HOS4332C – Principles of Postharvest Horticulture

3 CREDITS

MEETING TIMES AND LOCATION

Students view web-based lecture and demonstration materials and participate in a weekly discussion session (Wednesdays period 7 - 1:55 to 2:45 p.m.) conducted by videoconferencing.

INSTRUCTORS

Dr. Jeffrey K. Brecht
1217 Fifield Hall
(352) 273-4778
jkbrecht@ufl.edu

Dr. Mark Ritenour
IRREC – Ft. Pierce
(772) 201-5548
ritenour@ufl.edu

Office hours Mondays 3:00PM- 5:00PM, but students are encouraged to contact instructors via e-mail or phone outside of office hours whenever questions are encountered.

COURSE DESCRIPTION

This course covers the biological principles involved in harvesting, grading, packaging, transportation, and marketing horticultural crops, and their effects on quality maintenance. Commercial postharvest practices are described and explained in relation to general procedure and technology as well as the recommended postharvest best handling practices and optimum postharvest conditions for different types of horticultural crops.

LEARNING OBJECTIVES

Upon completion of the course, students should have an appreciation for the factors related to quality deterioration and wastage of horticultural commodities after harvest. These factors include physiological, biochemical, and pathological considerations, as well as compositional and physical changes occurring during maturation and deterioration. Students will understand commercial procedures for harvesting, preparation, packaging, transportation, and storage of horticultural crops in relation to biological principles and individual commodity requirements and responses. Students should possess the knowledge required to evaluate existing postharvest handling systems and be able to recommend improved practices that will better maintain product quality during the postharvest period.

PREREQUISITES: BOT 3503 and BCH 3023 or equivalent.

Syllabus - 01
COURSE GRADE

1. Midterm 1 100 points
2. Midterm 2 100 points
3. Final Exam 200 points
4. Research project report 100 points
Total 500 points

Exams will be open book with 1 week to complete.

Students will conduct a postharvest research project and create a PowerPoint report for other students to view. Detailed instructions for the research report will be distributed in a separate sheet.

There will be a 5-point reduction for each day late in submitting an exam or the project report.

GRADING SCALE

A (4.0) = 470 - 500 points (94-100%)  
A- (3.67) = 450 - 469 points (90-93%)
B+ (3.33) = 435 - 449 points (87-89%)
B (3.0) = 415 - 434 points (83-86%)
B- (2.67) = 400 - 414 points (80-82%)
C+ (2.33) = 385 - 399 points (77-79%)
C (2.0) = 365 - 384 points (73-76%)
C- (1.67) = 350 - 364 points (70-72%)
D+ (1.33) = 335 - 349 points (67-69%)
D (1.0) = 315 - 334 points (63-66%)
D- (0.67) = 300 - 314 points (60-62%)
E (0) = < 300 points (<60%)

Additional information on current UF grading policies for assigning grade points can be found here:

- Grading policy, [http://gradcatalog.ufl.edu/content.php?catoid=11&navoid=2486#grades](http://gradcatalog.ufl.edu/content.php?catoid=11&navoid=2486#grades)

COURSE MATERIALS

TEXTBOOK

No textbook is required for the course. However, the following supplemental reading sources may be helpful during this course.

COURSE POLICIES

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


Technical Difficulties
If you are experiencing technical difficulties with Canvas, you should immediately contact the UF Help Desk. This will generate a ticket number, which documents the date and time of your technical difficulty. Any requests to make-up late work due to technical difficulties must be accompanied by this ticket number.

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/scrr/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 when appropriate.

Syllabus - 03
Services for Students with Disabilities

Students with disabilities requesting accommodations should first register with the Disability Resource Center by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester

- Disability Resource Center, 0001 Reid Hall, (352) 392-8565, www.dso.ufl.edu/drc/

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.

- Counseling and Wellness Center, 3190 Radio Road, 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

Additionally, if you would like orientation on choosing a major, finding an internship, or planning your career, I encourage you to use the university’s on-campus resources.

- Career Resource Center, CR-100 Reitz Union, 392-1601, www.crc.ufl.edu/next-level

Course Evaluation Process

Student assessment of instruction is an important part of the effort to improve teaching and learning. At the end of the semester, you are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at:

- Course evaluations, www.evaluations.ufl.edu
  Evaluations are typically open during the last two or three weeks of the semester. You will be notified of the specific times when evaluations for this course are open. Summary results of these assessments are available to students at:
- Evaluations summary, www.evaluations.ufl.edu/results

Student Complaints

You can file and resolve any complaints about your experience in this course in the following site:

- Student complaints in residential courses, www.dso.ufl.edu/documents/UF_Complaints_policy.pdf
COVID Safety
The laboratory portion of this course will involve conducting an individual research project in the Postharvest Laboratories in Fifield Hall. You will work under the direct supervision of Dr. Brecht’s Biological Scientist, Mr. Moshe Doron. All of the laboratory space and equipment is to be reserved through Moshe in order to assure that no more than the allowed number of people will be working in any lab at the same time.

Students, instructors and all lab personnel are required to adhere to the following procedures for your safety and the safety of others:

1. Ingress/egress for Fifield Hall is through the main entrance facing Hull Road (south); the doors are unidirectional.
2. Wear a face mask upon entering the building and at all times while in the building, including labs.
3. Maintain physical distance (minimum 6 feet) from other people and use the touchless hand sanitizer stations that are prominently displayed. Use hand sanitizer before and/or after touching door handles.
4. The restrooms in Fifield Hall are single occupancy; nudge the door shut while using the restroom in order to indicate it’s occupied and leave the door ajar upon leaving in order to indicate that it’s not.
5. The postharvest labs, 1206, 1208, 1214, and 1225, are currently limited to no more than 2 persons working at the same time; 1315 (GC lab) is limited to 1 person. Moshe Doron will tell you and revise schedules if this changes.
6. Wash your hands and use hand sanitizer (available in labs) between lab activities.
7. Alcohol wipes and/or disinfectant sprays are available in all the labs – use them between activities to disinfect the surfaces that you touch, including keyboards and touchpads, to avoid cross-contamination between you and other people.

Contingency plans for student or instructor illness:
- If you are sick, don’t come to Fifield Hall. Communicate with Dr. Brecht by email about your situation.
- If your symptoms are consistent with COVID-19 infection, seek medical assistance and inform Dr. Brecht so he can alert the other students in case they have been in contact with you in order to self-quarantine.
- If either of the instructors, Dr. Brecht or Dr. Ritenour, or Moshe Doron, are sick, you will be notified as above by one of the others.

Contingency plan for meeting course objectives if the university has to cancel in-person instruction:
- In the event that in-person activities are cancelled, we will consult with you to develop and conduct an alternate research project that you can conduct without using the postharvest labs.
# HOS4332C
## PRINCIPLES OF POSTHARVEST HORTICULTURE
### Course Schedule

<table>
<thead>
<tr>
<th>Lec. #</th>
<th>Instr.</th>
<th>Lecture Topic</th>
<th>Supplemental Reading</th>
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### I. BIOLOGICAL CONSIDERATIONS

**Monday, August 31** – Fall classes begin (Lectures 1 & 2 posted by 8/31)

1. MAR  
   - Introduction - Postharvest deterioration and losses  
   - PH Tech., Ch. 2

2. JKB  
   - Morphology, structure, growth and development  
   - PH Phys., Ch. 6; and PH Tech., Ch. 3

   **Discussion date #1**: (Lec. 1-2) TBD Week of 8/31  
   (Incl. Research Project Assignment)

3. JKB  
   - Composition of horticultural crops  
   - PH Phys., Ch. 2

4. JKB  
   - Compositional changes during maturation & ripening  
   - Wills, Ch. 3

   **Discussion date #2**: (Lec. 3-4) TBD Week of 9/7

**Monday, September 7** – Labor Day (no classes)

5. JKB  
   - Ethylene & other plant hormones - role in senescence  
   - PH Phys., Ch. 5

6. JKB  
   - Ethylene and fruit ripening  
   - PH Phys., Ch. 7

   **Discussion date #3**: (Lec. 5-6) TBD Week of 9/14

**Friday, September 18** – Lab project topics due

7. MAR  
   - Respiration - introduction, measurement  
   - PH Phys., Ch. 4

8. MAR  
   - Respiration - internal and environmental factors  
   - PH Phys., Ch. 4

   **Discussion date #4**: (Lec. 7-8) TBD Week of 9/21

9. MAR  
   - Transpiration & water loss  
   - PH Phys., Ch. 8; and PH Tech., Ch. 8

10. JKB  
   - Physiological disorders  
   - PH Tech., Ch. 15

   **Discussion date #5**: (Lec. 9-10) TBD Week of 9/28

**MIDTERM EXAM** - through physiological disorders (lectures 1-10)

**Posting date**: 10/2; **Due date**: 10/9

Syllabus - 06
11  Bartz  Postharvest pathology - host-parasite interactions  Fruit & Veg, Ch. 8
12  Bartz  Postharv. pathol. - environmental factors & control

Discussion date #6: (Lec. 11-12) TBD Week of 10/5

II. COMMERCIAL PRACTICES
13  JKB  Maturity and quality standards  Fruit & Veg, Ch. 2
14  MAR  Food safety & quarantine treatments  Fruit & Veg, Ch. 9 & 10

Discussion date #7: (Lec. 13-14) TBD Week of 10/12

Friday, October 16 – Lab project progress reports due

15  MAR  Harvesting, handling and packinghouse operations  PH Tech., Ch. 5 & 9
16  MAR  Temp. management - cooling methods & principles  PH Tech., Ch. 8

Discussion date #8: (Lec. 15-16) TBD Week of 10/19

17  JKB  Comm. storage; modified & controlled atmospheres  PH Tech., Ch. 12 & 13
18  MAR  Transportation & the distribution system  PH Tech., Ch. 18; and

Discussion date #9: (Lec. 17-18) TBD Week of 10/26  Fruit & Veg., Ch. 10

MIDTERM EXAM  – Postharvest pathology through distribution and marketing (lectures 11-18)
Posting date: 10/30; Due date: 11/6

III. COMMODITY REQUIREMENTS
19  MAR  Tropical & Subtropical fruits  Kader, Ch. 30 & 31
20  MAR  Small fruits, Pome & Stone fruits  Kader, Ch. 27-29

Discussion date #10: (Lec. 19-20) TBD Week of 11/2

Finish up lab projects – Week of 11/2

21  JKB  Vegetables – leafy, succulent, & storage organs  Kader, Ch. 34-35
22  JKB  Vegetables – immature & mature fruits  Kader, Ch. 33

Discussion date #11: (Lec. 21-22) TBD Week of 11/9

Wednesday, November 11 – Veterans Day (no classes)
23 JKB Fresh-cut vegetables & fruits Kader, Ch. 36
24 MAR Cut flowers & potted plants Kader, Ch. 25

Discussion date #12: (Lec. 23-24) TBD Week of 11/16

Week of 11/23 – Finish research project reports and presentation preparation
Wed-Sun, November 25-28 – Thanksgiving Break (no classes)

TBD Week of 11/30 - Project reports due and student presentations (10-min ppt)
(voting through Dec. 7)

Review Session: TBD 12/7-9.

December 9 – Last Day of Classes

Dec. 10 & 11 – Reading Days

FINAL EXAM – Cumulative (50%), but focusing on lectures 19-24 (50%)
Posting date: 12/9; Due date: 12/16