Republic of Iraq

Ministry of Higher Education

and Scientific Research

Scientific supervision and

evaluation device

Academic program and course

2025

ACADEMIC PROGRAM SPECIFICATION FORM FOR THE ACADEMIC year 2024-2025

University: Northern Technical University
College/ Institute: Technical Institute/ Hawija
Department: Plant Production Techniques
Data Of Form Completion:
Department Head Name: **Dr.Qotaiba saleh sheikh**

Date: 27 /1/2025

Signature

Dean's Assistant for scientific Affairs: Dr. **Mohammed Jiyad .L**
Date: 27 /1/2025

Signature

Check the file before

Quality Assurance and University Performance Division:

M.M. Hamza Sadiq Omar

Signature

Dean's name: **Omar K. Ahmed**

Data : 27 /1/2025

Signature

1-vision The program

Looking forward Section that He is One Sections Scientific in The Institute Technical Al-Hawija that Serve the society in area Agricultural sector

2-message The program

Committed Section Keep up Evolution Scientific in Agricultural education field through Study programs It is governed by academic standards for numbers. a graduate able on Competition in market the job Locally and regionally with Ascend Badour Graduate in area development
Sector Agricultural And improve Production in Country

3-Goals The program

Providing the necessary human resources for the requirements Economic development plans And social. Supporting students With information and skills And experiences Scientific To enable them to Contribution In the process Development. Consolidation Team spirit among students and their preparation For life Scientific Cooperative in the environment Agricultural. investigation higher level from Interaction between Section and institutions
Scientific production whose tasks and objectives are integrated with the tasks and objectives of the department. Contributing to training, qualification and continuing education courses. And seminars at the institute. Activating scientific research in the agricultural field .

4-Accreditation Programmatic

no There is

5-Effects Foreign Other

no There is

6- Structure The program

Relatives Required	= % ratios the total / Total Units For requirement) 100 × (Total For graduation	the total	optional	compul sory	type Requirement
(15 - 10) %	20 = 100 × (119 ÷ 24)	24	2	22	university
% (22 - 16)	17 = 100 × (119 ÷ 20)	20	4	16	institute
% (74 - 63)	63 = 100 × (119 ÷ 75)	75	12	63	to divide
% 100		119	the total Total For graduation		

Level the first Program Description - 7/ the chapter the first +the chapter the second								
Course Type	The symbol	The pavement if any	Number of units	Number of practical hours	Number of theoretical hours	name The decision		Requirement type
						In the language English	In Arabic	
compulsory	NTU100		2	-	2	Human Rights and Democracy	human rights And democracy	University requirements
compulsory	NTU101		2	-	2	English language	English1	
compulsory	NTU102		2	1	1	1Computer Application	principles Computer1	
compulsory	3NTU10		2	-	2	1Arabic language	language Arabic1	
optional	4NTU10		2	1	1	Sport	sports	
optional	NTU107		2	-	2	French language	language French	
compulsory	TIH101		3	1	2	Statistics &Experiment Design	count And plannin experiments	Institute Requirements
optional	TIH102		2	1	1	Renewable Energy Systems	Systems Renewable energy	
compulsory	TIH103		2	1	1	Soil Science	Soil basics	
compulsory	PPT101		3	2	1	Horticulture Principles	basics gardening	Department Requirements
compulsory	PPT102		3	2	1	Agronomy Principles	basics Crops	
compulsory	PPT103		2	1	1	Plant Protection	protection plants	
optional	PPT104		2	1	1	Nursery & Forestry	Nurseries And forests	
optional	PPT105		2	1	1	Plant Environment	environment plants	
compulsory	PPT106		3	2	1	Fruit Production	production fruit	
compulsory	PPT107		2	1	1	Plant Physiology	Physiology plants	
compulsory	PPT108		4	2	2	Vegetation Production	production Green	
optional	PPT109		2	1	1	General Insects	Insects General	
compulsory	PPT110		3	2	1	Agri.Machine&Equipment	Pullers and machines Agricultural	
optional	PPT111		2	1	1	Tissue culture	agriculture Tissues	
			47	12	26	the total		

Level the second/ the chapter the first + the chapter the second								
Course Type	The symbol	The Pavement If found	Number of units	number Practical hours	number Theoretical hours	name The decision		Requirement type
						In the language English	In the language Arabic	
NTU 200 compulsory			2	-	2	English language	Englis h2	University requirements
compulsory	NTU201		2	1	1	Computer Application2	principles Computer2	
compulsory	NTU202		2	-	2	Arabic Language2	the language Arabic	
compulsory	NTU203		2	-	2	The Crimes of Baath Regime in Iraq	Crimes party system Resurrection in Iraq	
compulsory	NTU204		2	-	2	Professional Ethics	Profes sional ethics	
compulsory	TIH201		3	2	1	Medicinal Plants Production	production Plants Medical	Institute Requirements
compulsory	TIH202		2	1	1	Secondary Compounds Chemistry	Chemi stry of seconda ry compou nds	
optional	TIH203		2	1	1	Farm management	Farm manageme nt	
compulsory	PPT201		3	2	1	Drying &Reserving Plants	save drying plants	
compulsory	PPT202		3	2	1	Medicinal Plants Diseases	Plant diseas es Medic al	
compulsory	PPT203		3	2	1	Medicinal Plants Environment & Classification	environment And	

							classification Plants Medical	Department Requirements
compulsory	PPT204		2	1	1	Organic Chemistry	chemistry membership	
optional	PPT205		2	1	1	Aromatic & Floriculture Medicinal Plants	plants Decoration Aromatic	
compulsory	PPT206		3	2	1	Drugs Processing	manufacturing pharmaceutical	
compulsory	PPT207		3	2	1	Nurseries & Propagation	Nurseries And multiply	
compulsory	PPT208		3	2	1	Medicinal Plants Pesticides	Insects Plants Medical	
optional	PPT209		3	2	1	Plants Nutrition	feeding plants	
compulsory	PPT210		3	3	-	Project	project	
			54	42	21	the total		

a description The program Academic

This academic program description provides a concise summary of the main features of the program and the learning outcomes expected of the student, demonstrating whether he or she has made the most of the opportunities available. It is accompanied by a description of each .course within the program

Northern Technical University/Hawija Technical Institute	Educational institution .1
Plant production techniques	/ Scientific Department .2 Center
agricultural	Name of academic or .3 professional program
diploma	Final Certificate Name .4
Decisions	:Academic system .5 Annual - Courses - Other
	Accredited Certification .6 Program
nothing	Other external influences .7
2025/1/27	Description preparation date .8

Expected learning outcomes of the program (knowledge, skills and .8 (values

1. Keeping pace with the development of scientific research in the agricultural .field
2. Communicate with everything new or useful in supporting the sustainable .environment
3. Dealing with crises and problems in the agricultural sector
4. .Building foundations for the student in the Plant Production Department
5. Developing students' abilities to share ideas about agricultural problems and .their solutions

Academic Program Objectives

The program aims to graduate qualified technical cadres capable of improving agricultural production through the ability in the field of plant breeding and improvement to produce field crops and vegetable crops, and to resist plant

diseases and weeds, and the ability to manage and breed beehives, maintain agricultural machinery and equipment and use them optimally in agriculture, and the ability to design and engineer gardens, and build greenhouses, glass and .plastic, and their tools in a good way

9. Teaching and learning strategies

- Explaining the scientific material to the students in detail - Participation of students in solving agricultural problems - Discussion and dialogue about vocabulary related to the agricultural topic

10-Evaluation methods

(Weekly, monthly, daily exams and end of course exam)

11-Faculty

Faculty members

Faculty numbers	– Requirements Special Skills (if any)	Specialization		Academic Rank
		precise	general	
angel		Physiology	Crops	assistant professor
angel		Fruit nutrition	gardening	assistant professor
angel		soil fertility	soil	Assistant Professor
angel		Plant production	Plant production	Assistant Professor
angel		fruit trees	gardening	Assistant Professor

Goals Cognitive

A- 1Identify field crops and vegetable crops

A- 2Recognition on Categories Vegetarianism Medical

A- 3 Recognition on Machines And equipment Agricultural.

A- 4 Recognition on Apiaries And the houses Plastic And glass .

A- 5 Identify diseases, insects and jungle plants .

.A5- Learn how to manufacture medicines

.A6- Identify the type of soil

for-Objectives Skills Private By program

for1 .– ability in area breeding And improve Plant And production Crops Field And crops Greens And combating Diseases , insects and weeds.

for2 - planning And design And conduct Research Using Methodologies The occasion .

for3 - ability on maintenance Machines And equipment Agricultural and use it In a way optimum in Agriculture

for4 - ability on design And engineering Gardens And create Houses Glass And plastic And its management In a way good.

Methods education And learning

- .The lecture
- .The laboratory
- .Fields and orchards views
- .Summer training

Methods Evaluation

- .Oral tests
- Exams .Daily
- .Practical exams
- Exams .Quarterly
- .Final exams
- Projects .The process

-C Objectives Consciousness And the value .

A1- Storm .Mental

A2- Ability on .Analysis

C3- Ability on solution .Problems

A4- Ability on .Deduction

Methods education And learning

- **1** use the Teaching and learning methods for the academic description of plant production include of lectures , practical lessons, and research projects.
- 2 Inquiry-based learning.
-3 Modern technologies such as presentations and educational videos can also be incorporated to enhance understanding.
- 4 Teamwork and cooperation among students enhances the learning experience and helps students acquire valuable applied skills.

Methods Evaluation

- .Oral tests
- Exams .Daily
- .Practical exams
- Exams .Quarterly
- .Final exams
- Projects .The process

D_ General skills And the transferred qualification (For skills Others related to employability and personal development).

1- . Effective communication: Ability to interact with farmers

2- Ability to work within teams, whether in the fields or on research projects.

3- Ability to analyze agricultural problems (such as water shortages or pests) and find effective solutions.

4- Understand farming techniques, irrigation, fertilization, and pest control.

5- Improving the use of water, soil, and energy to achieve agricultural sustainability.

6- .Knowledge of useful and poisonous medicinal plants

Methods education And learning

- 1 the explanation And clarification .
- 2 Lessons The process in The field . -
3 Reports .
- 4 Projects Graduation For students .

Methods Evaluation

- 1 Tests Theory .
Tests The process -2.
Reports -3.

.11 StructureThe program

Watches Approved		name The decision or The course	code The decision or The course	Academ ic stage
practical	theoretical			
-	2	rights man And democracy	NTU100	Stage The first
-	2	the language English1	NTU101	Stage The first
1	1	principles Computer 1	NTU102	Stage The first
-	2	language Arabic1	NTU103	Stage The first
1	1	sports	NTU104	Stage The first
-	2	language French	NTU107	Stage The first
1	2	count And planning Experiences	TIH101	Stage The first
1	1	Systems energy Renewable	TIH102	Stage The first
1	1	basics soil	TIH103	Stage The first
2	1	Gardening Basics	PPT101	Stage The first
2	1	basics Crops	PPT102	Stage The first
1	1	protection plants	PPT103	Stage The first
1	1	Nurseries And forests	PPT104	Stage The first
1	1	environment plants	PPT105	Stage The first
2	1	production fruit	PPT106	Stage The first
1	1	Physiology plants	PPT107	Stage The first
2	2	production Green	PPT108	Stage The first
1	1	Insects General	PPT109	Stage The first
2	1	Pullers And machines Agricultural	PPT110	The first stage

1	1	agriculture Tissues	PPT111	Stage The first

-	2	the language English2	NTU200	Stage Second
1	1	principles Computer 2	NTU201	Stage Second
-	2	the language Arabic	NTU202	Stage Second
-	2	Crimes system party Resurrection In Iraq	NTU203	Stage Second
-	2	Ethics Profession	NTU204	Stage Second
2	1	production Plants Medical	TIH201	Stage Second
1	1	chemistry Vehicles High school	TIH202	Stage Second
1	1	Farm management	TIH203	Stage Second
2	1	save And drying Plants	PPT201	Stage Second
2	1	illnesses Plants Medical	PPT202	Stage Second
2	1	environment And classification Plants Medical	PPT203	Stage Second
1	1	chemistry membership	PPT204	Stage Second
1	1	plants Decoration Aromatic	PPT205	Stage Second
2	1	manufacturing pharmaceutical	PPT206	Stage Second
2	1	Nurseries And multiply	PPT207	Stage Second
2	1	Insects Plants Medical	PPT208	Stage Second
2	1	feeding plants	PPT209	Stage Second
3	-	project	PPT210	Stage Second

.12 PlanningTo develop Personal

He should that He is Members The Authority The teacher Within the approved staff and according to the ratio of students to the number of faculty members And it must that Be For efficiency role all cover To and there must be ,Curricula sufficient capacity to manage the Institute to accommodate levels of student interaction, guidance, counselling, university and career services and development activities, and interaction with practitioners and professionals as well as .employers

.13 StandardAcceptance situation Systems Related By joining In college or The Institute

It is done following basic criterion in Accepting students Section And that through appearance Their names in Lists Central admission for preparatory school graduates, as well as admission of a certain number of vocational (agricultural) study graduates who chose the institute in Central application form, each according to his/her grade

. 14 most important sources Information on The program

- . Head of Department
- . Department lecturer
- . Technical angel in the department

a plan skills The curriculum

Please situation signal in Squares The interview For outputs Learning Individuality from The program Subject For evaluation

Outputs Learning Required from The program																		
transferable skills(Skills Other Related With ability Employment And development Personal				Objectives Consciousness And the value				Program Skill Objectives				Objectives Cognitive				Basic or optional	name The decision	code The decision	Year/Level
4 d	3 d	2 d	1 d	4 c	3 c	2 c	1 c	4 b	3 b	2 b	1 b	4 A	3 A	2 A	1 A				
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	rights Man and Democracy	NTU100	Stage The first
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	the language English 1	NTU101	
																compulsory	principles Computer1	NTU102	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	basics soil	TIH103	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	basics gardening	PPT101	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	basics Crops	PPT102	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	protection plants	PPT103	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	optional	Nurseries And forests	PPT104	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	optional	environment plants	PPT105	

Please situation signal in Squares The interview For outputs Learning Individuality from The program Subject For evaluation																			
Outputs Learning Required from The program																			
transferable skills(other related skills) With ability Employment And development Personal				Objectives Consciousness And the value				Program Skill Objectives				Objectives Cognitive				Basic or optional	name The decision	code The decision	Year/ Level
4 d	3 d	2 d	1 d	4 c	3 c	2 c	1 c	4 b	3 b	2 b	1 b	4 A	3 A	2 A	1 A				
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	the language English2	NTU201	Phase 2
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	principles Computer3	NTU202	
																compulsory	Ethics Profession	NTU204	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	production Plants Medical	TIH201	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	save And drying Plants	PPT201	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	illnesses Plants Medical	PPT202	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	environment And classification Plants Medical	PPT203	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	compulsory	chemistry membership	PPT204	
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	optional	plants Decoration Aromatic	PPT205	

a description The decision

This course description provides a brief overview · Requiring For the most important features Course and expected learning outcomes from The student Proven to achieve About if He was may Achieve Benefit Maximum from Opportunities Learning Available. It is necessary from Link Among them And between Program description. ;

Technical Institute / Al-Hawija	Educational institution -1
Plant production techniques	/ Scientific Department -2 Center
	Course name-code -3
agricultural	Available forms of-4 attendance
diploma	Chapter - Year -5
Decisions	Total number of study hours-6
2025/27/1	Date of preparation of the -7 description

Course objectives -8

The program aims to graduate qualified technical cadres capable of improving agricultural production through the ability in the field of plant breeding and improvement to produce field crops, vegetable crops, fruit production, resistance to plant diseases and weeds, the ability to manage farms, the ability to extract oils from plants, extract volatile oils from medicinal plants, maintain agricultural machinery and equipment and use them optimally in agriculture, and the ability to design and engineer gardens, build greenhouses, glass and plastic, and .manage them well

.9Outputs The decision And methods education And learning And evaluation

A-Objectives Cognitive

- 1 recognize On How to Preparation The shrine Occasions For cultivation Crops .
- 2 .Learn how to grow crops according to the method of growing each one. A -
3 Identify the crop service operations required to achieve the highest production
.4 Get to know Transformational operations For seeds and crop parts after Harvest .

for- Objectives Skills Private As scheduled .

B1 - He works On Preparation The shrine Occasions For cultivation Crops .

B2 - He does By planting Crops According to Way Agriculture All From her .

B3 - It performs the required crop service operations to achieve the highest production. B - 4 He does With operations Harvest .

10 - Methods education And learning

Lessons theory Intensive, Model Data with films Educational, application practical in The field with all a lecture

11- Methods Evaluation

Commitment And perseverance on the audience, Reports And exams Daily And monthly, exam end the chapter

-CObjectives Consciousness And the value

C- 1Encouragement The student With knowledge Hadith

C- 2 suspense The student To learn And keeping up

Evolution C- 3 education The student How to Look For the future

C- 4development Mind And the feeling Responsibly duty on everyone

12- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Environmental factors	The impact of environmental factors on the production of horticultural crops (weather (factors	1	1
a test	theoretical	Environmental factors	The impact of environmental factors (environmental factors) on the production of .horticultural crops	1	2
a test	theoretical	Reproduction	Methods of propagating .garden plants include: 1 Sexual reproduction 2. Asexual .(vegetative) reproduction	1	3
a test	theoretical	Crop problems	Vegetable crops and their .production problems in Iraq	1	4
a test	theoretical	Environmental factors	Factors affecting the growth of :vegetable crops include Weather factors 2. Soil .1 factors 3. Plant growth .regulators	1	5
a test	theoretical	Methods of seedling propagation	Seedlings and their production their benefits - their effect on - plant growth - acclimatization - or hardening of seedlings .beds	1	6
a test	theoretical	Agricultural operations	Vegetable crop service .operations	1	7
a test	theoretical	Greenhouse conditions	Production of vegetables in protected conditions (protected .(agriculture	1	8
a test	theoretical	Types of fruits and methods of production	.Fruit orchard production	1	9
a test	theoretical	Pruning methods and timing	**Growing and pruning fruit .trees**	1	10
a test	theoretical	Grape breeding and pruning	**Grape production - breeding .and pruning**	1	11
a test	theoretical	Citrus fruits and their production methods	**.Citrus production**	1	12
a test	theoretical	Ornamental plants and their identification	**The importance of ornamental plants and their .botanical divisions**	1	13
a test	theoretical	Parks and gardens .planning	**Basic rules for planning .gardens and parks**	1	14
a test	theoretical	Garden shapes and .systems	**.Garden shapes and systems**	1	15

12- Course structure

Evaluation method	Teaching method	/ Unit name topic	Required learning outcomes	Watches	The week
a test	practical	Olive service and production	Olives - Propagation methods .Service operations -	2	5
a test	practical	Vegetable Crop Service	Learn about some garden green crops	2	6
a test	practical	Vegetable crop propagation	- Methods of propagation flowers and fruits	2	7
a test	practical	Soil preparation and maintenance for horticultural crops	Preparing the soil of the ditch planting some seeds of - horticultural crops	2	8
a test	practical	Field visits to orchards	Visiting nearby gardening stations - Writing student reports	2	9
a test	practical	Learn about nurseries and how to plan them	Planning garden walkways and learning about types of .nurseries	2	10
a test	practical	Plant diseases	Some diseases and insect pests that affect horticultural crops	2	11
a test	practical	Machines and equipment used	Identify the machines and tools used in fruit harvesting .operations	2	12
a test	practical	Storing fruits after harvest	Methods of storing fruits after harvesting - Marketing	2	13
a test	practical	Service operations in gardens	Carrying out some service operations in the institute's gardens	2	14
a test	practical	Visit gardening stations	Discussion of student reports written after visiting the gardening stations	2	15

12- Infrastructure

Gardening Basics	Required textbooks -1
Principles of Horticulture, Dr. Bahram Khorshid Al-Dawoudi, 1987 - College of Agriculture, University .of Salah Al-Din	Main references (sources) -2
-Basant Science, Dr. Salomi, Mr. Hussam Ali Ghaleb, 1981 .College of Agriculture, University of Basra .Fundamentals of Horticulture, Dr. B. Ormond, T. L. Sen, N. S Andrews, 1967 Dar Al-Ma'rifah	A- Recommended books and , references (scientific journals (.reports , etc
https://drive.google.com/file/d/1jeOsYFId1NiCYBrICqYVqrwcqol8cSPa/view	, B - Electronic references Internet sites

13- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical		Identify field crops and .classify field crops	1	1
a test	theoretical		- Soil service operations ,tillage, its importance ,when to perform it .judging good tillage	1	2
a test	theoretical		Smoothing, its - importance, benefits of leveling, adjustment and .dividing the field	1	3
a test	theoretical		Methods of crop cultivation, factors ,affecting each method ,crop service operations ,patching and weeding ,thinning, fertilization .irrigation, pest control	1	4
a test	theoretical		.Sunflower cultivation	1	5
a test	theoretical		.Cotton cultivation	1	6
a test	theoretical		.Yellow corn cultivation	1	7
a test	theoretical		.Rice cultivation	1	8
a test	theoretical		.Sesame cultivation	1	9
a test	theoretical		.Soybean cultivation	1	10
a test	theoretical		Wheat cultivation - origin suitable environmental - .conditions - planting date	1	11
a test	theoretical		Agriculture - Fertilization - Harvest stages - Transformation processes .of the grain industry – Sugar beet cultivation suitable environmental factors, planting date and method, sowing and fertilization	1	12
a test	theoretical		,Irrigation, maturity ,harvesting date conversion processes and factors affecting sucrose .content – Broad bean cultivation suitable environmental factors – most important – varieties – agriculture – cultivation methods	1	13

a test	theoretical		- Weeding - weeding - fertilization - ripening .harvesting - harvesting Lentil and chickpea cultivation – suitable – environmental factors – planting date – hoeing – weeding	1	14
a test	theoretical		- Fertilization - ripening .harvesting - harvesting .Agricultural tools	1	15

13Course structure					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	The importance of diagnosing field crop seeds - identifying the structure of the seed and the importance of its parts - training students to diagnose field crop seeds and present the results in .the form of a report	The importance of diagnosing field crop seeds - identifying the structure of the seed and - the importance of its parts training students to diagnose field crop seeds and present the results in the form of a .report	2	1
a test	practical	Students carry out soil preparation operations on the farm (ploughing and - (smoothing identifying the machines and tools used for this purpose and the characteristics of	Students carry out soil preparation operations on the farm (ploughing and smoothing) - identifying the machines and tools used for this purpose and the .characteristics of each one	2	2

		.each one			
a test	practical	Students carry out soil preparation operations on the farm - identifying the machines and tools used for this purpose and the characteristics of .each one	Students carry out soil preparation operations on the farm - identifying the machines and tools used for this purpose and the .characteristics of each one	2	3
a test	practical	Students carry out productive cultivation of barley crop on the farm .using seedlings	Students carry out productive cultivation of barley crop on .the farm using seedlings	2	4
a test	practical	Students watch field crops grown in other ways in the nursery/on Maroz/Ntra...and the characteristics of each one, and students record their observations and present them in the .form of a report	Students watch field crops grown in other ways in the nursery/on Maroz/Ntra...and the characteristics of each one, and students record their observations and present .them in the form of a report	2	5
a test	practical	Students conduct germination tests on seeds and explain the importance of conducting these tests and the conditions that must be followed when .implementing them	Students conduct germination tests on seeds and explain the importance of conducting these tests and the conditions that must be followed when .implementing them	2	6
a test	practical	Students perform field crop service operations - perform patching and fertilization operations according to the needs of field crops - irrigate field .crops	Students perform field crop service operations - perform patching and fertilization operations according to the needs of field crops - irrigate .field crops	2	7
a test	practical	Students fertilize the .crops	.Students fertilize the crops	2	8
a test	practical	Students combat ,weeds by weeding hoeing or spraying .with pesticides	Students combat weeds by weeding, hoeing or spraying .with pesticides	2	9
a test	practical	Training students to plan and design agricultural courses that suit the country’s regions and different environmental .conditions	Training students to plan and design agricultural courses that suit the country’s regions and different environmental .conditions	2	10

a test	practical	Showing scientific films and slides related to methods and techniques of .field crop production	Showing scientific films and slides related to methods and techniques of field crop .production	2	11
a test	practical	Training students to use devices to measure the quality of the produce Estimating oil) ,percentage estimating protein ,percentage estimating moisture .(percentage	Training students to use devices to measure the quality of the produce ,Estimating oil percentage) estimating protein percentage, estimating .(moisture percentage	2	12
a test	practical	Training students on methods of examining and ,grading crop seeds the devices and tools used for this purpose, and the characteristics of .each	Training students on methods of examining and grading crop seeds, the devices and ,tools used for this purpose .and the characteristics of each	2	13
a test	practical	Observing and diagnosing the growth of existing winter field crops in .the field	Observing and diagnosing the growth of existing winter .field crops in the field	2	14
a test	practical	Discussing the students' reports submitted by them on the various activities and works they did – watching films and field .models	'Discussing the students reports submitted by them on the various activities and works they did – watching .films and field models	2	15

13- **Infrastructure**	
Principles of Horticulture, Dr. Bahram Khorshid Al-Dawoudi, 1987 - College of Agriculture, University of Salah .Al-Din	Required textbooks -1
-Basant Science, Dr. Salomi, Mr. Hussam Ali Ghaleb, 1981 .College of Agriculture, University of Basra	Main references (sources) -2
.Fundamentals of Horticulture, Dr. B. Ormond, T. L. Sen, N S. Andrews, 1967 - Dar Al-Ma'rifah	A- Recommended books and references (.scientific journals, reports, etc)
	B - Electronic references, Internet sites

14- **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Identify the field crop	Identify field crops and classify field crops.	1	1
a test	theoretical	Soil service operations	- Soil service operations ,tillage, its importance ,when to perform it judging good tillage.	1	2
a test	theoretical	,Benefits of leveling adjusting and dividing the field	- Smoothing, its importance, benefits of leveling, adjustment and dividing the field.	1	3
a test	theoretical	Crop cultivation methods	Methods of crop cultivation, factors ,affecting each method ,crop service operations ,patching and weeding ,thinning, fertilization irrigation, pest control.	1	4
a test	theoretical	Sunflower cultivation methods	Sunflower cultivation.	1	5
a test	theoretical	Cotton propagation and cultivation	Cotton cultivation.	1	6
a test	theoretical	Learn about corn varieties and how to grow them	Yellow corn cultivation.	1	7
a test	theoretical	Rice varieties and their reproduction	Rice cultivation.	1	8
a test	theoretical	Benefits of sesame and how to grow it	Sesame cultivation.	1	9
a test	theoretical	Industrial benefits and varieties used in its cultivation	Soybean cultivation.	1	10
a test	theoretical	Environmental conditions suitable for wheat	Wheat cultivation - origin suitable environmental - conditions - planting date.	1	11

a test	theoretical	- Harvest stages transformation processes of the grain industry.	Agriculture - Fertilization - Harvest stages - Transformation processes of the grain industry.	1	12
a test	theoretical	– Sugar beet crop suitable environmental factors, planting date and method	– Sugar beet cultivation suitable environmental factors, planting date and method, sowing and fertilization	1	13
a test	theoretical	Conversion processes and factors affecting sucrose content	,Irrigation, maturity ,harvesting date conversion processes and factors affecting sucrose content.	1	14
a test	theoretical	- Broad bean crop suitable environmental factors - most important varieties	– Broad bean cultivation suitable environmental factors – most important – varieties – agriculture cultivation methods–	1	15

Course structure -14					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Training students to diagnose field crop seeds and present the results in the form of a report	The importance of - diagnosing field crop seeds identifying the structure of the seed and the importance of its parts - training students to diagnose field crop seeds and present the results in the form of a report.	2	1
a test	practical	Students carry out soil preparation operations on the farm (ploughing and (smoothing	Students carry out soil preparation operations on the farm (ploughing and smoothing) - identifying the machines and tools used for this purpose and the characteristics of each one.	2	2
a test	practical	Soil preparation on the farm - learning about the machines and tools used	Students carry out soil preparation operations on the farm - identifying the machines and tools used for this purpose and the characteristics of each one.	2	3
a test	practical	Students watching field crops being grown	Students carry out productive cultivation of barley crop on the farm using seedlings.	2	4
a test	practical	Students conduct germination tests on seeds.	Students watch field crops grown in other ways in the nursery/on Maroz/Ntra...and the characteristics of each one, and students record their observations and present them in the form of a report.	2	5
a test	practical	crop service – patching and grafting	Students conduct germination tests on seeds and explain the importance of conducting these tests and the conditions that must be followed when implementing them.	2	6
a test	practical	Students fertilize the crops .	Students perform field crop service operations - perform patching and fertilization operations according to the needs of field crops - irrigate field crops.	2	7
a test	practical	Controlling weeds by weeding, hoeing or spraying with pesticides.	Students fertilize the crops.	2	8
a test	practical	Planning and designing agricultural cycles that suit the country’s regions and different environmental conditions.	Students combat weeds by weeding, hoeing or spraying with pesticides.	2	9
a test	practical	Showing scientific films and slides related to field crop production methods.	Training students to plan and design agricultural courses that suit the country’s regions and different environmental conditions.	2	10
a test	practical	Training students to use devices to measure the quality of the produce	Showing scientific films and slides related to methods and techniques of field crop production.	2	11
a test	practical	,Oil content estimation protein content estimation	Training students to use devices to measure the	2	12

			quality of the produce		
a test	practical	Methods of examining and grading crop seeds	(,Estimating oil percentage estimating protein percentage, estimating moisture percentage).	2	13
a test	practical	Monitoring and diagnosing winter field crop growth	Training students on methods of examining and grading crop seeds, the devices and ,tools used for this purpose and the characteristics of each.	2	14
a test	practical	Seed germination tests, the importance of conducting these tests, and the conditions that must be followed	Observing and diagnosing the growth of existing winter field crops in the field.	2	15

14- **Infrastructure**	
Crop Basics 1. Plant Production Book - Al-Qassam - Dr. Abdul-Ridha .Jawad - 1989 - Higher Education Press 2. Field Crops Technology Book, Al-Saeed - Dr. Muhammad - Abdul Issa and Ghassan Abdul Jalil Al-Mudarris - 1989 .Higher Education Press - Mosul	Required textbooks -1
- Field Crop Production in Iraq Book - Dr. Kamel Saeed Jawad - Mr. Irfan Rashid - 1981 - Ministry of Higher .Education and Scientific Research - .Production of forage and pasture crops - Al-Ani - Dr Tariq Ali - Mr. Irfan Rashid - 1981 - Dar Al-Taqni for .Printing and Publishing - .Fundamentals of Field Crop Production - Al-Saeedi - Dr Muhammad Abd 1978 - Dar Al-Hurriya for Printing and .Publishing	Main references (sources) -2
	A- Recommended books and references (.scientific journals, reports, etc)
https://fagr.stafpu.bu.edu.eg/Agronomy/2331/crs-6377/Agronomy.pdf	B - Electronic references, Internet sites

15- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Branches of soil science	Learn about soil science, its ,branches, its importance and the purpose of soil analysis.	1	1
a test	theoretical		Some morphological characteristics of soil.	1	2
a test	theoretical	Texture and apparent density	Physical properties of soil and their relationship to plant growth.	1	3
a test	theoretical	Water conductivity and	Physical properties of soil	1	4

		soil composition	and their relationship to plant growth.		
a test	theoretical	Saturation, flow rate and true density	Physical properties of soil and their relationship to plant growth.	1	5
a test	theoretical	Types of water in soil	Soil water.	1	6
a test	theoretical	Factors affecting soil temperature	Soil temperature.	1	7
a test	theoretical	What is humus, its functions and soil ?colloids	Organic colloids.	1	8
a test	theoretical	Types of silicate minerals	Clay minerals.	1	9
a test	theoretical	Exchangeable capacitance.	Exchangeable capacitance.	1	10
a test	theoretical	Electrical conductivity of soilpc.	Electrical conductivity of soilpc.	1	11
a test	theoretical	Identifying types of salts and saline soils	Soil salinity.	1	12
a test	theoretical	The role of nutrients in plants	Nutrients and their importance to plants.	1	13
a test	theoretical	Lime and gypsum for soil field observation.	Lime and gypsum for soil.	1	14
a test	theoretical	Laboratory estimation methods.	Lime and gypsum for soil.	1	15

Course structure -15					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Watch the softness of the soil.	Watch the softness of the soil.	1	1
a test	practical	Watch the softness of the soil.	Watch the softness of the soil.	1	2
a test	practical	Collection of soil samples.	Collection of soil samples.	1	3
a test	practical	Preparing samples and estimating the humidity percentage.	Preparing samples and estimating the humidity percentage.	1	4
a test	practical	Estimation of apparent and true density and porosity.	Estimation of apparent and true density and porosity.	1	5
a test	practical	Soil texture assessment .	Soil texture assessment.	1	6
a test	practical	Preparing the saturated dough and soil suspension and determining the saturation percentage.	Preparing the saturated dough and soil suspension and determining the saturation percentage.	1	7
a test	practical	Measurement of soil reaction and electrical conductivity of soil extract.	Measurement of soil reaction and electrical conductivity of soil extract.	1	8

a test	practical	Qualitative detection of ions.	Qualitative detection of ions.	1	9
a test	practical	Estimation of cations.	Estimation of positive ions.	1	10
a test	practical	Estimation of anions.	Estimation of negative ions.	1	11
a test	practical	Soil humus assessment	Estimation of organic matter in soil.	1	12
a test	practical	Estimation of total carbonates in soil.	Estimation of total carbonates in soil.	1	13
a test	practical	Estimation of gypsum in soil.	Estimation of gypsum in soil.	1	14
a test	practical	Methods for measuring cation exchange capacity andSAR.	Estimation of cation exchange capacity and exchangeable sodium ratio in soil.	1	15

15- **Infrastructure**	
Soil Basics ,**Principles of Soil Science** , Dr. Abdullah Najm Al-Ani, 1980 College of Agriculture, University of Baghdad	Required textbooks -1
- ,Fundamentals of Soil Science, Dr. Abdul Fattah Al-Ani Technical Education Authority ,1984 -	Main references (sources) -2
,Soil Fertility and Fertilization, Dr. Kamel Saeed Jawad Higher Education Press ,1988 4 Soil Reclamation and Improvement , Dr. Shafiq Ibrahim Abdul Aal, 1981, University of Sulaymaniyah	A- Recommended books and references (.scientific journals, reports, etc)
Soil chemical analysis – m – l – Jackson, new delhi , 1973 5 Text book of soil chemical analysis. p . r . Hesse , New York , 1971 https://fagr.stafpu.bu.edu.eg/Agronomy/2331/crs-6377/Agronomy.pdf	B - Electronic references, Internet sites

16- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	The harm and damage of insects and their benefits.	The harms and benefits of insects.	1	1
a test	theoretical	The spread of insects in nature.	Factors for the success of insects and their spread in nature.	1	2
a test	theoretical	Insect reproduction	Insect reproduction and	1	3

		and growth.	growth.		
a test	theoretical	Types of nutrition in insects.	Types of nutrition in insects .	1	4
a test	theoretical	Environments in which insects live.	Environments in which insects live.	1	5
a test	theoretical	Non-insect animal pests, order Acaridae.	,Non-insect animal pests order Acaridae.	1	6
a test	theoretical	Non-insect animal pests, order Rodentia.	,Non-insect animal pests order Rodentia.	1	7
a test	theoretical	Non-insect animal pests, order of birds and rodents.	,Non-insect animal pests order of birds and rodents.	1	8
a test	theoretical	Economic importance of diseases	The economic importance of plant diseases and the losses resulting from them.	1	9
a test	theoretical	Some definitions in plant pathology.	Some definitions in plant pathology.	1	10
a test	theoretical	The way the cause enters.	The way in which the pathogen enters plant tissue .	1	11
a test	theoretical	Methods of transmission and spread of plant diseases.	Methods of transmission and spread of plant diseases .	1	12
a test	theoretical	Factors predisposing to plant diseases.	Factors predisposing to plant diseases.	1	13
a test	theoretical	Fungi, their ,characteristics ,methods of nutrition methods of reproduction and division.	,Fungi, their characteristics ,methods of nutrition methods of reproduction and division.	1	14
a test	theoretical	Nematodes as plant pathogens - Nematode body structure - Type of damage caused	Nematodes as plant pathogens - Nematode body structure	1	15

16- **Course Structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	External appearance of insects	- External appearance of insects	1	1
a test	practical	- The eyes.	Insect eyes	1	2
a test	practical	Mouth parts and their modifications	Mouth parts and their modifications - thorax in insects leg appendages and their - modifications - wings and their modifications.	1	3
a test	practical	The abdomen in insects - their appendages.	The abdomen in insects - their appendages.	1	4
a test	practical	Types of larvae and pupae.	- Transformation in insects types of larvae and pupae.	1	5
a test	practical	Principles of insect classification.	Principles of insect classification, their positions in the animal kingdom, the most important animal phyla and their characteristics.	1	6
a test	practical	Dream rank - general features - external appearance - the most important factors harmful to plants.	- Dream rank - general features external appearance - the most important factors harmful to plants.	1	7
a test	practical	Rodents - external appearance - species spread in Iraq.	- Rodents - external appearance species spread in Iraq.	1	8
a test	practical	Birds	Birds - Species harmful to agricultural crops - Species spread in Iraq.	1	9
a test	practical	Some laboratory - instructions - equipment and tools - light microscope practical application on the equipment and its maintenance.	- Some laboratory instructions equipment and tools - light microscope - practical application on the equipment and its maintenance.	1	10
a test	practical	Types of culture media - preparing them - - sterilizing the media how to put them in dishes.	- Types of culture media preparing them - sterilizing the media - how to put them in dishes.	1	11
a test	practical	Isolation of pathogens from plant parts, seeds and soil.	Isolation of pathogens from plant parts, seeds and soil.	1	12
a test	practical	Examine the isolation results and diagnose the causes.	Examine the isolation results and diagnose the causes.	1	13
a test	practical	Conducting a pest control operation for one of the parts spread throughout the institute diagnosing the - disease and determining the	Conducting a pest control operation for one of the parts - spread throughout the institute diagnosing the disease and determining the appropriate pesticide.	1	14

		appropriate pesticide.			
a test	practical	Diseases caused by worms (root knot ,disease in vegetables slow decay of citrus fruits, and wheat (warts.	Diseases caused by worms (root knot disease in vegetables, slow decay of citrus fruits, and wheat (warts.	1	15

16 **Infrastructure**	
Plant protection - Field Crop Pests - Kamel Salman Jabr - Imad Ahmed Mahmoud Ministry of Education Press - 1990	Required textbooks -1
Plant Diseases - Majeed Mutab Diwan - Dr. Abdul Rahman Hassan Yahya - 1984 - Dar Al-Taqni	Main references (sources) -2
	A- Recommended books and references (.Scientific journals, reports, etc)
https://agriculture.uodiyala.edu.iq/wp-content/uploads/2023/09/%D9%83%D9%84-%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA-%D8%A7%D8%B3%D8%B3-%D9%88%D9%82%D8%A7%D9%8A%D8%A9-%D8%AF.-%D8%AD%D8%B3%D9%8A%D9%86-%D8%B9%D9%84%D9%8A-%D9%85%D8%B7%D9%86%D9%8A-%D9%82%D8%B3%D9%85-%D8%A7%D9%84%D8%AA%D8%B1%D8%A8%D8%A9-1.pdf	B - Electronic references, Internet sites

17- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Economic importance of forests	- Forests - Definition - Relationship with humans - Forestry - Arboriculture Initiative .The tree - the shrub-	1	1
a test	theoretical	Geographical distribution of forests	Geographical distribution of forests - Distribution of forests and reasons for their spread - Tropical and subtropical forests .And its sections	1	2
a test	theoretical	Forests in Iraq - their types , their presence and the type of trees planted in them	Forests in Iraq - their types their division according to - density - division of forests according to the types present in their composition .artificial forests -	1	3
a test	theoretical	Different classifications of forest trees according to genera	Different classifications of forest trees according to ,genera, species, source age, and propagation methods according to the .purpose of their spread	1	4

a test	theoretical	Benefits of protective production forests	,The benefits of productive protective, touristic and .social forests	1	5
a test	theoretical	Vegetation and its types - forest	- Vegetation and its types forest - maki - tundra - vana and steppe - desert - stages - of tree development	1	6
a test	theoretical	- Seedlings - Juveniles Column Stage - Young Shrub	- Seedlings - juveniles column stage - young shrub mature stage - super - .mature stage (seniors)	1	7
a test	theoretical	Forest planning and artificial regeneration	Forest planning, artificial regeneration and planting systems - Factors affecting forest planning - Forms of - planning and planting Remote sensing - Aerial .photography	1	8
a test	theoretical	Pure and mixed forests	- Pure and mixed forests their structure and advantages - their disadvantages - the rules for their establishment - the density of the crown - the .forms of mixing Pruning and thinning of forest trees - its types and .importance	1	9
a test	theoretical	– Forest conservation its importance	Forest conservation - its importance - stages of its development - biological ,factors (humans, animals (diseases .(Insects, jungle	1	10
a test	theoretical	Abiotic factors, their importance and impact on forests	Abiotic factors, their importance and impact on forests (gases, fires, soil (and climate factors Forest environment, factors affecting it, climate and soil - factors - topography .biology	1	11
a test	theoretical	Forest Measurements	Forest measurements - tree height, diameter and .volume, growth and age	1	12
a test	theoretical	Forestry, its importance and stages of logging	Forest harvesting, its importance and stages of tree cutting, cleaning of trunks, transportation and .hauling of timber	1	13
a test	theoretical	- Wood Technology General Characteristics	Wood technology - general ,characteristics, defects ,degree of inconsistency straightness and lateral .growth	1	14
a test	theoretical	Economic importance of forests. Timber nodes	The economic importance - of forests - definition - relationship with humans forest development science	1	15

			arboriculture - initiative - .The tree - the shrub- .Annual rings, wood nodes		

17Course structure					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Identifying forest trees	,Identifying forest trees Arabic and scientific names, physical characteristics and how to diagnose - practical exercise to observe different types of forest trees.	1	1
a test	practical	,Origin of reproduction collection and extraction of seeds	,Origin of reproduction collection and extraction of ,seeds, storage methods most important machines And the equipment used in collecting seeds.	1	2
a test	practical	Forest nurseries, their types and benefits	Forest nurseries, their types and benefits, preparing and ,planning a seed bed individualization, and seed dispersal methods.	1	3
a test	practical	Service operations and preparation of individual burial sites	Service operations and preparation of the ,individualization beds different individualization ,media, moving seedlings watering and weeding.	1	4
a test	practical	Individualization ,process, its procedure points to consider	The process of individualization, its procedure, the points that must be taken into consideration when performing the process, and the time and methods of individualization.	1	5
a test	practical	Scientific visit to nearby nurseries and	A scientific visit to the nurseries and forests near	1	6

		forests	the area and preparing models.		
a test	practical	Forest planning and – planting methods natural and artificial regeneration	Forest planning and planting methods – natural ,and artificial regeneration	1	7
a test	practical	Pruning and thinning operations, definition	Pruning and thinning operations, definition, types slides and films -.	1	8
a test	practical	,Forest fire, its causes ,types, combating it preventive measures	,Forest fire, its causes ,types, and combating it	1	9
a test	practical	Trees' sensitivity to ,toxic gases and fumes needle trees	Sensitivity of trees to toxic ,gases and fumes coniferous, deciduous and - broadleaf trees Classification of trees according to their tolerance to freezing	1	10
a test	practical	,Forest measurements ,height, diameter growth, age	,Forest measurements ,height, diameter, growth age, devices and materials used in measurement.	1	11
a test	practical	Tree felling, felling stages	,Tree felling, felling stages dropping and cleaning operations.	1	12
a test	practical	Forest products and industries	Forest products and industries, wood, wood-based panels, industrial panels, nylon and plastic .industries, etc	1	13
a test	practical	Scientific films about the importance of forests and their spread .	Scientific films about the importance of forests and their spread.	1	14
a test	practical	Wood Technology and Wood Industries	Wood technology and wood industries, wood processing.	1	15

17-**Infrastructure**	
Nurseries and forests The methodological book / General Forests - Younis Muhammad Qasim Al-Alusi - Ali Muhyi / Ministry of Higher .Education and Scientific Research 1989	Required textbooks -1
Fundamentals of Forest Development, Dr. Yavuz Shafiq Abdullah - Ministry of Higher Education and Scientific Research - College of Agriculture and Forestry, University of .Mosul 1980	Main references (sources) -2
	A- Recommended books and references (.Scientific journals, reports, etc)
https://fac.umc.edu.dz/snv/faculte/becol/2022/Techniques%20de%20p%C3%A9pini%C3%A8res%202021%202022.pdf	,B - Electronic references Internet sites

18- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	,Definition of ecology its historical development and its divisions.	Definition of ecology, its historical development and its divisions.	1	1
a test	theoretical	:Energy (radiation) ,visible radiation ,infrared rays ultraviolet rays.	Energy (radiation): visible ,radiation, infrared rays ultraviolet rays.	1	2
a test	theoretical	Quality of light (light intensity), length of photoperiod.	Quality of light (light intensity), length of photoperiod.	1	3
a test	theoretical	The importance of light for plants in the process of photosynthesis and the effect of light on plants .	The importance of light for plants in the process of photosynthesis and the effect of light on plants.	1	4
a test	theoretical	Temperature (heat flow, changes in (temperature.	,Temperature (heat flow (changes in temperature.	1	5
a test	theoretical	Thermal inversion, the preferred temperature of a plant.	Thermal inversion, the preferred temperature of a plant.	1	6
a test	theoretical	Maximum, minimum and optimum temperature.	Maximum, minimum and optimum temperature.	1	7
a test	theoretical	Temperature and its actual value for the plant.	Temperature and its actual value for the plant.	1	8
a test	theoretical	Atmospheric pressure factors affecting) atmospheric pressure	Atmospheric pressure factors affecting) atmospheric pressure	1	9

		(distribution.	(distribution.		
a test	theoretical	Wind (wind movement, types of ,wind, air masses effect of wind on (plants.	,Wind (wind movement ,types of wind, air masses (effect of wind on plants.	1	10
a test	theoretical	The effect of wind on plants.	The effect of wind on plants.	1	11
a test	theoretical	Water (the amount of water on the Earth's surface and its cycle in (nature.	Water (the amount of water on the Earth's surface and (its cycle in nature.	1	12
a test	theoretical	,Air humidity ,evaporation, clouds fog and frost.	,Air humidity, evaporation clouds, fog and frost.	1	13
a test	theoretical	Dew, rain and rainfall distribution.	Dew, rain and rainfall distribution.	1	14
a test	theoretical	The water factor and its relationship to plants and the factors that affect water balance and plant water condensation.	The water factor and its relationship to plants and the factors that affect water balance and plant water condensation.	1	15

18- **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Environmental devices sampling devices) ((nets)	Environmental devices (sampling devices (nets))	1	1
a test	practical	soil properties measurement	soil properties measurement	1	2
a test	practical	Microbiological contamination of water	Microbiological contamination of water	1	3
a test	practical	Pollution causes	Pollution causes	1	4
a test	practical	Methods of testing .contaminated water	Methods of testing .contaminated water	1	5
a test	practical	,Community, density .frequency	,Community, density .frequency	1	6
a test	practical	Estimation of dissolved oxygen in .water	Estimation of dissolved .oxygen in water	1	7
a test	practical	Definition of water hardness, and what are the sources of ?hardness	Water hardness, sources of hardness	1	8
a test	practical	Forests and their construction (artificial ,(and natural distribution of living things in the forest	Forests (artificial and natural), distribution of living organisms in the forest	1	9

a test	practical	Waste of living organisms added to the soil	Waste of living organisms added to the soil	1	10
a test	practical	Factors affecting the decomposition of organic matter in soil	Factors affecting the decomposition of organic matter in soil	1	11
a test	practical	Preparation of standard and normative solutions	Preparation of standard and normative solutions	1	12
a test	practical	Fires, types, plant adaptations to fires	Fires, types, plant adaptations to fires	1	13
a test	practical	Types of plant environments in Iraq	Types of plant environments in Iraq	1	14
a test	practical	Environmental devices sampling devices) ((nets	Environmental devices (sampling devices (nets))	1	15

18- **Infrastructure**	
plant environment Environmental Science for Agricultural College .Students, Dr. Hekmat Abbas, Dr. Raad Hashem Bakr	Required textbooks -1
,Principles of Ecology, Brij Kobal, A. - Douaj Translated by - Dr. Rizan Mohammed Saleh, Mr. Bashir Ali Bashir, University of Salahuddin - College of .Science, 1990	Main references (sources) -2
.Environment and the Quality of Our Environment, Dr - Qaisar Majeed and Taher Mohammed Saleh University of Baghdad	A- Books and references recommended .by scientific journals, reports, etc
	B - Electronic references, Internet sites

19- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	The most important problems of fruit .production in Iraq	Geographical distribution of fruits in Iraq and the world - the most important problems of fruit production in Iraq.	1	1
a test	theoretical	- Citrus (Native Home (Nutritional Value	Citrus fruits (original - habitat - nutritional value reproduction - most important varieties - most	1	2

			- important citrus divisions (suitable environment.		
a test	theoretical	Overview (Native – Homeland (Nutritional Value	Palm trees (original habitat - nutritional value - reproduction - most - important varieties (suitable environment	1	3
a test	theoretical	Olive (original country - nutritional value - (reproduction	- Olives (original country - nutritional value reproduction - most - important varieties (suitable environment	1	4
a test	theoretical	,Description of banana buckthorn and loquat - original country) (nutritional value	Banana, jujube and loquat - original habitat) - nutritional value reproduction - most - important varieties (suitable environment.	1	5
a test	theoretical	Geographical distribution of fruits in Iraq	Geographical distribution of fruits in Iraq and the world - the most important problems of fruit production in Iraq.	1	6
a test	theoretical	- Grapes (Native Home (Nutritional Value	- Grapes (original habitat - nutritional value reproduction - most important varieties - suitable (environment	1	7
a test	theoretical	Apple and pear native home	,Apple and pear: origin ,nutritional value reproduction, most ,important varieties suitable environment	1	8
a test	theoretical	Quince (native home)	- Quince (original habitat - nutritional value reproduction - most - important varieties .(suitable environment	1	9
a test	theoretical	- Fig (original home nutritional value	- Figs (original habitat - nutritional value reproduction - most - important varieties (suitable environment	1	10
a test	theoretical	Peaches, apricots and pears (native)	Peaches, apricots and pears - original habitat) - nutritional value reproduction - most - important varieties (suitable environment	1	11
a test	theoretical	Pomegranate and persimmon (original country - nutritional (value	Pomegranate and persimmon (original habitat - nutritional value - reproduction - most - important varieties (suitable environment.	1	12
a test	theoretical	Pistachios, walnuts and pecans native to the country - nutritional	Pistachios, walnuts and - pecans: original habitat - nutritional value	1	13

		value	reproduction - most - important varieties suitable environment).		
a test	theoretical	Modern trends in fruit production	Modern trends in fruit production	1	14
a test	theoretical	The importance of hormones and their .areas of use	The importance of hormones and their areas .of use	1	15

19- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Fruit Tree Service	Fruit tree service (weeding and manual weeding – around a group of trees raising and pruning a (number of trees.	2	1
a test	practical	And weeding	View the types of citrus fruits available and distinguish between them.	2	2
a test	practical	And prepare a suitable bed or anvils for .planting it	Sexual reproduction in ,citrus (extracting seeds cleaning them, and preparing a suitable bed or anvils for planting them-	2	3
a test	practical	Identify the most - important citrus roots .used in propagation	Planting seeds inside the wooden vine) - Identifying the most important citrus rootstocks used in propagation.	2	4
a test	practical	Morphological description of date palm	Morphological description of the date palm (root - system - stem - trunk - (leaves - flowers identification of cultivated varieties and differentiation between them.	2	5
a test	practical	Practicing the correct process of removing the seedlings in order to prepare them for .planting	Vegetative propagation in palm trees - uprooting and preparing seedlings for planting - identifying good seedlings - practicing the correct uprooting of seedlings for the purpose of preparing them for planting .	2	6
a test	practical	Identifying the green - mass of the olive tree	Identify the green group of the olive tree - Identify the	2	7

		Identifying the necessary service operations	necessary service ,operations (irrigation fertilization, thinning and pruning) - Identify the methods of harvesting olives		
a test	practical	Using mind for - propagation Distinguishing between types of mind Preparing suitable - beds for planting	Olive propagation (sexual (and vegetative propagation Using cuttings for - - propagation Distinguishing between - types of cuttings Preparing suitable beds for planting.	2	8
a test	practical	,Watching banana jujube and loquat trees learning how to - propagate them	Watching banana, jujube and loquat trees - learning about their methods of reproduction and learning about the most important tree maintenance operations .	2	9
a test	practical	Grapes according to the methods of cultivation and other important service operations	The most important methods of grape cultivation - pruning grape trees according to cultivation methods and other important service operations.	2	10
a test	practical	Apple, pear and quince trees and learn about the most important service operations for these trees	Watching apple, pear and quince trees and learning about the most important service operations for these trees.	2	11
a test	practical	Fig trees and learn about the most important service operations for these trees	Watching fig trees and learning about the most important service operations for these trees.	2	12
a test	practical	,Improve the yield ,including thinning .shaving and cutting	The process of improving ,the crop includes thinning shaving and cutting.	2	13
a test	practical	Study of the nature of pregnancy in different fruit trees	Study of the nature of pregnancy in different fruit trees.	2	14
a test	practical	Scientific visit to nearby gardening .stations or orchards Harvesting, sorting and .packing operations	Scientific visit to nearby gardening stations or ,orchards. Harvesting sorting and packing .operations	2	15

19- **Infrastructure**	
Fruit production Evergreen Fruit (bound), Harb Rashid - Mansour Naseh .Al-Rawi, Dar Al-Taqni	Required textbooks -1

Deciduous Fruit, Alaa Abdel Razzaq - Maged Abdel Wahab - Ahmed Abu Saad, 1990 Ministry of Higher Education .Press	Main references (sources) -2
.Viticulture, Dr. Ibrahim Hassan, 1982, Mosul	A- Recommended books and references (.scientific journals, reports, etc)
https://uomosul.edu.iq/agriculture/wp-content/uploads/sites/11/2023/09/%D8%A7%D9%86%D8%AA%D8%A7%D8%AC-%D9%81%D8%A7%D9%83%D9%87% pdf	B - Electronic references, Internet sites

20- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Definition and terminology of plant physiology	Definition and terminology of plant physiology	1	1
a test	theoretical	Plant and Cell Engineering	Plant and Cell Engineering	1	2
a test	theoretical	Processes within the plant such as the transport and movement of water .and solutes	Transport and movement of water and solute	1	3
a test	theoretical	:Plant water balance ,water in the soil water absorption by the roots, water transported through tracheids and xylem	:Plant water balance water in the soil, water ,absorption by the roots water transported through tracheids and xylem	1	4
a test	theoretical	:Enzymes :Classification Factors affecting enzyme activity	:Enzymes: Classification Factors affecting enzyme activity	1	5
a test	theoretical	:Carbohydrates Classification: Starch Cellulose .	:Carbohydrates . Classification: Starch Cellulose	1	6
a test	theoretical	Photosynthesis: light reaction, carbon ,reaction physiological and ecological .considerations	Photosynthesis: light ,reaction, carbon reaction physiological and .ecological considerations	1	7
a test	theoretical	Respiration and fat metabolism	Respiration and fat metabolism	1	8
a test	theoretical	Growth, development :and differentiation Plant growth analysis	Growth, development and differentiation: Plant growth analysis	1	9
a test	theoretical	,Embryogenesis ,meristematic canals ,plant development root and shoot . development	,Embryogenesis ,meristematic canals plant development, root . and shoot development	1	10

a test	theoretical	Hormones: Auxins	Hormones: Auxins	1	11
a test	theoretical	Gibberellins and cytokines	Gibberellins and cytokines	1	12
a test	theoretical	control of flowering	control of flowering	1	13
a test	theoretical	Seed and twig dormancy	Seed and twig dormancy	1	14
a test	theoretical	Abscisic acidABA	Abscisic acidABA	1	15

20- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Demonstration of the phenomenon of osmosis in potato tubers	Demonstration of the phenomenon of osmosis in potato tubers	1	1
a test	practical	Plasmolysis and osmotic potential	Plasmolysis and osmotic potential	1	2
a test	practical	Study of the distribution of stomata on both sides of the leaf	Study of the distribution of stomata on both sides of the leaf	1	3
a test	practical	Measuring the transpiration rate of a healthy plant (lysimeter method)	Measuring the transpiration rate of a healthy plant (lysimeter method)	1	4
a test	practical	Water and Mineral Transport Demonstration	Water and Mineral Transport Demonstration	1	5
a test	practical	Determination of the rate of photosynthesis by gravimetric method	Determination of the rate of photosynthesis by gravimetric method	1	6
a test	practical	Effect of light intensity on photosynthesis rate	Effect of light intensity on photosynthesis rate	1	7
a test	practical	Determination of aerobic respiration rate using a sphygmomanometer	Determination of aerobic respiration rate using a sphygmomanometer	1	8
a test	practical	Estimation of respiratory rate by mass loss	Estimation of respiratory rate by mass loss	1	9
a test	practical	Detection of respiratory enzyme formation in plant tissues	Detection of respiratory enzyme formation in plant tissues	1	10
a test	practical	Extraction and action of invertase enzyme	Extraction and action of invertase enzyme	1	11
a test	practical	Isolation and screening of protein from plant materials	Isolation and screening of protein from plant materials	1	12
a test	practical	indele acetic acid on the growth ofcoleoptile	indele acetic acid on the growth ofcoleoptile Avena	1	13

		Avena			
a test	practical	Effect of cytokinin on bean leaf expansion	Effect of cytokinin on bean leaf expansion	1	14
a test	practical	Effect of seed coat on germination	Effect of seed coat on germination	1	15

20- **Infrastructure**	
Plant weapon .Plant Physiology (Part One): Dr. Abdul Hadi Jawad and Dr-Abdul Azim Kazim. / Ministry of Higher Education and Scientific Research - University of Baghdad Plant Physiology (Part Two): Dr. Abdul Azim Kazim-Muhammad and Dr. Abdul Hadi Plant Physiology (Part Three): Dr. Abdul Azim Kazim-Muhammad Z Ministry of Higher Education and Scientific Research	Required textbooks -1
.Plant Physiology. Robert M. DeKlin, Francis H. Z. Zeitham-Translated by Dr. Muhammad Mahmoud, Abdul Hadi .Khader / Arab Publishing Group 1985 ,Practical Plant Physiology, Dr. Hussein Ali Al-Saadi - Abdullah Hamad Al-Moussawi, Ministry of Higher .Education and Scientific Research - University of Basra	Main references (sources) -2
-plant physiology. Frank B. Salisbury: Cleon Ross. Eastern Economy Edition 1969 -plant physiology. (second edition). licoln taiz : Eduardo Zeiger. sinauer associates inc. 1998.	A- Recommended books and references (.scientific journals, reports, etc)
https://www.uoanbar.edu.iq/BasicEducationCollege/catalog/%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA%20%D9%81%D8%B3%D9%84%D8%AC%D8%A9%20%D9%86%D8%A8%D8%A7%D8%AA%20%D9%83%D8%A7%D9%85%D9%84%D8%A9(1).pdf	B - Electronic references, Internet sites

21- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Vegetable production problems and proposed .solutions	- Vegetable science economic and nutritional importance	2	1
a test	theoretical	,Climate factors	Methods of dividing vegetables - the effect of environmental factors on the growth and development of vegetables	2	2
a test	theoretical	,Germination dormancy, seed .treatments	Vegetable Crop Propagation - Sexual Propagation, Asexual ,Propagation Characteristics of Good Seeds	2	3
a test	theoretical	Reasons for differences in seedling tolerance, agricultural ,environments definition of ,acclimatization	Vegetable seedling production - definition of nursery, advantages and disadvantages of nursery	2	4

		methods of ,acclimatization physiological changes in acclimatization			
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	Production of cabbage and cauliflower crops (original - location - importance (climate and soil	2	5
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	Production of radish, turnip and garden cress (original - habitat - importance (climate and soil	2	6
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	,Production of broad beans peas and fenugreek	2	7
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	Onion, garlic and leek production	2	8
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	,Production of chard beetroot, spinach, carrots and lettuce	2	9
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	,Production of celery parsley and dill (original (country - importance	2	10
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	Production of potato and tomato crops (original - country - importance (climate and soil	2	11
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service	Production of eggplant and - pepper crops (origin importance - climate and (soil	2	12

		operations			
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	,Production of cucumber squash, watermelon and melon crops (original (country - importance	2	13
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	,Production of beans cowpeas, okra and maize - crops (original country (importance	2	14
a test	theoretical	- Native habitat Importance - Climate - and soil - Reproduction Planting date and method - Service operations	Mechanization of agricultural operations in vegetable fields - types of mechanization	2	15

21- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Summer and winter vegetable seeds	Distinguish between summer and winter vegetable seeds.	2	1
a test	practical	Planting Solanaceae seeds in day beds – planting methods) – planting distances	Preparing the agricultural media, planting the seeds of the eggplant family in beds – planting methods)	2	2

		– planting depth number of seeds in one (hole	– planting distances planting depth – number of seeds in one hole – quantity (of seeds in one acre.		
a test	practical	Planting cucurbit seeds	Planting cucurbit seeds – planting methods) – planting distances planting depth – number of seeds in one hole – quantity (of seeds per acre	2	3
a test	practical	Planting broad bean and pea seeds	Preparing the agricultural media, planting broad bean and pea seeds (planting methods – planting – distances – planting depth number of seeds in one hole quantity of seeds per – (acre.	2	4
a test	practical	Planting radish, garden cress and turnip seeds	Planting radish, garden cress and turnip seeds – planting methods) – planting distances planting depth – number of seeds in one hole – quantity (of seeds per acre.	2	5
a test	practical	Onion seed planting	Planting onion seeds – planting methods) – planting distances planting depth – number of seeds in one hole – quantity (of seeds per acre.	2	6
a test	practical	,Planting lettuce cauliflower, and garlic seedlings	,Planting lettuce cauliflower, and garlic seedlings.	2	7
a test	practical	Onion seedlings transplant	Onion seedlings transplanting.	2	8
a test	practical	Application of ,agricultural operations weeding and hoeing	Application of agricultural operations, weeding and hoeing.	2	9
a test	practical	Application of ,agricultural operations patching - thinning in .vegetable fields	Application of agricultural - operations, patching thinning in vegetable fields.	2	10
a test	practical	Application of ,agricultural operations fertilization - irrigation .control -	Application of agricultural - operations, fertilization irrigation - control.	2	11
a test	practical	Morphological description of plants of the cruciferous and .legume families	Morphological description of plants of the cruciferous and legume families.	2	12
a test	practical	Morphological description of plants of ,the Cucurbitaceae Solanaceae and .Ramaraceae families	Morphological description of plants of the Cucurbitaceae, Solanaceae and Ramaraceae families.	2	13
a test	practical	Morphological ,description: Narcissus .Compound and Tendril	:Morphological description Narcissus, Compound and Tendril.	2	14

a test	practical	Showing scientific films and other visual aids on mechanized .vegetable cultivation	Showing scientific films and other visual aids on mechanized vegetable cultivation.	2	15

21- **Infrastructure**	
Vegetable production ,Production of Khader, Al-Rikabi / Fakher Ibrahim ,Abdul Jabbar Jassim, 1981, Al-Adeeb Printing Press Baghdad	Required textbooks -1
- Vegetable Crops, translated by: Ali Ahmed Attia Mohamed Saeed Zaki - Dr. Mohamed Abdel Hamid and Dr. Ibrahim Mohamed Abdullah, 1985, Arab House for .Publishing and Distribution	Main references (sources) -2
- Al-Khidr, Part One and Two, Dr. Zidane Abdel Aal ,Dr. Abdel Aziz Khalaf - Dr. Muhammad Abdel Qader .New Publications House	A- Recommended books and references (.scientific journals, reports, etc)
https://www.uoanbar.edu.iq/eStoreImages/Bank/21333.pdf https://www.uoanbar.edu.iq/eStoreImages/Bank/21347.pdf	B - Electronic references, Internet sites

22- **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	A historical overview of the development of agricultural pest control and international bodies associated with pest control.	A historical overview of the development of agricultural pest control and international bodies associated with pest control .	1	1
a test	theoretical	Methods of pest control (natural and (applied.	Methods of pest control (natural and applied).	1	2
a test	theoretical	,Mechanical control biological control.	,Mechanical control biological control.	1	3
a test	theoretical	,Chemical control modern trends in pest control.	Chemical control, modern trends in pest control.	1	4
a test	theoretical	Pests of protected agriculture.	Pests of protected agriculture.	1	5
a test	theoretical	Cotton pests, wheat pests.	Cotton pests, wheat pests.	1	6
a test	theoretical	Corn pests, cruciferous	Corn pests, cruciferous	1	7

		pests.	pests.		
a test	theoretical	Stored Goods Pests.	Stored Goods Pests.	1	8
a test	theoretical	,Onion and garlic pests clover and clover pests .	,Onion and garlic pests clover and clover pests.	1	9
a test	theoretical	Cucurbit pests, pests of the Solanaceae family.	Cucurbit pests, pests of the Solanaceae family.	1	10
a test	theoretical	Stone fruit pests	Stone fruit pests Stone	1	11
a test	theoretical	Apple pests, grape pests.	Apple pests, grape pests.	1	12
a test	theoretical	Citrus pests, fig pests.	Citrus pests, fig pests.	1	13
a test	theoretical	,Pomegranate pests olive pests.	Pomegranate pests, olive pests.	1	14
a test	theoretical	Pests of palm trees and ornamental plants.	Pests of palm trees and ornamental plants.	1	15

22- **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Collect a group of insects.	Methods of collecting and ,preserving insects collecting a group of insects.	1	1
a test	practical	Pest control tools and how to use them	Pest control tools and how to use them.	1	2
a test	practical	Pesticide preparations	,Pesticide preparations (dry (liquid, gaseous.	1	3
a test	practical	Protected agriculture pests	Dusting, spraying.	1	4
a test	practical	wheat pests	Protected agriculture pests ,aphids, whiteflies, worms) (spiders.	1	5
a test	practical	Corn stalk borer, corn ,cobworm, aphid sorghum aphid, worm	Wheat pests (sunn, sow worm) Cotton pests (cotton spiny nutworm, cotton (leafworm, aphid.	1	6
a test	practical	stored product pests	Corn stalk borer, corn cobworm, aphid, cabbage aphid, cruciferous worm.	1	7
a test	practical	Onion thrips, onion fly, jet weevil, spotted jet aphid	Stored goods pests (wheat and rice weevils, flour (beetles, fig moth.	1	8
a test	practical	white fly, watermelon fruit worm	Onion thrips, onion fly, jet weevil, spotted jet aphid.	1	9
a test	practical	Tomato fruit worm	Whitefly, watermelon ,fruitworm, leafhopper ,cucurbit aphid, spider mite tomato fruitworm.	1	10
a test	practical	,Grape leaf miner grape leafworm.	From apricot, apricot stem borer.	1	11
a test	practical	fig leaf worm, fig fruit worm, spiders	,Apple fruit worm embroidery bug, grape leaf	1	12

			miner, grape leaf worm.		
a test	practical	olive fly	,Mealybug, citrus leafworm fig leafworm, fig fruitworm, spiders.	1	13
a test	practical	Palm borer, palm stem borer	,Pomegranate fruit worm pomegranate aphid, olive borer, olive fly.	1	14
a test	practical	Collect a group of insects.	,Palm weevil, palm borer palm stem borer.	1	15

22- **Infrastructure**	
General insects General and Applied Entomology - Dr. Abdullah Falih Azawi - 1980 - Al-Zahraa Press - Baghdad	Required textbooks -1
Field Crop Pests - Kamel Salman Jabr, Imad Ahmed Mahmoud - 1990 - Ministry of Higher Education Press	Main references (sources) -2
	A- Recommended books and references (.scientific journals, reports, etc)
https://faculty.uobasrah.edu.iq/uploads/teaching/1597119015.pdf	B - Electronic references, Internet sites

23- **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Concept of statistics and planning agricultural experiments	Concept of statistics and planning agricultural experiments	2	1
a test	theoretical	:Statistical measures measures of centering	:Statistical measures measures of centering	2	2
a test	theoretical	Measures of dispersion and variation	Measures of dispersion and variation	2	3
a test	theoretical	Types of agricultural experiments	Types of agricultural experiments	2	4
a test	theoretical	Sources of errors and differences in agricultural experiments	Sources of errors and differences in agricultural experiments	2	5
a test	theoretical	Basics of agricultural experiment design and types of designs used in agricultural experiments	Basics of agricultural experiment design and types of designs used in agricultural experiments	2	6
a test	theoretical	Concept of statistics and planning agricultural experiments	Concept of statistics and planning agricultural experiments	2	7
a test	theoretical	:Statistical measures	:Statistical measures	2	8

		measures of centering	measures of centering		
a test	theoretical	Completely randomized design	Completely randomized design	2	9
a test	theoretical	Its terms, planning and statistical analysis	Its terms, planning and statistical analysis	2	10
a test	theoretical	Complete randomized block design	Complete randomized block design	2	11
a test	theoretical	Its terms, planning and statistical analysis	Its terms, planning and statistical analysis	2	12
a test	theoretical	Latin square design	Latin square design	2	13
a test	theoretical	Its terms, planning and statistical analysis	Its terms, planning and statistical analysis	2	14
a test	theoretical	Split panel design conditions, planning) .(and statistical analysis	Split panel design conditions , planning and) .(statistical analysis	2	15

23- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	How to collect samples	Learn how to take a random sample from the .community	1	1
a test	practical	,arithmetic mean ,median, mode weighted arithmetic mean	Exercises on centering scales	1	2
a test	practical	,arithmetic mean ,median, mode weighted arithmetic mean	Exercises on centering scales	1	3
a test	practical	,Range, Variance ,Standard Deviation ,Standard Error Coefficient of Variation	Exercises on dispersion measures	1	4
a test	practical	,Range, Variance ,Standard Deviation ,Standard Error Coefficient of Variation	Exercises on dispersion measures	1	5
a test	practical	Make a plan for the experimental plot in ,light of the parameters specifications and dimensions of the experiment to be conducted.	Make a plan for the experimental plot in light of ,the parameters specifications and dimensions of the experiment to be conducted .	1	6
a test	practical	Conduct a laboratory experiment to estimate	Conduct a laboratory experiment to estimate the	1	7

		the percentage of seed germination.	percentage of seed germination.		
a test	practical	Planting an ,experiment distributing treatments ,to experimental units and estimating the amount of seeds and fertilizer for each experimental unit.	,Planting an experiment distributing treatments to experimental units, and estimating the amount of seeds and fertilizer for each .experimental unit	1	8
a test	practical	Where does it take place and what is the difference between it ?and other designs	Statistical analysis of completely randomized design	1	9
a test	practical	Statistical analysis of completely randomized design	Statistical analysis of a completely randomized design	1	10
a test	practical	Statistical analysis of randomized complete block design	Statistical analysis of randomized complete block design	1	11
a test	practical	ANOVA table and correction factor	Statistical analysis of randomized complete block design	1	12
a test	practical	Statistical analysis of the Latin square design .	Statistical analysis of the .Latin square design	1	13
a test	practical	Statistical analysis of the Latin square design .	Statistical analysis of the .Latin square design	1	14
a test	practical	The boards split once and twice	Statistical analysis of split .panel design	1	15

23- **Infrastructure**	
Statistics and planning experiments Practical foundations in planning agricultural experiments for students of technical agricultural institutes. Dr. Tariq Ali Al-Ani, Dr. Tariq Abdul-.Jabbar - 1980	Required textbooks -1
.Introduction to Statistical Methods and Experimental Design, Dr Muhammad Ali, Dr. Muhammad Mamdouh, Egypt 1980	Main references (sources) -2
- Principles of Modern Statistics, Salim Ismail, Al-Zahraa Press - Baghdad Design and Analysis of Agricultural Experiments, Khasha Mahmoud .1972 .Al-Rawi, Abdul Aziz Khalaf Allah - 1980	A- Recommended books and references (.Scientific journals, reports, etc)
https://hama-univ.edu.sy/newsites/agricultural/wp-content/uploads/2018/10/%D8%A7%D9%84%D8%A7%D8%AD%D8%B5%D8%A7%D8%A1-%D9%83%D8%A7%D9%85%D9%84.pdf	B - Electronic references, Internet sites

24- **Course Structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Types of agricultural .tractors - Public Safety	The importance of agricultural mechanization the tractor is a source of - power in the field	1	1
a test	theoretical	The main parts of the tugboat and the .function of each part	The main parts of the tugboat and the function of each part	1	2
a test	theoretical	Fuel system - Air - technology system (Cooling system	Tug systems	1	3
a test	theoretical	- Parts of each system - how each part works - malfunctions .maintenance	- Lubrication system Electrical system	1	4
a test	theoretical	- Parts of each system - how each part works its faults - its maintenance	,Transmission, clutch saddle box	1	5
a test	theoretical	Vertical and differential transport - group, final transport tugboat structure, its parts, its benefits, the importance of each .part	Plowing, importance of plowing, qualities of good plowing	1	6
a test	theoretical	- Use of these plows their parts - their maintenance - plowing .methods	Reversible Plows - How They Work	1	7
a test	theoretical	The nature of the work of these plows - the - use of these plows their parts - their maintenance - plowing methods	Chisel, rotary and subsoil plows - how they work	1	8
a test	theoretical	Leveling, planning and channel cutting machines - the nature ,of the machines' work ,their use, their types their parts, their operation	Soil smoothing machines (combs, ploughs)	1	9
a test	theoretical	Seeder, its parts, its operation, laboratory and field standards for ,these machines maintenance of these .machines	Mechanized agriculture - its importance, fertilizer spreader	1	10
a test	theoretical	Weeding and - fertilizing machines types - nature of work - parts - operation -	- Potato Planting Machine - Types - How it Works - Parts - Operation Calibration - Maintenance	1	11

		- calibration . maintenance			
a test	theoretical	Its types - nature of - work - parts operation - calibration .maintenance -	Crop service machines, pest – control machines – types nature of their work	1	12
a test	theoretical	Operation - Calibration .Maintenance -	Green fodder cutting machines and baling press machine nature	1	13
a test	theoretical	- Operation - - Calibration .Maintenance	,Harvester - Classification External Structure - Its Function - Its Parts	1	14
a test	theoretical	,Tug maintenance importance of maintenance, types and how to do it	,Tug maintenance ,importance of maintenance types and how to do it	1	15

24- **Course Structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	General Driver Safety Safety Benefits - .Application	,View machinery equipment and tow trucks in the field - General driver safety - Application of safety benefits.	2	1
a test	practical	Tugboat driving - training in first gear engine parts (fixed and (moving	- Duties before starting Starting and stopping the engine - Training to drive - the tugboat in first gear Engine parts (fixed and (moving	2	2
a test	practical	The function of each part - possible malfunctions - how to .avoid them	Fuel systems for diesel and gasoline engines - the - function of each part - possible malfunctions how to avoid them.	2	3
a test	practical	- Identify its parts plowshares, horizontal .and vertical adjustment	- Ploughs (disc and rotary) - Identifying their parts Plough network and horizontal and vertical adjustment.	2	4
a test	practical	Chisel plough, rotary plough, subsoil ,plough) - their parts their network, their adjustment, ploughing in the field using these ploughs, performing maintenance after .ploughing	Seedbed preparation ,machines (drill plough rotary plough, subsoil plough) - their parts, their ,network, their adjustment ploughing in the field using these ploughs, performing maintenance after ploughing.	2	5
a test	practical	Its uses and .maintenance	Seedbed smoothing machines, their uses and maintenance.	2	6

a test	practical	Leveling, planning and ,digging machines networking of these ,machines, field work maintenance	Leveling, planning and digging machines	2	7
a test	practical	,Networking ,Calibration Laboratory and Field	Agricultural machinery (sowing and sowing) Machine disassembly	2	8
a test	practical	Its types, calibration procedure, machine maintenance after operation	Potato planting machine	2	9
a test	practical	Its types, how to - work in the field, and its maintenance after work	Institute of sweat and fertilization - its types, how to work in the field, and its .maintenance after work	2	10
a test	practical	Spraying process after calibrating the sprinkler, maintenance after spraying process	- Pest control equipment types, spraying process after calibrating the sprayer	2	11
a test	practical	Reciprocating and rotary mower, its network, calibration procedure, maintenance	Reciprocating and rotary ,mower, its network ,calibration procedure maintenance	2	12
a test	practical	Green fodder cutting - and baling machines ,their parts, operation and operation of these machines in the field	Green fodder cutting and baling machines - their parts, operation, and operation of these machines in the field	2	13
a test	practical	Harvester - Training on driving the harvester at all forward ,and reverse speeds daily maintenance of the harvester	Harvester - Training on driving the harvester at all ,forward and reverse speeds daily maintenance of the harvester	2	14
a test	practical	Show scientific films .and slides	Show scientific films and . slides	2	15

24- **Infrastructure**	
Tractors and agricultural machinery Agricultural machinery and equipment, types , use , and maintenance, Abdul Hussein Anm Subhi, 1988, Education Press	Required textbooks -1
Agricultural mechanization in Iraq, Badie Qadouri, Talib Al-Sarraj, 1971, Ministry of Planning, Baghdad	Main references (sources) -2
,Agricultural Dredgers, Dr. Eng. Abdul Salam Mahmoud Baghdad University Press ,1986	A- Recommended books and references (.scientific journals, reports, etc)
,Agricultural Tractor Maintenance, Al-Najjar / Ali Al-Saleh Dar Al-Hikma Press, Baghdad ,1990	B - Electronic references, Internet sites

25- **Course Structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Introduction, the importance of herbs and plants in ancient and modern medicine	Introduction, the importance of herbs and plants in ancient and modern medicine	1	1
a test	theoretical	General rules and appropriate times for collecting medicinal plants	General rules and appropriate times for collecting medicinal plants	1	2
a test	theoretical	Drying herbs and medicinal plants	Drying herbs and medicinal plants	1	3
a test	theoretical	Natural drying methods	Natural drying methods	1	4
a test	theoretical	Industrial drying methods	Industrial drying methods	1	5
a test	theoretical	Preservation of herbs and medicinal plants	Preservation of herbs and medicinal plants	1	6
a test	theoretical	Store herbs and medicinal plants	Store herbs and medicinal plants	1	7
a test	theoretical	Methods of using herbs and medicinal plants, herbal and ,medicinal plant juice herbal and medicinal plant syrup, medicinal plant honey.	Methods of using herbs and medicinal plants, herbal ,and medicinal plant juice herbal and medicinal plant syrup, medicinal plant honey.	1	8
a test	theoretical	Herbal and medicinal plant dye, herbal and ,medicinal plant oils herbal and medicinal plant ointments, herbal and medicinal plant powder.	Herbal and medicinal plant dye, herbal and medicinal plant oils, herbal and ,medicinal plant ointments herbal and medicinal plant powder.	1	9
a test	theoretical	Herbal tea and ,medicinal plants herbal baths and medicinal plants.	Herbal tea and medicinal plants, herbal baths and medicinal plants.	1	10
a test	theoretical	Methods of use and treatment	Uses of herbs and medicinal plants.	1	11
a test	theoretical	Cloves - Ginger	Increase the number of herbs and medicinal plants.	1	12
a test	theoretical	Castor oil - black seed oil	Extraction of herbs and medicinal plants.	1	13
a test	theoretical	The part taken for use	Uses of herbs and medicinal plants.	1	14
a test	theoretical	Where to find and collect it	herbs as medicinal plants.	1	15

25- **Course Structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Conducting medicinal plant collection operations	Conducting medicinal plant collection operations	2	1
a test	practical	Carrying out some drying processes for herbs and medicinal plants	Carrying out some drying processes for herbs and medicinal plants	2	2
a test	practical	Carrying out some drying processes for herbs and medicinal plants	Carrying out some drying processes for herbs and medicinal plants	2	3
a test	practical	Carrying out some drying processes for herbs and medicinal plants	Carrying out some drying processes for herbs and medicinal plants	2	4
a test	practical	Carrying out some drying processes for herbs and medicinal plants	Carrying out some drying processes for herbs and medicinal plants	2	5
a test	practical	Preservation of some medicinal herbs and plants	Preservation of some medicinal herbs and plants	2	6
a test	practical	Carrying out storage operations for some medicinal herbs and plants	Carrying out storage operations for some medicinal herbs and plants	2	7
a test	practical	Training on the use of available medicinal herbs and plants	Training on the use of available medicinal herbs and plants	2	8
a test	practical	Training on the use of available medicinal herbs and plants	Training on the use of available medicinal herbs and plants	2	9
a test	practical	Training on the use of available medicinal herbs and plants	Training on the use of available medicinal herbs and plants	2	10
a test	practical	Training on the use of available medicinal herbs and plants	Training on the use of available medicinal herbs and plants	2	11
a test	practical	Training on the use of available medicinal	Training on the use of available medicinal herbs	2	12

		herbs and plants	and plants		
a test	practical	Training on the use of available medicinal herbs and plants	Training on the use of available medicinal herbs and plants	2	13
a test	practical	available medicinal herbs and plants	Training on the use of available medicinal herbs and plants	2	14
a test	practical	Training on the use of available medicinal herbs and plants	Training on the use of available medicinal herbs and plants	2	15

25- **Infrastructure**	
Preservation and drying of medicinal plants	Required textbooks -1
file:///C:/Users/Dell/Downloads/25412540001254.pdf	Main references (sources) -2
https://agriculture.uodiyala.edu.iq/uploads/%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA%20%D9%82%D8%B3%D9%85%20%D8%A7%D9%84%D8%A8%D8%B3%D8%AA%D9%86%D8%A9/%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA%20.%D8%B9%D8%A8%D8%AF%D8%A7%D9%84%D9%83%D8%B1%D9%8A%D9%85%20%D8%B9%D8%A8%D8%AF%20%D8%A7%D9%84%D8%AC%D8%A8%D8%A7%D8%B1%20%D9%853/%D8%AA%D8%AE%D8%B2%D9%8A%D9%86%20%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA%D8%A7%D8%AA%20%D9%88%D8%A7%D9%84%D9%85%D9%88%D8%A7%D8%AF%20%D8%A7%D9%84%D8%B7%D8%A8%D9%8A%D8%A9.ppt	A- Recommended books and references (.Scientific journals, reports, etc)
https://acmls.org/wp-content/uploads/2024/07/%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA%D8%A7%D8%AA-%D8%A7%D9%84%D8%B7%D8%A8%D9%8A%D8%A9-%D9%88%D8%A7%D8%B3%D8%AA%D8%AE%D8%AF%D8%A7%D9%85%D8%A7%D8%AA%D9%87%D8% A7-%D8%A7%D9%84%D8%B9%D9%84%D8%A7%D8%AC%D9%8A%D8%A9-198-website.pdf file:///C:/Users/Dell/Downloads/Noor-Book.com%20%20%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA%D8%A7%D8%AA%20%D8%A7%D9%84%D8%B7%D8%A8%D9%8A%D8%A9%20%D8%B9%D9%86%D8%AF%20%D8%A7%D9%84%D8%B9%D8%B1%D8%A8%20%D8%AF%20%D9%86%D8%A7%D8%B5%D8%B1%20%D8%B5%D9%81%D8%B1%203%20.pdf	B - Electronic references, Internet sites

26- **Course structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Classification of plant diseases	Classification of plant diseases according to the pathogen, symptoms and agent.	1	1
a test	theoretical	Oomycetes	Oomycetes, their characteristics, the most important diseases they cause, late blight on ,potatoes, seedling death ,downy mildew on onions cucurbits and grapes.	1	2
a test	theoretical	zygotic fungi	Zygotic fungi, their classification, most important characteristics and the diseases they cause.	1	3
a test	theoretical	cyst fungi	Sac fungi, their most important features, the diseases they cause and their resistance, powdery mildew diseases on cucurbits, grasses, grapes and roses.	1	4
a test	theoretical	imperfect fungi	Imperfect fungi, diseases caused by them, palm ,pollen blackening disease apple stem blackening disease, ascochyta spot on broad beans.	1	5
a test	theoretical	basidiomycetes	Basidiomycetes, their characteristics, the most important diseases they cause, rust and smut fungi.	1	6

a test	theoretical	plant pathogenic bacteria	,Plant pathogenic bacteria their characteristics, the most important diseases they cause, and sources of infection with pathogenic bacteria.	1	7
a test	theoretical	plant pathogenic viruses	Viruses that cause plant diseases, methods of transmission and spread of viral diseases, the most important diseases caused by viruses.	1	8
a test	theoretical	,Non-parasitic diseases their causes	,Non-parasitic diseases their causes, symptoms, and element deficiencies Npk,Cu,Mg,Br,Fe.Zn,Mn,S	1	9
a test	theoretical	Plant diseases resulting from irregular irrigation, high groundwater level	Plant diseases resulting ,from irregular irrigation ,high groundwater level blossom end rot on tomato stems and fruits, gummosis of stone fruit trees.	1	10
a test	theoretical	Methods of controlling plant diseases	Methods of controlling ,plant diseases: agricultural .biological, chemical ,Bacterial pesticides antibiotics, mycotoxins produced by some fungi that infect grains, fruits and food.	1	11
a test	theoretical	Mycoplasmas as plant pathogens	Mycoplasmas as plant pathogens, their characteristics, the most important diseases they cause, their symptoms, their life cycle, and methods of	1	12

26- **Infrastructure**

medicinal plant diseases Plant Diseases and Their Control: Written by Ali Kamel Al- ,Ghamrawi, Mustafa Al-Najjar, and Tawfiq Abdel-Haq - Anglo-Egyptian Library - 165 - Mohamed Farid Street .Cairo	Required textbooks -1
	Main references (sources) -2
	) A- Recommended books and references (.scientific journals, reports, etc
https://govkrd.b-cdn.net/Ministries/Ministry%20of%20Agriculture%20and%20Water%20Resources/Arabic/%D8%A7%D9%84%D9%85%D9%86%D8%B4%D9%88%D8%B1%D8%A7%D8%AA/%D8%A7%D9%84%D8%A8%D8%AD%D9%88%D8%AB/%D8%A7%D9%84%D8%A7%D9%81%D8%A7%D8%AA%20%D9%88%D8%A7%D9%84%D8%A7%D9%85%D8%B1%D8%A7%D8%B6%20%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA%D9%8A%D8%A9%20%D8%A7%D9%84%D8%AC%D8%B2%D8%A1%20%D8%A7%D9%84%D8%A7%D9%88%D9%84%20%D9%A2%D9%A0%D9%A0%D9%A3.pdf	B - Electronic references, Internet sites

27- **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	Definition of medicinal plant	/ Medicinal plants Definition of medicinal plants / Historical overview Importance of medicinal / .plants	1	1
a test	theoretical	Geographical distribution of medicinal plants	Geographical distribution of medicinal plants in Iraq and the Arab world, the most important problems of medicinal plant production .in Iraq	1	2
a test	theoretical	Drug classification (medical materials)	Classification of drugs (medical substances) according to their locations .in the plant	1	3
a test	theoretical	Its properties, its - spread in seeds .flowers - stem - leaves	alkaline materials	1	4
a test	theoretical	- Ferns - Definition - Areas of growth - Distribution Historical overview of - life - Reproduction - Classification .Importance	Drugs extracted from ferns	1	5
a test	theoretical	- Definition of lichens - Where they are found Uses of lichens	Lichens Drugs extracted from	1	6
a test	theoretical	Lichen products - their balance in the ecosystem	Types of lichens	1	7
a test	theoretical	Biological and - economic importance Use of seaweed in agriculture - Marine environment - Physical and chemical - properties - Light Temperature - Water movement and the effect of all of this on algae	.Drugs extracted from algae	1	8
a test	theoretical	Soil algae, factors ,affecting their growth their negative and ,positive importance - and freshwater algae algae cultivation	. Freshwater algae	1	9
a test	theoretical	- Extraction Importance - Benefits and therapeutic	. Essential oils such as citrus	1	10

		- properties Relationship to humans - Treatment with volatile essential oils			
a test	theoretical	Its properties and - distribution in plants geographical distribution its importance and - - medical benefits methods of use	. Bitter substances - colocynth	1	11
a test	theoretical	Geographical distribution its importance and - medical benefits - its properties and spread in plants - its cultivation	. Stimulants - walnuts	1	12
a test	theoretical	Its properties in plants and its geographical distribution - its medical benefits and uses	– Mucilages and gums cucumber	1	13
a test	theoretical	Notes to be taken into consideration when dealing with medicinal plants - Doses - Methods of use	Notes to be taken into consideration when dealing - with medicinal plants - doses . methods of use	1	14
a test	theoretical	General review	General review	1	15

27- **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	practical	Seeds - Medicinal flowers in the - laboratory, castor - goat horn - fenugreek black seed	Identifying plant types.	2	1
a test	practical	- Eucalyptus - Pine .Willow - Spurge	Identifying types of medicinal plants in the institute's fields	2	2
a test	practical	Preparing the ground	Preparing the land for planting some types of medicinal plants, including herbs, trees and shrubs.	2	3
a test	practical	- Nettle - Chamomile Black Seed	First: Annual herbs.	2	4
a test	practical	- Castor oil - goat horn chasteberry	Second: Shrubs	2	5
a test	practical	- Pine - Cypress - Eucalyptus - Seabuckthorn Buckthorn	Third: Trees.	2	6
a test	practical	- Nettle - Chamomile Black seed with explanation - Its - economic importance - Its medical benefits The active ingredients and their effect on humans	Cultivation of medicinal herbal plants.	2	7
a test	practical	- Castor oil - Goat horn - Vitex agnus-castus Benefits - Medical properties - Active ingredients and their - effect on humans Monitoring agricultural operations	Planting shrubs.	2	8
a test	practical	- Pine - Cypress - Eucalyptus - Sebha - Buckthorn Explaining the economic importance	Planting medicinal tree seeds.	2	9
a test	practical	Various service operations	Follow up on the above ,agricultural operations ,including irrigation weeding and fertilization.	2	10
a test	practical	Using my scalpel and cleaving devices from chamomile flowers and orange seeds	Extraction of volatile and fixed oils	2	11
a test	practical	Collecting, drying and preserving the active	Collecting the active parts of cultivated plants, drying	2	12

		parts of cultivated .plants	them and preserving them.		
a test	practical	UsingPaper chromate graphy of thin layer chromatography	separation of active parts	2	13
a test	practical	UsingData show	Introducing students to weights and measures in ancient medicine for ancient tools	2	14
a test	practical	Using different methods such as (preparing herbal tea)	Applications in the preparation of herbal and medical medicines	2	15

27- **Infrastructure**	
Production of medicinal plants	Required textbooks -1
	Main references (sources) -2
:The book of medicinal plants and herbal medicine . Author . Abdul Redha Al-Mayah Al-Basaer House and Library for Printing, Publishing and .Distribution . 2013	) A- Recommended books and references (.scientific journals, reports, etc
	B - Electronic references, Internet sites

28- **Course Structure**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	The week
a test	theoretical	.Environmental factor ,Factors, light temperature	.Environmental factor Factors, light, temperature	1	1
a test	theoretical	,Environmental factor .air, wind	,Environmental factor, air .wind	1	2
a test	theoretical	,Soil factor, soil type .soil composition	Soil factor, soil type, soil .composition	1	3
a test	theoretical	Soil moisture, soil solution, humus.	,Soil moisture, soil solution humus.	1	4
a test	theoretical	,Topographic factors slope direction	Topographic factors, slope direction	1	5
a test	theoretical	,Biological factors animal influence, plant influence and interaction	Biological factors, animal influence, plant influence and interaction	1	6
a test	theoretical	Classification according to the part ,used, root, stem, bark .etc	Classification according to ,the part used, root, stem .bark, etc	1	7
a test	theoretical	Classification by nature of herbs	Classification by nature of herbs	1	8
a test	theoretical	Classification by ,habitat. Tropical .. …… ,subtropical .etc	.Classification by habitat ,Tropical, subtropical .etc .. ……	1	9
a test	theoretical	Classification by therapeutic value, anti-cancer, anti-cholesterol	Classification by therapeutic value, anti-cancer, anti-cholesterol	1	10
a test	theoretical	Classification by ,Ayurvedic formula .roots, flowers, ... etc	Classification by Ayurvedic .formula, roots, flowers, ... etc	1	11
a test	theoretical	Botanical classification	Botanical classification	1	12
a test	theoretical	Botanical classification	Botanical classification	1	13
a test	theoretical	Botanical classification	Botanical classification	1	14
a test	theoretical	Botanical classification	Botanical classification	1	15

28 - Infrastructure, environment and classification of medicinal plants	
https://sciences.uodiyala.edu.iq/uploads/00%20Abdullah%20New%20website/Lectures/bio	Required textbooks -1
	Main references (sources) -2
	) A- Recommended books and references (.scientific journals, reports, etc
https://sciences.uodiyala.edu.iq/uploads/00%20Abdullah%20New%20website/Lectures/bio	B - Electronic references, Internet sites