

HOS5085C
PRINCIPLES OF POSTHARVEST HORTICULTURE
Syllabus

Description: Biological principles involved in harvesting, grading, packaging, transportation, and marketing horticultural crops, and their effects on quality maintenance.

Objectives: 1. To develop 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. 2. To develop an understanding of commercial procedures of harvesting, preparation, packaging, transportation, and storage in relation to biological principles and individual commodity requirements and responses.

Course Format: Web-based lecture and demonstration materials with weekly live discussion session. In addition, students will be required to complete a postharvest research project.

Credits: 3

Prerequisites: BOT 3503 and BCH 3023 or equivalent.

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Evaluation:	<u>Points</u>	<u>Grading Scale</u>		
	Midterm 1	100	A =	450-500
	Midterm 2	100	B+=	430-449
	Final exam	200	B =	400-429
	Research reports	<u>100</u>	C+=	380-399
	Total	500	C =	350-379
			D+=	330-349
			D =	300-329
			E =	299 - below

Supplemental Reading:

Postharvest technology of horticultural crops, 3rd edition, 2002, edited by A. A. Kader (Coop. Ext., Univ. of Calif. Div. Nat. Res., Berkeley, CA).

Postharvest: an introduction to the physiology and handling of fruit, vegetables & ornamentals, 5th edition, 2007, by R. B. H. Wills et al. (CAB International, New York).

Postharvest physiology and pathology of vegetables. 2nd edition, 2003, edited by J.A. Bartz and J.K. Brecht (Marcel Dekker, Inc., New York)

Postharvest biology. 2004, S.J. Kays and R.E. Paull (Exon Press, Athens, GA).

ACADEMIC HONESTY: As a result of completing the registration form at the University of Florida, every student has signed the following statement: “I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University.”

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.

We, the members of the University of Florida community, pledge to hold our peers and ourselves to the highest standards of honesty and integrity.

UF COUNSELING SERVICES: Resources are available on-campus for students having personal problems or lacking clear career and academic goals, which interfere with their academic performance. These resources include:

1. University Counseling Center, 301 Peabody Hall, (352) 392-1575. Personal and career counseling.
2. Student Mental Health, Student Health Care Center, (352) 392-1171. Personal counseling.
3. Sexual Assault Recovery Services, Student Health Care Center, (352) 392-1161. Sexual assault counseling.
4. Career Resource Center, Reitz Union, (352) 291-1601. Career development assistance and counseling.

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Topical Outline

Lec. #	Instr.	Lecture Topic	Supplemental Reading
A. BIOLOGICAL CONSIDERATIONS			
	JKB	Introduction	Kader Ch. 4
1	MAR	Postharvest deterioration and losses	Wills Ch. 1
2	JKB	Morphology, structure, growth and development	Wills Ch. 2 & Kays&Paull Ch. 2
Discussion date: (Lec. 1-2) 9/2			
3	MAR	Respiration - introduction, measurement	Bartz & Brecht Ch. 2 &
4	MAR	Respiration - internal and environmental factors	Kays&Paull Ch. 3
Discussion date: (Lec. 3-4) 9/9			
5	JKB	Ethylene and other plant hormones - role in senescence	Bartz & Brecht Ch. 3
6	JKB	Ethylene and fruit ripening	Bartz & Brecht Ch. 10
Discussion date: (Lec. 5-6) 9/16			
7	JKB	Composition of horticultural crops	Wills Ch. 3 &
8	JKB	Compositional changes during maturation and ripening	Kays&Paull Ch. 4
Discussion date: (Lec. 7-8) 9/23			
9	MAR	Transpiration & water loss	Bartz & Brecht Ch. 5
10	JKB	Physiological disorders	Wills Ch. 8 & Bartz & Brecht Ch. 19
Discussion date: (Lec. 9-10) 9/30			
MIDTERM EXAM - through physiological disorders (lectures 1-10)			
Posting date: 9/30; Due date: 10/7			
11	Bartz	Postharvest pathology - host-parasite interactions	Bartz & Brecht Ch. 24
12	Bartz	Postharvest pathology - environmental factors and control	Bartz&Brecht Ch. 20-23
Discussion date: (Lec. 11-12) 10/7			
B. COMMERCIAL PRACTICES			
13	JKB	Maturity and quality standards	Wills Ch. 10 & Kader Ch. 6 & 23
14	MAR	Food safety & quarantine treatments	Kader Ch. 19 & 24 & Bartz&Brecht Ch. 23
Discussion date: (Lec. 13-14) 10/14			
15	MAR	Harvesting, handling and packinghouse operations	Bartz&Brecht Ch. 16
16	MAR	Temperature management - cooling methods and principles	Bartz & Brecht Ch. 8 & Kader Ch. 11
Discussion date: (Lec. 15-16) 10/21			
17	JKB	Commercial storage; modified & controlled atmospheres	Wills Ch. 6-7 & Bartz&Brecht Ch. 9
18	MAR	Transportation	Kader Ch. 20
19	Wysocki	Distribution and marketing	Kader Ch. 2 & 21
Discussion date: (Lec. 17-18-19) 10/28			

MIDTERM EXAM – Postharvest pathology through distribution and marketing (lectures 11-19)

Posting date: 10/28; **Due date:** 11/4

C. COMMODITY REQUIREMENTS

20 MAR Subtropical & tropical fruits Kader Ch. 30-31

21 MAR Small fruits; pome and stone fruits Kader Ch. 27-29

Discussion date: (Lec. 20-21) 11/4

22 MAR Vegetables – vegetative, storage & floral organs Bartz&Brecht Ch. 25-26

Kader Ch. 34-35

23 JKB Vegetables – immature & mature fruits Bartz&Brecht Ch. 27-28

Kader Ch. 33

Discussion date: (Lec. 22-23) 11/18

24 JKB Fresh-cut vegetables & fruits Bartz&Brecht Ch. 29 &

Kader Ch. 36

25 MAR Cut flowers & potted plants Kader Ch. 25

Discussion date: (Lec. 24-25) 12/2

Review Session: 12/9

FINAL EXAM – Cumulative, but focusing on lectures 20 – 25

Posting date: 12/9; **Due date:** 12/16