







Course Description Form

1. Course Name:

Handling and storage of Horticultural Crops

2. Course Code

HSHC405

3. Semester / Year:

second semester/ second stage/2024-2025

4. Description Preparation Date:

1/2/2025

5. Available Attendance Forms:

Attending+online

6. Number of Credit Hours (Total) / Number of Units (Total)

2 Theoretical + 3 Practical / 3.5 unite

7. Course administrator's name (mention all, if more than one name)

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Lecturer Dr. Mohand Akeel Ahmed

ASSIST. Lecturer Zohor foad

8. Course Objectives

- The learner will be able to identify the economic and political objectives of horticultural forecasts
- · The student learns about the stages of growth and maturity through which horticultural results are achieved
- The team between the different storage groups and the appropriate ones
- Recording the basics of tree growth and using them to acquire emerging fruits for storage
- Training between types of fruits and their divisions, depending on the type of large roles of fruits
- Familiarity with what information the evidence needs to store and what is called for it to master the work
- The student's awareness of the factors affecting the prolongation of the storage life of fruits
- Determine the appropriate type of storage to suit the type of fruits
- · A comprehensive study of all types of fruits and how to cover them, and does not include conditions except for periods of storage for a long period of time

9. Teaching and Learning Strategies

- Interactive lecture
- Brainstorming
- Dialogue and discussion
- Field Training
- Practical exercises
- Field project
- Self-education



10. Course Structure

Required Learning Outcomes

Unit or subject Learning

Evaluatio

	2 Theo	retical A1: The student acquires	name	method	
		the importance of food storage agricultural and horticultural products B1: He possesses the practical a mental knowledge and concepts that help him in how to conduct good storage of fruits d1: Community members participate and work to educate them about the importance of	The important of storage and amount of los horticultural crops	the lecture	e Short te written test, and
		products and the impact this has a society E1: Contributes to enhancing the values of stored agricultural products among community members and educating them about the importance of storing agricultural products to ensure the remain for the longest possible period in the market.	ut	وه الموصل الموصل الموصل الموصل الموصل الموصل الموصل الموصل المواجع الم	وامع الدوامع
	3 Practical	A15: He possesses practical and mental knowledge and concepts that help him know the fruit and what its main sections are. a16: Differentiate between clustered and doubled fruits	Classification of fruits	Interactive lecture, brainstorming , dialogue and discussion	Short practical test 1
2	2 Theoretic	al A2: Determines the stages of growth and maturity of fruits and their types B2: He possesses the practical and mental knowledge and concepts that help him follow the stages of fruit growth. C4: Draws the growth curve of the fruits of the first group	Stages of growth and ripening of fruits	Interactive lecture, brainstorming , dialogue and discussion	Short test, written test, and assignment
3	3 Practical	A17: Identifies the types of plant dyes and the main colors of fruits with examples. d4: Possess the skills of measuring the sensory qualities of fruits.	Sensory measures of complete growth and maturity in fruits	Interactive lecture, brainstorming , dialogue and discussion	Short practical test1
	3 Practical	A3: Determines the types of fruits, which group they belong to, and what are the stages of their growth C5: Draws the growth curve of the fruits of the second group	The second group of fruits	Interactive lecture, brainstorming , dialogue and discussion	Short test, written test, and assignment
		d5: Possess the skill of measuring the qualitative characteristics of fruits.	Chemical measures of complete growth and maturity in fruits	Interactive lecture, brainstorming , dialogue and discussion	Short practical test1
	2 Theoretical	A4: Determines breathing methods	Breathing and its	Interactive	Short test,

		for horticultural crops C5: Draws the fruit respiration	maturity and storage.	oramstor	ming written
		d2: Community members participate and work to educate them about the importance of		, dialogu discussio	e and test
	3 Practio	agricultural products. B4: Master the methods of			
5		storage of fruits	technology fruits horticultural	for lecture, and brainstorm , dialogue	practical total
3	2 Theore	knowledge and concepts related to the phenomenon of climacteric and its relationship.	The phenomen of chlorosis and its relationship	on Interactive decture.	Short test
		its relationship to maturity in horticultural crops. C6: Draw the respiration curve for Climacteric and non-Clymbacterial fruits.	- P	, dialogue a discussion	test, and assignment
		participate and work to educate them about the importance of increasing cold storage and its impact on controlling the		عة الموصل راعة والغابات معالياً	الزير المالية الزير المالية الزير المالية الم
	3 Practical	prolongation of the storage period. A18: Identify the factors that affect artificial ripeness. What are the most important methods for measuring respiratory rate?	t Artificial ripenin Monday	lecture, brainstorming	Short practical
6	2 Theoretic	A6: The student understands what ethylene is and its role in the ripening of fruits. B3: He possesses practical and mental knowledge and concepts that help him in how to produce ethylene naturally in fruits and reduce its production.	respiratory rate and ethylene	, dialogue and discussion Interactive lecture, brainstorming , dialogue and discussion	Short test, written
	2 Theoretica	A19: He possesses the practical and mental knowledge and concepts that help him know the factors affecting industrial maturity. B5: Able to measure the respiratory rate of stored fruits.	respiratory rate and ethylene production and the factors affecting them	lecture, brainstorming , dialogue and	Short practical test1
		most important methods of reaping and harvesting fruits C7: Determines the best methods of harvesting and harvesting for each type of fruit	Harvesting and picking operations Chemical	Interactive lecture, brainstorming , dialogue and discussion	Short test, written test, and assignment
		b6: He possesses practical and mental knowledge and concepts that help him reduce damage and deterioration of fruits. Crops	composition of fruits	Interactive lecture, brainstorming , dialogue and discussion	Short practical test1
		A8: The student is familiar with the most important additional procedures for cooling fruits	Additional cooling transactions	Interactive lecture, brainstorming	Short test, written

		C8: Determines the best coolin	200					
	2 D	- CC .				, dialogue	and	T - ·
	3 Prac	Different methods and				discussion	allu 1	assignme
		nai vest Hofficilifural grans		Collecting	and			Short
		D/. Suggest any suitable		reparing		lecture,		
		for harvesting and packing f	thods he	orticultural		brainstorm	ning	practical
			truits cr	ops		, dialogue	and	test1
9	2 Theor	retical A9: Modern methods are used in				discussion		
		storing the fruits in a modified a	The second secon	ffect of stor	age	Interactive		Cl
		admosphere	iir in	modified a	ir	lecture,	1	Short tes
		A10: Differentiate between norm	atr	nosphere		brainstormi	ng	written
		storage and storage in a modified	nal			, dialogue a	ba	test, and assignmen
		an aunosphere	1			discussion		assignmen
		C9: Differentiate between norm	.1					
		storage and storage in a modified	11					
	2 =	an aunosphere	1					
	3 Practic	A3: Different methods are used to	. D					
		pack the fruits.		kaging		Interactive	S	hort
				ticultural	1	lecture,	n	ractical
			crop	DS		brainstormin	0 4	est1
10	2 Theoret	ical All: Modern and				, dialogue an discussion	d	. 1
			or Stor	age in		Interactive	C:	
		storing fruits in a rarefied air atmosphere	rare			lecture,	S	hort test,
		A12: Differentiate 1	atmo	osphere		orainstorming	-	ritten
		A12: Differentiate between norma	.1		,	dialogue and	1 10	st, and
		storage and storage in a rarefied ai atmosphere	ir		C	discussion	as	signment
		C10: Differentiate between normal	.	The -				
		storage and storage in a rarefied	1	وصل	blas	The state of the s		
		attilosphere		وصل والغابات ا	ازاعة	land		
	3 Practical	D6: able of measuring the acidity of		1 67	7	ا ا		
		fruits		nating (th	ne Ir	nteractive	Sh	ort
			acidit	v of fruits	1/10	ctura		ctical
				ماد الزراعي	bi	rainstorming	test	
11	2 Thoorat'	A 10 X	1	Use_	A P	rainstorming dialogue and scussion	103	
	2 Theoretic	al A12: Identify plant hormones that	The ef	ffect of plan	-	scussion teractive		
		affect fruit growth.	hormo	ones on		cture,		ort test,
		C11: Shows the effect of plant	growth	h and fruit		ainstorming	wri	
		normones individually on the	setting	,		lialogue and	test	
	3 Practical	growth and ripening of fruits			dis	scussion	assi	gnment
	Jiractical	D/: Measures sugary substances in	Estima	ation o	f Int	eractive	-	
		fruits		ydrates in		ture,	Sho	
			fruits			instorming		tical
					, di	ialogue and	test1	
2	2 Theoretica		Chari	-1.1	dis	cussion		
		changes that occur in fruits during	that occ	cal changes		eractive	Shor	t test,
		growth, ripening, and storage	fruits d	Uring		ture,	writt	
		S. S	growth.	ripening,	di	instorming alogue and	test,	and
	3 Practical	A21. The state	and stor	rage	disc	cussion	assig	nment
	- 1 ractical	A21: The student acquires	Mechan	nical		ractive		
		knowledge and concepts related to	pressure		lecti		Short	
		mechanical and electrical	refriger	ation cycle	brai	nstorming	pract test1	icai
		refrigeration devices for cold stores.			, dia	logue and	iost I	
		A22: He knows everything related to mechanical and allowed			disci	ussion		
		all electrical						
1	2 Theoretical	refrigeration devices for cold stores A14: Discusses topics related to the						
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2		storage of hard to the	Report a	ind	Inter	active	Chart	tost
		storage of horticultural crops	discuss	ind	lectu		Short writte	test,

3 Practical	A23: He knows everytto the mechanical	hing related		1	, dialogue an discussion			
2 Theory	refrigeration cycle	refrigeration lectu		lecture, brainstorming	Short practical test1			
2 Theoretical			Solve the problem		Interactive lecture, brainstorming			
	B8: Developed from the r the cold storage	cold storage		A field visit to one of the fruit stores		Short practical		
2 Theoretical	13. Show 1 00				, dialogue and	test1		
l	inder certain conditions	and stored the problem			Interactive lecture, brainstorming	Short test, written test, and		
te	forages to develo	p cold	A field visit to one of the vegetable stores discussion Interactive lecture, brainstorming		Interactive ecture, orainstorming dialogue and	Short practical test1		
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Dr. Jassim Mohammed Alwan 1 Practicals on the problem discussion on the pro		

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Practical lecturer

Lecturer Dr. Mohand Akeel Ahmed Zohor Foad

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Theoretical lecturer:

Lecturer Dr. Badran Sabhan Abdullah Agha

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