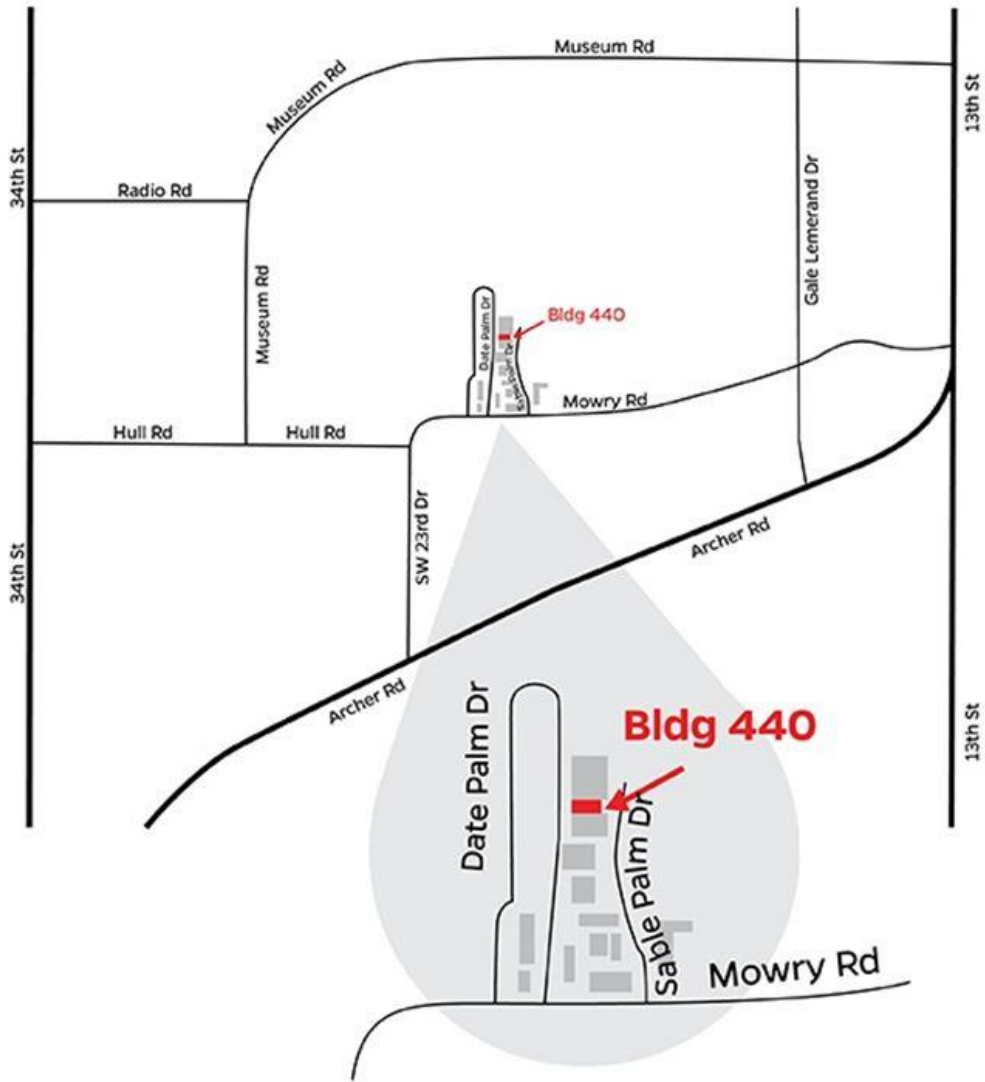
Student Complaints:

- Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>.
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>

Assignment submission guidelines – the following rules will be strictly enforced!

- Submit on time, i.e., “at the beginning of the class”!
- I will collect them at the beginning of the class, and put them in my “Red” folder.
- After I close the “Red” folder, if your submission is not in the folder, it means your submission is late.
- Since the class starts at 1:55 pm, one-day late submission starts from the time when the “Red” folder is closed until 1:55 pm the next day (24-hour period).
- Example 1: If your assignment is due Monday and you submit it at 2 pm on Monday, your submission is considered to be 1-day late (10% deduction). (I am sorry about this strict rule, however have to enforce the rule fairly for all of you.)
- Example 2: If your assignment is due Monday and you submit it at 3 pm on Tuesday, your submission is considered to be 2-days late (20% deduction).
- Please staple your submission. If not stapled, there will be a 30% deduction from the full credit. Please remember that you are not the only one who is submitting an assignment, and “non-stapled” submission may be lost and will potentially create a mess.
- In case, you submit your assignment under my office door, please write down the time and date of your submission (i.e., timestamp). If you don’t have a time stamp, it is considered to be submitted when I find it.
- If you show any extra efforts on your assignments and activities in lecture and lab exercises, there is a high potential for extra credit.

IFAS Extension Bookstore



Review Paper

You are required to write a review paper for this course. You can select any topic related to the course contents. The following are potential journals where you can find related articles. A review article should include at least 50 research articles to describe the current status of the topic of your choice, and make some recommendations for future directions. The goal is to publish your review article in a journal.

- Transactions of the ASABE
- Biosystems Engineering
- Applied Engineering in Agriculture
- Journal of Agricultural Safety and Health
- Precision Agriculture
- Computers and Electronics in Agriculture
- ...

The deadlines for a review paper are below.

- Outline (30 pts, due Monday, Sep. 23): Describe your topic of interest including a title and brief summary. Please feel free to consult with me for your topic of interest.
- Progress report (70 pts, due Monday, Oct. 21): Submit your partially completed review paper including the title, introduction, summary of identified articles, and reference information.
- Final report (100 pts, due Monday, Nov. 25): Submit one hardcopy of your completed final paper and also email me (wslee@ufl.edu) an electronic version of your paper and PowerPoint presentation. You will present your article at the end of the semester for about 10-15 min.

Once you complete it, you will submit it to a journal for publication.