Ministry of Higher Education and Scientific
Research, Scientific Supervision and Evaluation Directorate, Department of Quality Assurance and Academic Accreditation
Department of Accreditation

Academic Program and Course Description Guide

2025-2026

Introduction:

The educational program is considered a coordinated and organized package of academic courses that includes procedures and experiences organized in the form of academic vocabulary, the main purpose of which is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs such as the external examiner program.

The description of the academic program provides a brief summary of the main features of the program and its courses, indicating the skills that students are working to acquire based on the objectives of the academic program. The importance of this description is evident because it represents the cornerstone of obtaining program accreditation, and the teaching staff participates in writing it under the supervision of the scientific committees in the scientific departments.

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the latest developments in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, quarterly), in addition to adopting the description of the academic program circulated according to the book of the Department of Studies 3/2906. On 5/3/2023 with regard to programs that adopt the Bologna Process as a basis for their work. In this area, we can only emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth conduct of the educational process concepts and terminology:

Description of the academic program: The description of the academic program provides a brief summary of its vision, mission, and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a necessary summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be a developed, inspiring, motivating, realistic and applicable program.

The program's mission: It briefly explains the goals and activities necessary to achieve them, and also defines the program's development paths and directions.

Program objectives: These are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum structure: All courses/study subjects included in the academic program according to the approved learning system (semester, annual, Bologna track), whether it is a requirement (ministry, university, college, or scientific department), along with the number of study units.

Learning outcomes: A consistent set of knowledge, skills, and values that the student has acquired after the successful completion of the academic program. The learning outcomes for each course must be determined in a way that achieves the program objectives.

Teaching and learning strategies: They are the strategies used by the faculty member to develop the student's teaching and learning, and they are plans that are followed to reach the learning goals. That is, it describes all curricular and extracurricular activities to achieve the learning outcomes of the program.

Concepts and terminology:

Academic Program Description: The description of the academic program provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It is derived from the description of the program.

Program Vision: An ambitious picture for the future of the academic program to be a sophisticated, inspiring, stimulating, realistic and applicable program.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (semester, yearly, Bologna track) whether it is a requirement (ministry, university, college and scientific department) with the number of study units.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by the student after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty member to develop the student's teaching and learning, and they are plans that are followed to reach the learning goals. That is, describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Faculty/Institute: Agriculture

Scientific Department: Horticulture and Landscaping

Academic or Vocational Program Name: Horticulture and Landscaping

Final Certificate Name: Bachelor's degree in Agriculture/ Horticulture and Landscaping

Academic System: Semester

Date of preparation description: 1-6-2026

File filling date: 1-6-2026

Signature:
Head of department Name:
Prof. Dr. Abdul Kareem Abdul Jabbar Mohammad
Date: 1-6-2026

Signature:
Scientific Associate Name:
Prof. Dr. Mohammed Ali Abood
Date: 1-6-2026

The file is checked by: Prof. Dr. Basem Rahem Bader
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Date: 1-6-2026
Signature:

Approval of the Dean
Prof. Dr. Raaed Ibrahim Khalil
1/6/2026

1. **Program Vision**

The program aims to achieve excellence among its counterparts both locally and regionally by developing its faculty, enhancing their scientific and research capabilities, establishing genuine partnerships with similar departments, updating academic, scientific, and applied curricula, and exchanging expertise to raise the country's scientific and economic standing. It also seeks to provide society with a skilled, knowledgeable, and capable workforce, capable of driving change and persevering in the agricultural sector, thereby contributing to the achievement of sustainable development goals.

2. **Program Mission**

The program defines its academic mission by adopting the principles of accuracy and scientific rigor in providing society with specialized scientific personnel who serve the community. These graduates are educated with strong academic ethics and high standards, and are equipped with the knowledge, skills, and perseverance necessary to keep pace with societal and technological advancements in agriculture and sustainable development. The program's mission aligns with that of the college and the university, and it establishes rigorous standards for evaluating and monitoring the performance of graduates and faculty members.

3. **Program Objectives**

1. To prepare a generation of young specialists in horticultural fields by awarding them a Bachelor of Science degree in Agricultural Sciences/Horticulture.

2. To develop agricultural scientific personnel with academic and research expertise who can actively contribute to the development of agriculture or to the advancement of higher education and scientific research by awarding Master's degrees currently and Doctoral degrees in the future.

3. To participate in scientific seminars and conferences, as well as the participation of department faculty in various agricultural activities organized by the Ministry of Agriculture.

4. To develop the agricultural landscape in horticultural fields towards a better future by implementing research plans conducted by department members in the department's fields or in the fields of the private agricultural sector, in accordance with the concept of sustainable development.

5. To provide consultations and joint cooperation with individuals and agricultural companies in the public and private sectors, as well as to conduct training courses for Ministry of Agriculture employees and farmers, ensuring the achievement of sustainable development.

6. To conduct applied agricultural research to find solutions to the problems facing farmers by using modern agricultural methods that align with the department's plan towards achieving the goals of sustainable development.

7. Contributing to the development of important agricultural crops using modern agricultural and production techniques for plant species such as date palms, evergreen fruit trees, vegetables like tomatoes, and ornamental plants such as bulbs, shrub roses, and others, through research, training courses, and the use of modern technology in their cultivation.

8. Building genuine partnerships with corresponding departments in other colleges.

4. Program Accreditation

Currently does not exist

5. Other external influences

Currently does not exist

6. Program Structure

Reviews*	Percentage	Unit of study	Number of Courses	Program Structure
fundamental	**5.85 %**	**10**	**5**	**Requirements of the institution**
fundamental	**20.47 %**	**35**	**12**	**College Requirements**
fundamental	**73.68 %**	**126**	**40**	**Department Requirements**
Without Modules	/	/	/	**Summer Training**
/	/	/	/	**Other**

* It can include notes whether the course is basic or optional.

7. **Program Description**				
Credit Hours		**Course Name**	**Course or Course Code**	**Year 2025-2026/Level**
USSWL	**SSWL**			
72	**78**	Organic Chemistry	COA-1102	The first
17	**33**	Democracy and Human Rights	UD04	The first
97	**78**	Principles of Soil Science	SSD-1103	The first
72	**78**	Surveying	COA-1104	The first
97	**78**	Engineering Drawing	HOD-1109	The first
17	**33**	English Language 1	UD11	The first
72	**78**	Agricultural Machines and Machinery	HOD-1205	The first
72	**78**	Principles of Statistics	HOD -1202	The first
87	**63**	Principles of Agricultural Economic	HOD -1208	The first
97	**78**	Principles of Animal Production	APD-1201	The first
27	**48**	Computer I	UD13	The first
17	**33**	Arabic Language 1	UD12	The first
47	**78**	Plant Anatomy	HOD-2101	The second
47	**78**	Plant genetic	HOD-2102	The second
47	**78**	Plant Physiology	HOD-2103	The second

47	**78**	Organic Agriculture	HOD-2104	The second
47	**78**	Basics of Field Crops	HOD-2105	The second
27	**48**	Computer 2	UD23	The second
17	**33**	Arabic Language 2	UD22	The second
47	**78**	Plant nutrition	HOD-2201	The second
47	**78**	Plant Ecology and Sustainable Agriculture	HOD-2202	The second
47	**78**	Nurseries and plant propagation	HOD-2203	The second
72	**78**	Principles of landscape design	HOD-2204	The second
47	**78**	Biochemistry	HOD-2205	The second
17	**33**	Crimes of the Baath regime in Iraq	UD24	The second
17	**33**	English language 2	UD21	The second
Credit Hours		**Course Name**	**Course or Course Code**	**Year 2025-2026/Level**
practical	theoretical			
3	**2**	Plant Growth Regulators	PLGR300	Third
3	**2**	Medicinal and Aromatic Plants	MEAP301	Third
3	**2**	Experiment Design and Analysis	EXDA302	Third
3	**2**	Vegetable production 1	VEGP303	Third

3	**2**	Irrigation and Drainage	IRRD305	Third
3	**2**	Deciduous fruits 1	DECF306	Third
3	**1**	Floriculture 1	FLOR308	Third
3	**2**	Plant Breeding	PLAB310	Third
3	**2**	Deciduous fruits 2	DECF307	Third
3	**2**	Honey Bee Breeding	HOBB311	Third
3	**2**	Vegetable production 2	VEGP304	Third
3	**1**	Floriculture 2	FLOR309	Third
3	**1**	Horticulture Disease	HORD312	Third
3	**2**	Landscape design	LAND400	Fourth
3	**2**	Green Houses Operation	GRHO401	Fourth
3	**2**	Evergreen Fruit	EVEF402	Fourth
3	**2**	Horticulture seed production	HOSP403	Fourth
3	**2**	Plant tissue culture	PLTC404	Fourth
3	**2**	farm management	FARM405	Fourth
3		Graduate Research project	GRREP408	Fourth
3	**2**	Grape Science	GRAS406	Fourth

3	**2**	Plant Biotechnology	PLAB414	Fourth
		Postharvest fruit storage	POFS410	Fourth
3	**2**	Date Palm Production	DAPP411	Fourth
3	**2**	Soil fertility and fertilization	SOFF412	Fourth
	1	Seminar	SEMN407	Fourth
3	**2**	Graduate Research project	GRREP409	Fourth

8. **Expected learning outcomes of the program**	
Knowledge	
A1- The student should be familiar with the sciences of fruits and palm trees and methods of their production. A2- The student should be familiar with the sciences of vegetable crops and methods of their production. A3- The student should be familiar with the sciences of ornamental plants and methods of their production. A4- The student should be familiar with the sciences of garden engineering and methods of their implementation. A5- He has knowledge of methods of raising and improving horticultural crops. A6- He has knowledge of other supporting sciences such as physiology, fruit storage, anatomy and plant classification.	Learning Outcomes 1
Skills	
B1 - He has the skill to deal with modern laboratory equipment to complete scientific research. B2 - He has the skill to work in the field and establish and maintain orchards and vegetable and ornamental fields. B3 - He has the skill to use agricultural machinery required by modern agriculture.	Learning Outcomes 2
C1- Providing the graduate student with skills to give scientific lectures to farmers after graduation.	Learning Outcomes 3

C2- Providing the graduate student with leadership and administrative skills in order to work in scientific research centers for the agricultural sector. C3- Providing the graduate student with skills to transfer modern technology to the country. C4- Providing the student with scientific research skills to continue communicating with new information in the field of horticultural sciences abroad and trying what is new and useful to the country.	
Values	
- Instilling human values to feel responsible for preserving and increasing garden areas in his country and other countries. - Instilling noble values and ethical behavior during agricultural work such as honesty, love of work and sincerity in it and to feel that man everywhere is his goal in terms of providing safe food for him. - Making the student feel that food production is a collective responsibility and that he, as an agricultural engineer, must prepare himself for collective work in agricultural projects and stay away from narrow personal interest. - Making the student feel that the globe is a small green village and preserving it is a collective human responsibility.	Learning Outcomes 4

9. Teaching and Learning Strategies

- Follow the style of lecture with the use of modern means of presentation.
- Conducting laboratory experiments.
- Direct dialogue with students by asking them questions.
- Homework (writing scientific reports).
- Learning through applied field practices.

10. Evaluation methods

- Monthly exams.
- Rapid exams (coats).
- Evaluation through classroom activity.
- Through the preparation of scientific reports and the use of information

networks.
- Final exams.

11. Faculty

Faculty Members

#	Teaching Name	Certification	Scientific title	General Specialization	Specialization	Observations
1	Abdul Kareem Abdul Jabbar Mohammad Saeed	Ph.D	Professor	Horticulture and landscaping	Ornamental Plants	Head of the Department
2	Othman Khaled Alwan	Ph.D	Professor	Horticulture	Plant breeding and improvement	
3	Aziz Mahdi Abd	Ph.D	Professor	Horticulture	Breeding horticultural plants	
4	Ayad Assi Obaid	Ph.D	Professor	Horticulture and landscaping	Fruit	
5	Ahlam Ahmed Hussein	Ph.D	Professor	Horticulture	Vegetables	
6	Zeina Sami Rashid	Ph.D	Professor	Horticulture and landscaping	Horticulture\Fruit and Vegetables	
7	Ahmed Thamer Houmed	Ph.D	Assistant Professor	Horticulture and landscaping	Horticulture\Fruit and Vegetables	
8	Raad Waheeb Mahmoud	Ph.D	Assistant Professor	Horticulture and landscaping	Landscape design	
9	Heba Ahmed Jawad	Ph.D	Assistant Professor	Horticulture and landscaping	Plant tissue culture	
10	Khaled Ibrahim Mustaf	Ph.D	Assistant Professor	Horticulture and landscaping	Horticulture\Fruit and Vegetables	
11	Ekhlas Mutaib Ahmed	Ph.D	Assistant Professor	Horticulture and landscaping	Plant tissue culture	
12	Zeina Hezbar Khazaal	Ph.D	Assistant Professor	Horticulture and landscaping	Horticulture\Fruit and Vegetables	Graduate Coordinator
13	Adnan Ghazi Salman	Ph.D	Instructor	Horticulture and landscaping	Vegetables	
14	Mohammed Mezher Hasan	Ph.D	Instructor	Agricultural mechanization	Agricultural machines and equipment	
15	Mohammed Dhahir Abdel Hadi	Ph.D	Instructor	Horticulture and landscaping	Horticulture\Fruit and Vegetables	
16	Nisreen Mohammed Hathal	Ph.D	Instructor	Horticulture and landscaping	Horticulture\Fruit and Vegetables	

	Horticulture\Fruit and Vegetables	Horticulture and landscaping	Instructor	Ph.D	Sarah Ali Mohammed	17
	Vegetables	Horticulture and landscaping	Instructor	Ph.D	Mohammed Ali Zain Al-Den	18
	Horticulture\Fruit and Vegetables	Plant production	Instructor	Ph.D	Basim Almas Issa	19
Evening Department Coordinator	Horticulture\Fruit and Vegetables	Horticulture and landscaping	Instructor	Master	Nashwan Abdel Hamid Abbas	20
	Horticulture\Fruit and Vegetables	Horticulture and landscaping	Instructor	Master	Loma Bashir Hussein	21
PhD student at Diyala University		Horticulture and landscaping	Assistant Instructor	Master	Wissam Habib Abdullah	22
PhD student at Diyala University		Horticulture and landscaping	Assistant Instructor	Master	Eman Hikmat Hassan	23
PhD student at Diyala University		Horticulture and landscaping	Assistant Instructor	Master	Zainab Hassan Akram	24
PhD student at Diyala University		Horticulture and landscaping	Assistant Instructor	Master	Jamal Nathir Naji	25
Morning Department Coordinator		Horticulture and landscaping	Assistant Instructor	Master	Mohammed Abbas Hamid	26
		Horticulture and landscaping	Assistant Instructor	Master	Catherine Adnan Mahmoud	27
		Horticulture and landscaping	Assistant Instructor	Master	Mohaimen Khalifa Qahar	28
		Horticulture and landscaping	Assistant Instructor	Master	Rmosh Haqqi Ismail	29

Professional Development

Mentoring new faculty members

- The department sets future plans to include master's degree holders in postgraduate studies to obtain a doctorate degree according to the department's need for specialization in the future, and this is done through a number of options:

- Including study vacations inside and outside Iraq

- Fellowships

- Missions and studies at private expense

With regard to the activities of faculty members for development and professionalism, including: attending seminars and lectures, participating in training and professional seminars, and conducting new and innovative

- Sabbatical: The university supports the scientific leave of faculty members (sabbatical) for activity after five years of service for the benefit of some faculty members who took advantage of this opportunity.

- Full-time science for one year for the purpose of obtaining a postdoctoral degree
- The department works to support faculty members to obtain full-time research inside and outside the country after obtaining university approvals for the purposes of scientific research and joint supervision

Professional development of faculty members

- The department and the information center provide effective workshops and special courses to motivate faculty and employees to develop their performance through Internet technologies, e-learning systems and workshops
- The department has program plans for training faculty members according to the controls and instructions of the university and the ministry
- The Presidency of the University, represented by the President of the University and the Scientific Assistant, work on the importance of sober publishing and urge it according to the instructions of the Ministry, which emphasizes publishing in journals with a high impact factor for the year 2024
- The department certainly works on the participation of faculty members to contribute to all scientific activities, workshops and seminars related to the needs of society and the labor market, and the work of a number of patents that benefit the labor market for the year 2022 to 2024

12. **Acceptance Criterion**

Admission is carried out according to the regulations of the Ministry of Higher Education and Scientific Research - Central Admission Department, then according to the college's instructions, including:
- Iraqi nationality.
- Holder of an Iraqi secondary school certificate supported by ratification by the General Directorate of Education in the province or an equivalent certificate.
- Successful in the medical examination according to the conditions of each study and the blind student who meets the conditions for applying for appropriate humanitarian studies is entitled to apply through the Association of the Blind and can be through the medical committee at the university.
- The age of the applicant for central admission is not more than 24 years old, and whoever is over 24 years old is entitled to apply to evening or private colleges.
- Distribution of students to departments through the student's rate in the preparatory study and according to the student's desire and the absorptive capacity of the department.

13. **The most important sources of information about the program**

14. Program Development Plan
- Organizing workshops and training classes. - Forming committees to discuss the reality of teaching with its pros and cons, to develop curricula and plans and to update educational resources. - Providing opportunities for academic and research development through participation in scientific seminars and conferences. - Providing training opportunities for faculty members on the latest teaching techniques. - Providing scientific references, necessary books and electronic information sources. - Encouraging professors to complete reference books in specialization courses. - Comparing the study plan with its counterparts in other universities

Program Skills Outline															
Learning outcomes required from the program															
Values				Skills				Knowledge				Basic or optional	Course Name	Course Code	Year 2025/Level
C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
✓	✓	✓	✓		✓	✓	✓					Core	Organic Chemistry	COA-1102	The first
✓	✓	✓	✓		✓	✓	✓					Basic	Democracy and Human Rights	UD04	The first
✓	✓	✓	✓		✓	✓	✓					Core	Principles of Soil Science	SSD-1103	The first
✓	✓	✓	✓		✓	✓	✓					Core	Surveying	COA-1104	The first
✓	✓	✓	✓		✓	✓	✓					Core	Engineering Drawing	HOD-1109	The first
✓	✓	✓	✓		✓	✓	✓					Basic	English Language 1	UD11	The first
✓	✓	✓	✓		✓	✓	✓					Core	Agricultural Machines and Machinery	HOD-1205	The first
✓	✓	✓	✓		✓	✓	✓					Core	Principles of Statistics	HOD -1202	The first
✓	✓	✓	✓		✓	✓	✓					Core	Principles of Agricultural Economic	HOD -1208	The first
✓	✓	✓	✓		✓	✓	✓					Core	Principles of Animal Production	APD-1201	The first

✓	✓	✓	✓		✓	✓	✓					Basic	Computer I	UD13	The first
✓	✓	✓	✓		✓	✓	✓					Basic	Arabic Language 1	UD12	The first
✓	✓	✓	✓		✓	✓	✓					Basic	Plant Anatomy	HOD-2101	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Plant genetic	HOD-2102	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Plant Physiology	HOD-2103	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Organic Agriculture	HOD-2104	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Basics of Field Crops	HOD-2105	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Computer 2	UD23	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Arabic Language 2	UD22	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Plant nutrition	HOD-2201	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Plant Ecology and Sustainable Agriculture	HOD-2202	The second
✓	✓	✓	✓		✓	✓	✓	✓				Basic	Nurseries and plant propagation	HOD-2203	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Principles of landscape design	HOD-2204	The second

✓	✓	✓	✓		✓	✓	✓					Basic	Biochemistry	HOD-2205	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Crimes of the Baath regime in Iraq	UD24	The second
✓	✓	✓	✓		✓	✓	✓					Basic	English language 2	UD21	The second
✓	✓	✓	✓		✓	✓	✓					Basic	Plant Anatomy	HOD-2101	The second
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Plant genetic	HOD-2102	The second
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Plant Growth Regulators	PLGR300	Third
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Medicinal and aromatic plants	MEAP301	Third
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Design and analysis of experiments	EXDA302	Third
✓	✓	✓	✓		✓	✓	✓			✓		Basic	Produce vegetables 1	VEGP303	Third
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Irrigation and Drainage	IRRD305	Third
✓	✓	✓	✓		✓	✓	✓				✓	Basic	Deciduous fruit 1	DECF306	Third
✓	✓	✓	✓		✓	✓	✓	✓	✓			Basic	Ornamental plants 1	FLOR308	Third
✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	Basic	Horticultural plant breeding	PLAB310	Third
✓	✓	✓	✓		✓	✓	✓				✓	Basic	Deciduous Fruit 2	DECF307	Third

✓	✓	✓	✓		✓	✓	✓					Basic	Beekeeping	HOBB311	Third
✓	✓	✓	✓		✓	✓	✓			✓		Basic	Produce vegetables 2	VEGP304	Third
✓	✓	✓	✓		✓	✓	✓	✓	✓			Basic	Ornamental Plants 2	FLOR309	Third
✓	✓	✓	✓		✓	✓	✓					Basic	Horticultural plant diseases	HORD312	Third
✓	✓	✓	✓		✓	✓	✓	✓				Basic	Garden Engineering	LAND400	Fourth
✓	✓	✓	✓		✓	✓	✓			✓		Basic	Protected cultivation	GRHO401	Fourth
✓	✓	✓	✓		✓	✓	✓				✓	Basic	Sustainable fruit	EVEF402	Fourth
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Seed production and storage	HOSP403	Fourth
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Plant tissue culture	PLTC404	Fourth
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Farm Management	FARM405	Fourth
✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	Basic	Research Project	GRREP408	Fourth
✓	✓	✓	✓		✓	✓	✓				✓	Basic	Production of grapes and small fruits	GRAS406	Fourth
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Biotechnology	PLAB414	Fourth
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Reaping and storing horticultural crops	POFS410	Fourth

✓	✓	✓	✓		✓	✓	✓				✓	Basic	Palm production	DAPP411	Fourth
✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	Basic	Fertilizers and soil fertility	SOFF412	Fourth
✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	Basic	Seminars	SEMN407	Fourth
✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	Basic	Research Project	GRREP409	Fourth

- **Please tick the boxes corresponding to the individual learning outcomes from the program under evaluation.**

Course Description Form Arabic language 1

1. Course Name:
Arabic language 1
2. Course Code:
UD12
3. Semester / Year:
Second Semester/ 2025-2026
4.Description Preparation Date:
1/6/2026
5.Available Attendance Forms:
Attending
6.Number of Credit Hours
50 hours (Theoretical & practical) 2 units
7.Course administrator's name (mention all, if more than one name)
Name: Assistant teacher .Anaam salih mahdi Email: Anaamsalih53@gmail.com
8.Course Objectives
This curriculum seeks to learn the Arabic language correctly and to know and preserve its beginnings.
9.Teaching and Learning Strategies
1- That the student learns the basics of the Arabic language 2- The student recognizes common linguistic errors and tries to avoid them 3- The student can write clear and accurate spelling.
10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
the first	2	For the student to recognize the importance of the Arabic language and to preserve it	Arabic	Explanation, presentation of the model and lecture	the exam
the second	2	The student will be familiar with a historical overview of the Arabic language	Arabic	Explanation, presentation of the model and lecture	the exam
the third	2	The student gets to know the letters of the alphabet and the alphabet	Arabic	Explanation, presentation of the model and lecture	the exam
the fourth	2	For the student to recognize common linguistic errors	Arabic	Explanation, presentation of the model and lecture	the exam
Fifth	2	For the student to know punctuation marks	Arabic		the exam

VI	2	The student gets to know general grammatical rules	Arabic	Explanation, presentation of the model and lecture	the exam
Seventh	2	The student gets to know numbers and counting	Arabic	Explanation, presentation of the model and lecture	the exam
VIII	2	The student will be familiar with writing the hamza in the Arabic language	Arabic	Explanation, presentation of the model and lecture	the exam
Ninth	2	For the student to recognize the difference between dā' and dā'	Arabic	Explanation, presentation of the model and lecture	the exam
The tenth	2	For the student to recognize modal verbs	Arabic		
eleventh	2	For the student to recognize the abrogated names	Arabic	Explanation, presentation of the model and lecture	the exam
twelveth		For the student to know the		Explanation,	the exam

	2	types of (what) in the Arabic language	Arabic	presentation of the model and lecture	
Thirteenth	2	The student should know the hamzat al-wasl and the hamzat al-qat`	Arabic	Explanation, presentation of the model and lecture	the exam
fourteenth	2	The student gets to know the sentence, the subject, and the predicate	Arabic	Explanation, presentation of the model and lecture	the exam
Fifteenth	2	The student gets to know the elements of the sentence	Arabic	Explanation, presentation of the model and lecture	the exam
				Explanation, presentation of the model and lecture	
				Explanation, presentation	

				of the model and lecture	

11.Learning and Teaching Resources

1-The eloquent singer wrote about Arab books

2-Alfiyya Ibn Malik

Course Description Form of Agricultural equipment and machinery

1. Course Name:
Agricultural equipment and machinery
2. Course Code:
HOD-1205
3. Semester / Year:
Second semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
150 hours / 6 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Dr. Mohammed Mezher Hasan Email : mohammedmezher@uodiyala.edu.iq
8. Course Objectives

Agricultural machinery studies the most important machines used in agricultural fields and the extent of their usefulness, it includes knowledge of the basic concepts of agricultural machinery like Knowing the features and specifications of agricultural machinery, the theoretical basis for the operation of agricultural machines and machinery, and the scientific methods used in their operation also, Study the effect of using agricultural machinery and machinery to increase agricultural production	Course Objectives: Graduating students who are able to:

9. Teaching and Learning Strategies

1- Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons in agricultural fields 5- Scientific trips to learn about the most important agricultural machines used in agricultural fields	Strategy

10. Course Structure

Evaluation Method	Learning Method	Unit or Subject Name	Required learning outcomes	Hours	Week
Daily, monthly and final exams and daily reports	**Lecture** **Dialogue & discussion** Brainstorming	Important definitions and basic concepts in the sciences that related the subject of	General definitions and basic concepts in agricultural	**5**	**1**
Daily, monthly and final exams and daily reports	**Lecture** **Dialogue & discussion** Brainstorming	Sources of movement, tools and methods for transporting them in	Methods of movements transportation	**5**	**2**
Daily, monthly and final exams and daily reports	**Lecture** **Dialogue & discussion** **Brainstorming**	Components of the agricultural tractor and its function.	Agricultural tug (definition - general	**5**	**3**
Daily, monthly and final exams and daily reports	**Lecture** **Dialogue & discussion** **Brainstorming**	Components of agricultural tractors, the function and importance of each	The main parts of an agricultural tractor	**5**	**4**
Daily, monthly and final exams and daily reports	**Lecture** **Dialogue & discussion** **Brainstorming**	The basis of the engine's operation, its fixed and moving parts, the function of	Engine, general description - fixed and moving parts	**5**	**5**
Daily, monthly and final exams and daily reports	**Lecture** **Dialogue & discussion** **Brainstorming**	Parts of the system, methods of operation and types	Fuel system (diesel - gasoline)	**5**	**6**

Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Parts of the system, methods of operation and types	Oil system (types - parts) Benefits of oil	**5**	**7**
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Parts of the system, methods of operation and types	Cooling system (water cooling - air cooling)	**5**	**8**
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	The parts of the devices, the function of each part, and the mathematical relationships in converting speeds between these devices	Transmission devices (clutch - gearbox - differential - final transmission)	**5**	**9**
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Introduction to the hydraulic system, power transmission devices to agricultural machinery, and methods of connecting them	Hydraulic system in agricultural machines, their types in terms of the method of connection with the tug	**5**	**10**
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Definition of equipment, its types, parts, methods of maintenance, and the most important mathematical relationships to calculate its productivity	Primary and secondary soil preparation equipment	**5**	**11**
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Definition of equipment, its types, parts, methods of maintenance, and the most important mathematical relationships to calculate its productivity	Fertilization equipment	**5**	**12**
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Definition of equipment, its types, parts, methods of maintenance, and the most important	Irrigation equipment and methods	5	**13**

		mathematical relationships to calculate its productivity			
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Definition of equipment, its types, parts, methods of maintenance, and the most important mathematical relationships to calculate its productivity	Plant protection equipment	**5**	**14**
Daily, monthly and final exams and daily reports	**Lecture Dialogue & discussion Brainstorming**	Definition of equipment, its types, parts, methods of maintenance, and the most important mathematical relationships to calculate its productivity	Reaping and harvesting equipment	**5**	**15**

11. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture .
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Book of Engines & agricultural machinery	Required Textbooks (Curricular Books, If Any)
Agricultural machinery books Engines books	Main References (Sources)
International network for information on the subject	Electronic References, Websites

Course Description Form of Organic Chemistry

1.	Course Name:
Organic Chemistry	
2.	Course Code:
COA-1102	
3.	Semester / Year:
first semester/ 2025-2026	
4.	Description Preparation Date:
1/6/2026	
5.	Available Attendance Forms:
Attending	
6.	Number of Credit Hours (Total) / Number of Units (Total)
150 hours / 6 units	
7.	Course administrator's name (mention all, if more than one name)
Name: Eman Rahman Mahdi Abed Email: **emanrahman@uodiyala.edu.iq**	
8.	Course Objectives
Course Objectives	• The course aims to teach students the basics and concepts of chemistry of saturated and unsaturated aliphatic hydrocarbon compounds. It includes lessons on the chemical bonds and chemical formulas of hydrocarbon compounds. It also includes a definition of each of these compounds, its name, and its derivatives according to the international IUPAC system, as well as the physical properties of each compound and its chemical interactions with other hydrocarbon compounds.
9.	Teaching and Learning Strategies

Strategy	- Explains the basic concepts in organic chemistry.1 2- Distinguish the chemical formulas of hydrocarbon compounds. 3- Differentiate between the types of chemical reactions of hydrocarbon compounds 4- Compares the results of reactions of hydrocarbon compounds. 5- It applies the IUPAC rules for naming hydrocarbon compounds - Conducts experiments to detect hydrocarbon compounds in the laboratory6 7- Writing laboratory reports on the analysis of hydrocarbon compounds is completed according to guidelines.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Explains the basic concepts in organic chemistry	Organic chemistry	Explanation, presentation of the model and lecture	The exam
2	2	Distinguish the chemical formulas of hydrocarbon compounds.	Organic chemistry	Explanation, presentation of the model and lecture	The exam
3		Differentiate between the types of chemical reactions of hydrocarbon compounds.	Organic chemistry	Explanation, presentation of the model and lecture	The exam
4	2	Compares the results of reactions of hydrocarbon compounds	Organic chemistry	Explanation, presentation of the model and lecture	The exam
5	2	It applies the IUPAC rules for naming hydrocarbon compounds.	Organic chemistry	Explanation, presentation of the model and lecture	The exam
6	2	Tests for detecting hydrocarbon compounds are conducted in the laboratory	Organic chemistry	Explanation, presentation of the model and lecture	The exam
7	2	The writing of laboratory reports	Organic chemistry	Explanation, presentation of	The exam

		on the analysis of hydrocarbon compounds is completed according to guidelines.		the model and lecture	
8	2	He works efficiently within a team analyzing and testing the properties and ingredients of food products.	Organic chemistry	Explanation, presentation of the model and lecture	The exam
9	2	The information network is used to obtain modern knowledge in the field of organic chemistry.	Organic chemistry	Explanation, presentation of the model and lecture	The exam
10	2	Explains the basic concepts in organic chemistry. It explains the foundations and principles of basic sciences and their applications in agricultural sciences, food technology, and nutrition, explaining the chemical composition of food contents, their interactions, food spoilage factors, and appropriate preservation and manufacturing methods.	Organic chemistry	Explanation, presentation of the model and lecture	The exam
11	2	Assesses nutritional needs for different age groups	Organic chemistry	Explanation, presentation of the model and lecture	The exam
12	2	It efficiently employs modern technologies related	Organic chemistry	Explanation, presentation of the model and	The exam

		to agricultural operations and food production to develop and improve the food product and applies the correct specifications and standards in the field of food science and nutrition, food analysis and composition, and the changes that occur.		lecture	
13	2	He works with his colleagues in a team spirit, and the ability to communicate with others	Organic chemistry	Explanation, presentation of the model and lecture	The exam
14	2	It carries out applied research and uses statistical programs in experimental design and data analysis in the field of food and nutrition research	Organic chemistry	Explanation, presentation of the model and lecture	The exam

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1- Youssef Ali Al-Fattahi, 1989, Foundations of Organic Chemistry, a methodological book for students of the College of Agriculture and Life Sciences, University of Baghdad, House of Wisdom
Main references (sources)	Raymond Chang 2002 “Chemistry”7th Ed.McGraw- Hill Higher Compaine. • Richard E. Beleil (2005). General chemistry Lab. Manual, Dakota State university, U.S.A

Recommended books and references (scientific journals, reports...)	Iraqi academic scientific journals
Electronic References, Websites	Library Genesis

Course Description Form of Principles of Animal Production

1. Course Name:	
Principles of Animal Production	
2. Course Code:	
APD-1201	
3. Semester / Year:	
Second semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
175 hours / 7 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name: Dr. Raaed Ibrahim Khalil Email : raaedibrahim@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	**-Give an idea of importance of animal prodution, types of farm animals ,animal husbandry .** **-Give an idea of importance of reproduction , nutrition and management .** **-Animals Housing and Records .**
9. Teaching and Learning Strategies	

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Introduction of importance of animal production.	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Interrelated animal production & plant production , Sciences related to animal production.	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Capabilities & constraint of animal production in Iraq.	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Breed of dairy & beef cattle	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Buffaloes	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Milk production in the world and its influencing factors.	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
8	2	Sheep & goat breeding	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
9	2	Nutrition requirements, Compound stomach	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
10	2	Poultry	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
11	2	Barns	Principles of Animal Production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

12	Semester 2nd exam				
13	**2**	Reproductive in farm animals	**Principles of Animal Production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Fish culture & production	**Principles of Animal Production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Visit the farm of Agriculture College	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Observation of field operations	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Milking	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Calves suckling	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Scientific Trip	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Reproductive physiology & Artificial insemination	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Hatching , Selection of hatching eggs.	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Feedstuffs	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Barns	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11	**3**	Animal diseases	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Applied in animal management	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Observation of field operations	**Principles of Animal Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation
Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	-Principles of Animal Production. Al-Jalili et.al.
Main References (Sources)	- Milk cattle production . Alkudsi N.H. 2010. -Sheep & goat Principles of Production and Breeding . Al-Kass et.al. 1993
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	

Description Form of Principles of agricultural economics

1. Course Title:
Principles of agricultural economics

2. Course Code:
HOD -1208
3. Semester / Year:
Second semester/ 2025-2026
4. Date of preparation of this description :
1/6/2026
5. Available Forms of Attendance:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total):
150 hours / 6 units
7. Course administrator's name (if more than one name)
Mhana Abdullah Mahmood
8. Course Objectives
1.Teaching the student the applications of economics in agriculture in an economic manner and compared to .the technical aspect 2.The student's knowledge of economic laws and economic principles used in the field of agriculture 3.Optimal employment of agricultural production elements 4.How to achieve optimal levels of production 5.How agricultural products are based on market prices 6.Introducing the student to economics in general and agricultural economics in particular 7.The student's ability to identify deviations in the optimal use of resources and production from their actual use. 8 - Teaching the student how to achieve economic efficiency on the farm
9. Teaching and Learning Strategies
-Giving lectures 1-Brainstorming 2-Thinking strategy according to the student's ability, for example (if the student is able to learn the concept of applying the concept of agricultural economics on the farm, both in terms of achieving optimization of resources and production, as well as how to dispose of .production in detail

3-Critical thinking strategy in learning. Critical Thinking is a term that symbolizes the highest levels of thinking, which aims to pose a problem .and then analyze it logically to reach the desired solution

10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Quick and monthly exams, class activity and reports	Explanation, presentation of the model and lecture	Principles of Agricultural Economics	Principles of Agricultural Economics	2	1
Quick and monthly exams, class activity and reports	Explanation, presentation of the model and lecture	Economic problem	Principles of Agricultural Economics	2	2
Quick and monthly exams, class activity and reports	Explanation, presentation of the model and lecture	Demand for agricultural crops	Principles of Agricultural Economics	2	3
Quick and monthly exams, class activity and reports		Agricultural supply	Principles of Agricultural Economics	2	4
Quick and monthly exams, class activity and reports	Explanation, presentation of the model and lecture	Agricultural production economics	Principles of Agricultural Economics	2	5
Quick and monthly exams, class activity and reports	Explanation, presentation of the model and lecture	Functions of agricultural production	Principles of Agricultural Economics	2	6

Quick and monthly exams, class activity and reports	Explanation , presentation of the model and lecture	Agricultural production costs	Principles of Agricultural Economics	2	7
Quick and monthly exams, class activity and reports	Explanation , presentation of the model and lecture	Revenues and profits for projects of agricultural production	Principles of Agricultural Economics	2	8
Quick and monthly exams, class activity and reports	Explanation , presentation of the model and lecture	Agricultural Marketing	Principles of Agricultural Economics	2	9
Quick and monthly exams, class activity and reports	Explanation , presentation of the model and lecture	Price policy	Principles of Agricultural Economics	2	10
Quick and monthly exams, class activity and reports	Explanation , presentation of the model and lecture	Agricultural Finance	Principles of Agricultural Economics	2	11
Quick and monthly exams, class activity and reports	Explanation , presentation of the model and lecture	Farm Business management	Principles of Agricultural Economics	2	12
Quick and monthly exams, class activity and reports	Explanation , presentation of the model and lecture	Economic benefits determined for the size of the production project	Principles of Agricultural Economics	2	13
Quick and monthly exams, class activity and reports	Explanatio, presentation of the model and lecture	Types of relationships between agricultural commodities	Principles of Agricultural Economics	2	14
11. Course Evaluation					

.(Daily quick exams (COZs .(Monthly exams (two or more - .Evaluating students' classroom activity - Assessing students' laboratory activities - Evaluations on writing scientific reports and homework.	
12. Learning and Teaching Resources	
1- Al-Dahri, Abdel-Wahab Matar. 1987. The agricultural economy . Ministry of Higher Education and Scientific Research. Baghdad University . Second . Edition . Baghdad 2-Al-Najafi, Salem Tawfiq. 1990. The agricultural economy . Dar Al-Hikma for Printing and Publishing - Mosul	Required textbooks (methodology, if any)
Al-Maksousi, Rahman Hassan Ali. 2007. The agricultural economy . Ministry .of Higher Education and Scientific Research. Wasit University Recent articles from the Internet and from specialized scientific journals, the Iraqi Journal of Agricultural Sciences, and the virtual library	Main references (sources)
Iraqi academic scientific journals	Recommended books and references (scientific journals, reports…)
	Electronic References, Websites

Course Description Form of Principles of Statistics

1. Course Name:
Principles of statistics
2. Course Code:
HOD -1202
3. Semester / Year:
Second semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
150 hours /6 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Dr. Othman Khalid Alwan **Email : othmanalwan@uodiyala.edu.iq**
8. Course Objectives
Knowledge of the basic concepts associated with statistics, its relationship with other social and human sciences, its functions, and areas of application. Training the student to use available data to describe the phenomenon study. **The ability to statistically analyze phenomena and the extent of the importance of the results (significant or non-significant)**
9. Teaching and learning strategies
A 14-week attendance lectures, interspersed with two monthly exams, daily exams & reports.
1. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Quick and monthly exams, class activity, reports, and applications for solving exercises	Presentation of the lecture, discussion, and follow-up of the solution steps	Introduction: Getting to know statistics, its functions, types of data, and statistical symbols	Familiarity with the vocabulary and principles of statistics	4	1
Quick and monthly exams, class activity, reports, and applications for solving exercises	Presentation of the lecture, discussion, and follow-up of the solution steps	Data presentation methods: Display metadata tabularly and graphically.	Learn how to display data for each phenomenon	4	2
Quick and monthly exams, class activity, reports, and applications for solving exercises	Presentation of the lecture, discussion, and follow-up of the solution steps	Descriptive statistics measures: (mean, median, mode). (Range, average absolute deviations,.	Knowledge of descriptive statistics measures	4	3
Quick and monthly exams, class activity, reports, and applications for solving exercises	Presentation of the lecture, discussion, and follow-up of the solution steps	Variance and standard deviation (coefficient of relative variation, standard score)	Learn about measures of central tendency	4	4
Quick and monthly exams, class activity, reports, and applications for solving exercises	Presentation of the lecture, discussion, and follow-up of the solution steps	Elementary probability theory	Learn about probability theories	4	5
Quick and monthly exams, class activity, reports, and applications for solving exercises	Presentation of the lecture, discussion, and follow-up of the solution steps	Probabilities and their practical applications of some concepts related to probabilities,	Learn how to apply theories	4	6
Quick and monthly exams, class activity, reports, and applications for solving exercises	Presentation of the lecture, discussion, and follow-up of the solution steps	Discontinuous discrete probability distributions (binomial distribution)	Learn about non-continuous distributions	4	8+ 7

Quick and monthly exams, class activity, reports, and applications for solving exercises	**Presentation of the lecture, discussion, and follow-up of the solution steps**	**Probability distributions Continuous continuous (normal distribution)**	**Learn about non-continuous distributions**	**4**	**10+9**
Quick and monthly exams, class activity, reports, and applications for solving exercises	**Presentation of the lecture, discussion, and follow-up of the solution steps**	**Test of Hypothesis**	**Learn about statistical hypotheses**	**4**	**11**
Quick and monthly exams, class activity, reports, and applications for solving exercises	**Presentation of the lecture, discussion, and follow-up of the solution steps**	**Chi- square distribution x^2**	**Learn about chi-square distribution**	**4**	**+12 13**
Quick and monthly exams, class activity, reports, and applications for solving exercises	**Presentation of the lecture, discussion, and follow-up of the solution steps**	**Simple regression and correlation:**	**Learn about regression and correlation**	**4**	**14**
Quick and monthly exams, class activity, reports, and applications for solving exercises	**Presentation of the lecture, discussion, and follow-up of the solution steps**	**Using computers to solve statistical problems**	**Learn the programs that are used to solve problems**	**4**	**15**

11. Course Evaluation

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	Introduction to Statistics − Written by Dr. Khasha Mahmoud Al−Rawi − University of Mosul − 2000
Main References (Sources)	Electronic References, Websites

Course Description Form of Principles of soil

1. Course Name:	
Principles of soil	
2. Course Code:	
SSD−1103	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
175 hours / 7 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Prof. Hussein Aziz Email: Husseinaziz@uodiyala.edu.iq	
8. Course Objective	
Course Objectives	• Definition of soil science and how soils originate and develop, and what are the processes and factors affecting that. • Knowledge of the physical properties of soils (texture, structure, soil water, actual and apparent soil density) • Knowledge of the chemical properties of soils (mineral composition, organic matter, ion exchange, soil acidity, alkalinity and salinity). • Knowledge of the biological properties of soils and identification of the basic nutrients and their importance to plants.
9. Teaching and Learning Strategies	
Strategy	In-person lectures for 15 weeks, including two monthly exams and daily exams.
10. Course Structure	

The theoretical part					
Week	**Hours**	**Required Learning Outcome**	**Unite or Subject Name**	**Learning Method**	**Evaluation Method**
1	2	Soil formation and formation	Principles of soil	Lecture with explanation and presentation	Exams
2	2	Soil formation processes and factors	Principles of soil	Lecture with explanation and presentation	Exams
3	2	Soil profile	Principles of soil	Lecture with explanation and presentation	Exams
4	2	Soil physical properties(psp) texture, classes, structure,	Principles of soil	Lecture with explanation and presentation	Exams
5	2	Soil density, Bulk density , soil air , soil temperature ,soil color	Principles of soil	Lecture with explanation and presentation	Exams
6	2	Available water capacity , permeability soil water.	Principles of soil	Lecture with explanation and presentation	Exams
7	2	Soil water (soil water classification)	Principles of soil	Lecture with explanation and presentation	Exams
8	2	Soil Chemical Properties	Principles of soil	Lecture with explanation and presentation	Exams
9	2	Soil minerals	Principles of soil	Lecture with explanation and presentation	Exams
10	2	Colloids and soil properties	Principles of soil	Lecture with explanation and presentation	Exams
11	2	Double electrical layer	Principles of soil	Lecture with explanation and presentation	Exams
12	2	Exchanges ion in the soil	Principles of soil	Lecture with explanation and presentation	Exams
13	2	The properties of bio-soil (soil classification revival)	Principles of soil	Lecture with explanation and presentation	Exams
14	2	The role of biology in the soil to increase soil fertility	Principles of soil	Lecture with explanation and presentation	Exams
15	2	Soil classification	Principles of soil	Lecture with explanation and presentation	Exams

Practical part					
Week	**Hours**	**Required Learning Outcome**	**Unite or Subject Name**	**Learning Method**	**Evaluation Method**
1	3	How to take soil samples	Principles of soil	Lecture with explanation and presentation	Exams
2	3	Preparation of samples for laboratory study	Principles of soil	Lecture with explanation and presentation	Exams
3	3	Determination of moisture in the soil	Principles of soil	Lecture with explanation and presentation	Exams
4	3	Distribution (soil texture)	Principles of soil	Lecture with explanation and presentation	Exams
5	3	Distribution volumetric minutes of soil (mechanical analysis)	Principles of soil	Lecture with explanation and presentation	Exams
6	3	Determination density and bulk soil	Principles of soil	Lecture with explanation and presentation	Exams
7	3	How to prepare saturated soil paste and calculate saturation	Principles of soil	Lecture with explanation and presentation	Exams
8	3	Measurement of electrical conductivity	Principles of soil	Lecture with explanation and presentation	Exams
9	3	Measure PH in soil	Principles of soil	Lecture with explanation and presentation	Exams
10	3		Principles of soil	Lecture with explanation and presentation	Exams
11	3	Determination of positive ions from soil and water extract	Principles of soil	Lecture with explanation and presentation	Exams
12	3	Determination of negative ions from soil and water extract	Principles of soil	Lecture with explanation and presentation	Exams
13	3	Estimate calcium carbonate	Principles of soil	Lecture with explanation and presentation	Exams
14	3	Estimation of organic matter	Principles of soil	Lecture with explanation and presentation	Exams

15	3	Estimation of soil biology	Principles of soil	Lecture with explanation and presentation	Exams

11. Course Evaluation

Exams
Daily exams and discussion questions within the lecture
The degree of participation in questions related to the academic subject

12. Learning and Teaching Resources

Required Textbook (curricular books, if any)	Alani, 1988. Principles of soil
Mean references (sources)	
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic references, Websites	

Course Description Form of Democracy and human rights

13. Course Name:

Democracy and human rights
14. Course Code:
UD04
15. Semester / Year:
First Semester / 2025-2026
16. Description Preparation Date:
1/6/2026
17. Available Attendance Forms:
Attending
18. Number of Credit Hours (Total) / Number of Units (Total)
50 hours / 2 units
19. Course administrator's name (mention all, if more than one name)
ayyada Mohammed Abdul Latif **yyadahabdullateef@uodiyala.edu.iq**
20. Course Objectives

urse Objectives	student's knowledge of: 1- Know the meaning of democracy and its historical origin 2- Know the types of democracy 3- Definition of what human rights are 4- Learning about human rights in ancient civilizations (Mesopotamia civilizatio Nile Valley)

21. Teaching and Learning Strategies

ategy	5 -week attendance lectures, interspersed with two monthly exams, and daily ms.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			introduction to the concept of nocracy and an explanation of historical origin	ture with lanation sentation	ly exam

			hows the most important aracteristics and components of nocracy	ture with lanation sentation	ly exam
			umerates the forms of nocracy and their relationship state institutions	ture with lanation sentation	ly exam
			plains the types of democracy l its most important nifestations	ture with lanation sentation	ly exam
			rifying the most important arantees that guarantee the nocratic system	ture with lanation sentation	ly exam
			st month exam	ture with lanation sentation	ly exam
			l the Definition of human rights gin and development of the ncept of human rights	ture with lanation sentation	ly exam
			limpse of human rights in ient civilizations (Mesopotamia vilization, Nile Valley	ture with lanation sentation	ly exam
			man rights in divine religions, h a focus on human rights in m	ture with lanation sentation	ly exam
			man rights and their ationship to other variables: the ationship of rights to the law, relationship of rights to duties	ture with lanation sentation	ly exam
			e most important international man rights declarations and ventions: The Universal claration of Human Rights 1948	ture with lanation sentation	ly exam
			e most important basic human hts	ture with lanation sentation	ly exam
			rruption and its manifestations, es of corruption: administrative ruption, moral corruption, ancial corruption, political ruption	ture with lanation sentation	ly exam
			ministrative corruption, moral ruption, financial corruption, itical corruption	ture with lanation sentation	ly exam
			ond month exam	ture with lanation	ly exam

				sentation	

23. Course Evaluation

Examinations
Monthly and daily exams with discussion questions inside the lecture
The degree of participation in the questions related to the subject.

24. Learning and Teaching Resources

quired textbooks (curricular books, if any)	Human rights, democracy and public freedoms, Assistant Professor Dr. Maher Sabry Kazim, Baghdad 0.2010
in references (sources)	1. The Concept of Contemporary Democracy, Ali Khalifa Al-Kuwari, from Al-Mustaqbal Al-Arabi Magazine, No. 168, February 1993. 2. Universal Declaration of Human Rights, United Nations Department of Public Information
Recommended books and references (scientific journals, reports…)	dies, field visits
ctronic References, Websites	Internet, social networks

Course Description Form of English Language 1

1. Course Name:	
English Language 1	
2. Course Code:	
UD11	
3. Semester / Year:	
first semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
50 hours / 2 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name: Assistant Teacher: FARHAD WALEED HAMEED Email: farhadwalid@ uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	Teaching basic principles and rules and using them to develop and improve the level of non-native speakers
9. Teaching and Learning Strategies	

Strategy	- Giving lectures. - Using the method of dialogue and discussion with students to convey Theoretical information to the student. - In-person lectures for 15 weeks, including two monthly exams, daily exams, and scientific reports

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	**2**	The tense system	English Language 1	Lecture, discussion, reports,	Quick and monthly exams, class activity and
2	**2**	Compound words	English Language 1	Lecture, discussion, reports,	Quick and monthly exams, class activity and
3	**2**	Present tenses / Hot verbs	English Language 1	Lecture, discussion, reports,	Quick and monthly exams, class activity and
4	**2**	Present Perfect /	English Language 1	Lecture, discussion, reports,	Quick and monthly exams, class activity and
5	**2**	Narrative tenses	English Language 1	Lecture, discussion, reports,	Quick and monthly exams, class activity and
6					
7		Monthly exam	Monthly exam	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
8		Questions in English language	English Language 1	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
9		Prefixes and antonyms	English Language 1	Lecture, discussion, reports	Daily, monthly and final exams and daily reports

10		Future forms	English Language 1	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
11		Expressions of quantity	English Language 1	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports
12					
13		Making suggestions	English Language 1	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports
14		adjectives	English Language 1	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports

11. Course Evaluation
Assigning students to homework. Daily rapid exams - Monthly exams (two or more). - Evaluating students' classroom activity. - Evaluations on homework.

12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	1New Headway pre Intermediate
Main References (Sources)	**www.youtube.com.**
Recommended Books and References (Scientific Journals, Reports...)	- Benefit from websites to learn the pronunciation of words and for students to acquire new meanings.

Course Description Form of Plan surveying

25.	Course Name:
	Plan surveying
26.	Course Code:
	COA-1104
27.	Semester / Year:
	Second semester / 2025-2026
28.	Description Preparation Date:
	1/6/2026
29.	Available Attendance Forms:
	Attending
30.	Number of Credit Hours (Total) / Number of Units (Total)
	150 hours / 6 units
31.	Course administrator's name (mention all, if more than one name)

me: Dr. Basim Aboud Abbas
Email: basimabbas@uodiyala.edu.iq

32. Course Objectives

Course Objectives	arn about the methods of measuring area and the tools used in measurement.

33. Teaching and Learning Strategies

Strategy	A 15 -week attendance lectures, interspersed with Two monthly exams, daily exams, and scientific reports

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	2		e student gets to know the inition of Plan surveying and its portance	ture with lanation sentation	ly exam
	2		the student to become familiar h surveying methods	ture with lanation sentation	ly exam

			e student gets to know the types of n surveying	ture with lanation sentation	ly exam
			e student gets to know the units of asurement	ture with lanation sentation	ly exam
			the student to become familiar h the English system of units	ture with lanation sentation	ly exam
			e student will be familiar with the tric system of units	Lecture with explanation presentation	ly exam
			The student will be familiar with measuring distances on flat land	ture with lanation sentation	ly exam
			The student will be familiar with measuring horizontal distances on sloping lands	ture with lanation sentation	ly exam
			For the student to recognize columns in measuring areas	ture with lanation sentation	ly exam
			e student gets to know the stacles and their types	ture with lanation sentation	ly exam
			e student gets to know settlement l its importance in agriculture	ture with lanation sentation	ly exam
			e student gets to know the types of eling devices	ture with lanation sentation	ly exam
			e student to become familiar with ographic surveying	ture with lanation sentation	ly exam
			e student will be familiar with nning using a flat plate	ture with lanation sentation	ly exam
			e student gets to know areas and umes	ture with lanation sentation	ly exam

35. Course Evaluation	
Examinations Monthly and daily exams with discussion questions inside the lecture The degree of participation in the questions related to the subject	
36. Learning and Teaching Resources	
quired textbooks (curricular books, if any)	

in references (sources)	undations of Plan surveying and topography d Saleh Al-Khafaf / 2000 ernational Information Network Internet
Recommended books and references (scientific journals, reports…)	qi academic scientific journals
ctronic References, Websites	ogle browser

Course Description Form of Engineering Drawing

1. Course Name:	
Engineering Drawing	
2. Course Code:	
HOD–1109	
3. Semester / Year:	
first semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
175 hours / 7 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name: Dr. Mohammed Mezher Hasan Email: mohammedmezher@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	1-getting to know the concept of engineering drawing 2-identification of the tools used in engineering drawing 3-the student should recognize the drawing scale 4-the student should be able to draw 5-the student should be able to imagine the drawing
9. Teaching and Learning Strategies	

Strategy	- Giving lectures. - Using the method of dialogue and discussion with students to convey Theoretical information to the student. - In-person lectures for 15 weeks, including two monthly exams, daily exams, and scientific reports

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	2	General definitions and basic concepts in engineering drawing - its importance - getting to know engineering drawing tools	Introduction engineering drawing	Lecture, discussion, reports,	Quick and monthly exams, class activity and reports
2	2	Types of lines - their use - methods of signing dimensions	Introduction engineering drawing	Lecture, discussion, reports,	Quick and monthly exams, class activity and reports
3	2	Drawing tangent lines, arcs and curves.	Drawing shapes	Lecture, discussion, reports,	Quick and monthly exams, class activity and reports
4	2	Drawing ellipses	Drawing ellipses	Lecture, discussion, reports,	Quick and monthly exams, class activity and reports
5	2	The three projection levels (vertical - horizontal - lateral) - Projection of simple geometric shapes such as triangles, squares and circles	The three projection levels	Lecture, discussion, reports,	Quick and monthly exams, class activity and reports
6	Semester 1st exam				
7	2	Dividing the board and choosing the appropriate scale	Dividing the board	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
8	2	Finding the three projections - How to write dimensions	How to write dimensions	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
9	2	Writing dimensions on the drawing - and common mistakes	How to write dimensions	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
10	2	Drawing the three projections of the cylinder	Drawing the three projections	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
11	2	How to draw solids - Angles of drawing solids	Drawing solids	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports

12	Semester 2nd exam				
13	**2**	Drawing the cylinder in the solid shape	Drawing solids	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports
14	**2**	Derive the third projection - Drawing the solid an idea about the importance of sectors	Derive the third projection	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	General definitions and basic concepts in engineering drawing - its importance - getting to know engineering drawing tool**s**	Introduction engineering drawing	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
2	**3**	Types of lines - their use - methods of signing dimensions	Introduction engineering drawing	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
3	**3**	Drawing tangent lines, arcs and curves.	Drawing shapes	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
4	**3**	Drawing ellipses	Drawing ellipses	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
5	**3**	The three projection levels (vertical - horizontal - lateral) - Projection of simple geometric shapes such as triangles, squares and circles	The three projection levels	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Dividing the board and choosing the appropriate scale	Dividing the board	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
8	**3**	Finding the three projections - How to write dimensions	How to write dimensions	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
9	**3**	Writing dimensions on the drawing - and common mistakes	How to write dimensions	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports

10	**3**	Drawing the three projections of the cylinder	Drawing the three projections	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
11	**3**	How to draw solids - Angles of drawing solids	Drawing solids	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Drawing the cylinder in the solid shape	Drawing solids	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
14	**3**	Derive the third projection - Drawing the solid an idea about the importance of sectors	Derive the third projection	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports

11. Course Evaluation

Assigning students to homework.
Daily rapid exams
- Monthly exams (two or more).
- Evaluating students' classroom activity.
- Evaluations on homework.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	Engineering Drawing for the 1st year By R.B. Gupta Natik Sabri, 1995 engineering drawing for students of the Faculty of Agriculture, University of Mosul
Main References (Sources)	Engineering Drawing for the 1st year By R.B. Gupta Natik Sabri, 1995 engineering drawing for students of the Faculty of Agriculture, University of Mosul ،
Recommended Books and References (Scientific Journals, Reports...)	
Electronic References, Websites	

Course Description Form of Computer 2

1. Course Name: Computer application 3
Computer 2
2. Course Code:
UD13
3. Semester / Year:
First semester / the second stage 2025-2026
4.Description Preparation Date:
1/6/2026
5.Available Attendance Forms: Attending
6. Number of Credit Hours (Total) / Number of Units (Total) 5 hours (2 Theoretical and 3 practical) 3.5 units
7.Course administrator's name (mention all, if more than one name)
Name: **Dr Aqeel Ibrahim Mustaf** Email:
8.Course Objectives
1- The student should be familiar with Microsoft Excel 2010 **2- The student learns how to run and stop running the Excel 2010 program** **3- The student must be able to create a table and format the table in Excel 2010** **4- The student will be familiar with all the mathematical functions in Excel 2010** **5- The student learns how to apply functions and benefit from them**
9.Teaching and Learning Strategies
Introduction to Excel 2010 and a detailed explanation of how to use the program and create a spreadsheet. Learn how to format a table and delete and insert fields. Focus on learning and implementing mathematical and logical functions in Excel 2010
10. Course Structure

Week	Hours	Required	Unit or	Learning method	Evaluation

		Learning Outcomes	subject name		method
the first	2	Introduction to Microsoft Excel 2010	Computer application 3	Running the Program / Program Interface / File Tab	the exam
the second	2	Explanation of the Home page	Computer application 3	Home Tab / Clipboard Group, Font, Alignment	the exam
the third	2	Explanation of the Home page		Home Tab / Number Group, Styles	the exam
the fourth	2	Explanation of the Home page		Insert/Delete/Cut/Copy/Paste Group, Cell Arrangement,	the exam
Fifth	2	Explanation of the Page Layout tab		Editing Page Layout Tab / Format Group, Page Setup, Sheet Options Document	the exam
VI	2	Explanation of the View and Instructions tab		Viewing Methods Group and Zoom Group Insert Tab / Table Group, Illustrations,	the exam
Seventh	2	Explanation of the Insert tab, inserting objects in Microsoft Excel			the exam
VIII		Explanation of		Charts Image Tools Tab / Formatting Inserted Images in Excel Insert Tab /	

Ninth	2	the Insert tab for Image Tools			the exam
The tenth	2	Explanation of creating mathematical formulas in Excel			the exam
eleventh	2			Formula Group, Inserting a Mathematical Formula from the Function Library Group,	the exam
twelveth	2	Explanation of creating mathematical formulas in Excel		Insert Function Command	the exam
Thirteenth	2				the exam
fourteenth	2	Explanation of creating mathematical formulas in Excel		Writing Mathematical Formulas Rules, Writing Functions and Comparison and Reference Factors	the exam
Fifteenth	2	Explanation of creating mathematical formulas in Excel		Applying Sum, Sumif, Average, Averageif Functions Applying	the exam
	2	Explanation of creating mathematical formulas in Excel Explanation of		Arithmetic and Arithmeticif Functions, Number of Empty Cells Calculation	the exam

		creating mathematical formulas in Excel Explanation of creating mathematical formulas in Excel Explanation of creating mathematical formulas in Excel Explanation of the keyboard shortcut panel		Applying Max, Min, Mod, Round, Abs Functions Applying the Conditional IF Statement Function Important Keyboard Shortcutsl	

11. Course Evaluation

1- "Basic Computer Fundamentals and Desktop Applications Part Three" 2- "The International Information Network: The Internet"

12.Learning and Teaching Resources

"Basic Computer Fundamentals and Desktop Applications Part Three" 2- "The International Information Network: The Internet"

Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form Crimes of the Baath regime in Iraq

1. Course Name:
Crimes of the Baath regime in Iraq
2. Course Code:
UD24
3. Semester / Year:
First semester /Second stage 2025-2026
4.Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6.Number of Credit Hours
50 hours / 2 Units
7.Course administrator's name (mention all, if more than one name)
Name: **Assistant teacher .Anaam salih mahdi** Email: Anaamsalih53@gmail.com
8.Course Objectives
is curriculum seeks to familiarize students with the crimes committed by the previous regime during the years of rule through documents, analysis and study
9.Teaching and Learning Strategies
1. This curriculum seeks to learn about and respect the laws 2. The student learns the etiquette of personal freedom 3. The student learns that the law applies to everyone
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first			The crimes of the	Explanation,	The exam

	2	For the student to become familiar with humanitarian laws	Baath regime in Iraq	presentation of the model and lecture	
the second	2	The student gets to know the concept of crimes and their categories	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
the third	2	The student gets to know the types of international crimes	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
the fourth	2	The student should learn about the crimes committed by the previous regime	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
Fifth	2	The student will be familiar with psychological and social crimes	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
VI	2	The student	The crimes of the Baath regime in Iraq	Explanation, presentation	The exam

		will learn about the effects of psychological crimes on the individual		of the model and lecture	
Seventh	2	For the student to recognize the effects of social crimes on the individual	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
VIII	2	The student should recognize the previous regime's violation of Iraqi laws	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
Ninth	2	The student should become familiar with the locations of prisons and detention in the previous regime	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
The tenth	2	The student gets to know environmental crimes	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
eleventh					

twelveth	2	The student will learn about the drying of the marshes during the time of the previous regime	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
Thirteenth	2	The student will learn about the leveling of orchards during the time of the previous regime	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
fourteenth	2	For the student to learn about the crimes of social graves during the time of the previous regime	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
Fifteenth	2	The student will be familiar with the chronological classification of mass graves during the time of the previous	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam

	2	regime The student gets to know personal freedom, its dimensions and limits	The crimes of the Baath regime in Iraq	Explanation, presentation of the model and lecture	The exam
11.Learning and Teaching Resources					
An approach to the crimes of the Baath regime in Iraq					

Computer 1

1. Course name:
Computer 1
2. Course code:
UD13
3. the chapter/Year:
First semester - for the academic year 2025-2026
4. Date this description was prepared
1/6/2026
5. Available attendance forms:
Full time (theoretical lecture and practical lecture)weekly
6. Number of study hours (total) / Number of units (total):
75 hours / 3 units
7. Name of the course administrator (if more than one name is mentioned)
Dr. Abdullah Farhan Mahdi
8. Course objectives
Teaching the student to be knowledgeable.With the basic rules for dealing with and managing computers to help him complete projects, print matters, and prepare statistics. Charts, presentation creation, engineering design, etc.And becauseThe emergence of the Internet as a means of communication available to everyone has made it very necessary for the student to learn how to use the computer due to the role of the Internet in many fields, including education, scientific research, commerce, and marketing through electronic correspondence, web pages, and

electronic conversation.

9. Teaching and learning strategies

1- Cognitive objectives:

1- The student's comprehension of the material

2- The ability to analyze and apply what you have learned practically on the computer.

3- The evaluation is done by presenting the material to the students in the laboratory and then applying it by them.

2- Course specific skill objectives:

1- Direct questions and answers about the previous article

2- Analyzing the student's ability to comprehend through theHome work is carried out at home and stored on discs to be displayed directly to students to see how much they have learned from the previous lecture.

3- Showing educational films on the subject to reinforce the ability to learn.

10. Course Evaluation

- First exam score out of 10
- The second exam score is out of 10 points (5 points for the practical part)
- Daily attendance and participation score (5) points
- First semester final grade out of (20) points
- Final exam score (20 practical + 30 theoretical)

Exams

- Daily exams With questions Discussion within the lecture
- Degree of participation in questions related to the study material

11. Learning and teaching resources

Required Textbooks(methodologythatI found it

- Computer Basics and Office Applications

Ministry of Higher Education and Scientific Research - Research and Development Department

Main References(Sources)

- Graham Brown, David Watson, "ICT at CambridgeIGCSE, 3rd Edition (2020).
- Alan Evans, Kendall Martin, Mary Ann Pozzi, "Technology at Work Complete," 16th Edition (2020)

Recommended supporting books and references (scientific journals, reports, etc.)

- Dr. Adel Abdel Nour "Introduction to the World of Artificial Intelligence"

the reviewerElectronic,Websites

- Word 2010 Digital Classroom Book

- https://www.agitraining.com/books/microsoft-officebooks/word-2010-digital-classroom-book

Course Description Form of English language 2

1. Course Name:	
English language 2	
2. Course Code:	
UD21	
3. Semester / Year:	
second semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
50 hours / 2 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name: Assistant Professor FARHAD WALEED HAMEED Email: farhadwalid@ uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	Teaching basic principles and rules and using them to develop and improve the level of non-native speakers
9. Teaching and Learning Strategies	

Strategy	- Giving lectures. - Using the method of dialogue and discussion with students to convey Theoretical information to the student. - In-person lectures for 15 weeks, including two monthly exams, daily exams, and scientific reports

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	2	The tense system	English language	Lecture, discussion, reports,	Quick and monthly exams, class activity and reports
2	2	Compound words	English language	Lecture, discussion, reports,	Quick and monthly exams, class activity and
3	2	Present tenses / Hot verbs	English language	Lecture, discussion, reports,	Quick and monthly exams, class activity and
4	2	Present Perfect /	English language	Lecture, discussion, reports,	Quick and monthly exams, class activity and
5	2	Narrative tenses	English language	Lecture, discussion, reports,	Quick and monthly exams, class activity and
6					
7		Monthly exam	Monthly exam	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
8		Questions in English language	English language	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
9		Prefixes and antonyms	English language	Lecture, discussion, reports	Daily, monthly and final exams and daily reports

10		Future forms	English language	Lecture, discussion, reports	Daily, monthly and final exams and daily reports
11		Expressions of quantity	English language	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports
12					
13		Making suggestions	English language	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports
14		adjectives	English language	Lecture, discussion, reports,	Daily, monthly and final exams and daily reports

11. Course Evaluation

Assigning students to homework.
Daily rapid exams
- Monthly exams (two or more).
- Evaluating students' classroom activity.
- Evaluations on homework.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	1New Headway pre Intermediate
Main References (Sources)	**www.youtube.com.**
Recommended Books and References (Scientific Journals, Reports...)	- Benefit from websites to learn the pronunciation of words and for students to acquire new meanings.

Course Description Form of Principles of Plant genetics.

1. Course Name:
Plant genetics
2. Course Code:
HOD−2102
3. Semester / Year:
First semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
125 hours / 5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Prof. Dr. Aziz Mahdi Abd Email : Azizmabd@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	- Teaching students some genetic sciences related to plant breeding and improvement. - Teaching students how to breed and improve the characteristics of different varieties and types of fruit plants, whether self-pollinated, cross-pollinated, or vegetatively propagated. - Teaching students how to raise and improve the characteristics of different varieties and types of vegetable plants, whether self-pollinated, cross-pollinated, or vegetatively propagated. - Teaching students how to breed and improve the characteristics of different varieties and types of ornamental plants, whether self-pollinated, cross-pollinated, or vegetatively propagated. - Teaching students to use genetic engineering methods to improve horticultural crops. - Teaching students to use some of the materials used to produce new products. - Teaching students how to raise horticultural crops that are resistant to various diseases. - Teaching students how to raise horticultural crops that are resistant to harsh environmental conditions.
9. Teaching and Learning Strategies	
Strategy	- Giving lectures. - Using the method of dialogue and discussion with students to convey theoretical information to the student. - Applying theoretical lessons in the field. - Using modern laboratories. - Using computers and display devices during lectures. Assigning students to homework to prepare scientific reports on their specialty.
10- Course outcomes and teaching, learning and evaluation methods	A- Cognitive objectives - Enabling students to obtain knowledge and understanding of the basics of horticultural plant breeding. - Enabling students to obtain knowledge and understanding of methods of breeding and improving horticultural plants to obtain new genetic structures (varieties) that are suitable for the Iraqi environment. - Enabling students to obtain knowledge and understanding of methods for transferring desired genes into commercial varieties. - Enabling students to obtain knowledge and understanding of producing vegetable crops that are tolerant to harsh environmental conditions. - Enabling students to obtain knowledge and understanding of producing modern varieties suitable for organic agriculture to implement the concept of sustainable agriculture.
	B - The skills objectives of the course. - Training students to obtain the scientific skills necessary to work as plant breeders. - Training students to obtain practical skills in using modern laboratory equipment for gene transfer in order to improve horticultural crops. - Providing students with the practical field skills necessary to distinguish plant genetic phenomena, such as natural resistance to diseases and the presence of useful genetic mutations, and to benefit from them in improving plant characteristics. - Training students to obtain the skills required to work in the field of breeding and improving horticultural crops, including precision in work and patience because plant breeding and improvement programs take a long time.

	C- Emotional and value goals - Inculcating human values to create a sense of responsibility and work to increase production using newly bred varieties. - Instilling the values of love for work in the field of scientific research, especially since education and improvement programs are long and require patience. - Make the student feel that food production is a collective responsibility and that he, as a plant breeder, must prepare himself for group work in research projects related to plant improvement and stay away from narrow personal interest. - The student should learn that the local plant wealth is the identity of the country and that he should bear responsibility for preserving it.
	D - General and qualifying transferable skills (other skills related to employability and personal development - Providing the graduate student with the skills of giving scientific lectures in various scientific forums. - Providing the graduate student with technical skills in order to work in scientific research centers. - Providing the graduate student with skills to work as a plant breeder and how to conduct the hybridization process between plants. - Providing the student with scientific research skills to continue communicating with new information in the field of horticultural sciences abroad and trying what is new and useful to the country.
11-Teaching and learning methods	- Through lectures. - Discussion with students (conducting dialogues). - Showing genetic scientific films that show the greatness of the Creator in His creation. - Hosting specialized professors and clerics to fill the souls of students with noble Islamic values. Evaluation methods - Monthly written exams. - Direct oral exams. - Class and home activities.
12-Evaluation methods	**- Daily quick exams (COZs).** **- Monthly exams (two or more).** **- Evaluating students' classroom activity.** **- Evaluations on writing research, scientific reports, and homework.**

13. Course Structure			
Theoretical part			
Week	**Hours**	**Topics Covered**	**Lab. Experiment Assignments**
1	5	Introduction to the science of evolution Methods plant breeding science and its related specifications and successful plant .breeders	Identify the tools used in plant breeding experiments
2	5	.Reproduction systems in the plant	Life for flowering plants, horticultural
3	5	.Male infertility and types	Methods of control in the self-pollination
4	5	Lack of sexual self-compatibility and .situations and means to overcome them	Methods of insulation between plants through breeding programs
5	5	Genetic variations and their relation to .breeding and improving the plant	Methods of castration in self-pollinated plants and humoral
6	5	Inheriting qualitative and quantitative traits and genetic equivalent and some .estimate genetic parameters	Lack of sexual self-compatibility and means to overcome it
7	5	Gene duplication and the strength of the hybrid internal and horticultural plant breeding	Divide the plants according to the nature and appreciation rate of vaccination
8	5	Genetic improvement of self-pollinated plants	Mutations and their role in horticultural crop breeding
9	5	Cannot detect language. Please choose it .manually	The most important uses of replication in improving crops Bustnbh
10	5	Genetic improvement of plants humoral Vaccination	The goals and methods of breeding and improving the family Solanaceae plants - tomatoes, eggplant
11	5	Complement the genetic improvement of plants humoral Pollination	The goals and methods of breeding and improvement of Cucurbitaceae family - and pumpkins option
12	5	.Methods of breeding crops Propagated	Tarbah goals and methods and improve family Alqraeih-sophistication and watermelon
13	5	Genetic improvement of plants through genetic engineering	Breeding aims and methods improve family Alnrjsuh- onion family and pretzels – okra
14	5	Breeding and genetic improvement using mutations	The aims and methods of breeding and improvement of pomegranate
15	5	Breeding and genetic improvement to withstand pests and environmental tensile	Mutation aims and methods improve the vines

Course Description Form of Plant anatomy

1. Course Name:
Plant anatomy
2. Course Code:
HOD-2101
3. Semester / Year:
first semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
125 hours / 5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Khalid Ibrahem Mustaf **Email: khalidibrahim@uodiyala.edu.iq**
8. Course Objectives

-Introducing students to the types of plant cells, their components, the function of each component, plant tissues and their functions, and the internal structure of plant organs.

-Teaching students how to dissect a plant, make anatomical sections of the plant cell, and make slides to view under a microscope.

-Teaching students about the components of each organelle in the plant cell and the function of each organelle in the plant cell

-Explaining the components of each organelle in the plant cell and the function of each organelle in the plant cell

- Explaining the use of modern techniques to make anatomical sections and how to dye them and attach them to slides for the purpose of photographing and studying them.

9. Teaching and Learning Strategies

-Giving lectures.

-Using the PowerPoint lecture presentation method, using a projector, dialogue and discussion of each slide that appears on the display screen with the students to convey theoretical information to the student.

-Getting to know the laboratory for plant anatomy, laboratory equipment, dissection tools, and chemicals required in the process of preparing slides to make the slides included in the theoretical material.

-Collecting botanical models from plants in the field for the purpose of making slides for the theoretical subject.

-Applying theoretical lessons in the laboratory to make slides and cross-sections and view them with an optical microscope

- Assigning students to homework to prepare scientific reports on the laboratory work carried out by the student in the laboratory.

- Assigning students to collect plant models for the theoretical subject to make slides and anatomical sections

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	5	Familiarity with plant anatomy vocabulary and identifying the components of the plant cell wall and the function of each part.	Introduction, definition of plant anatomy, plant cell, types, study of the higher plant cell, cell wall, middle lamina, primary wall,	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports

2	5	Plant cell living contents, cytoplasm, mitochondria, ribosomes, Collgi system, plastids, spherical bodies, microtubules, cell membranes.	Identify the plant cell and the function of each organel and its components.	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
3	5	The non-living contents of the plant cell . Vacuoles, cellular juice, crystals and their types, starchy granules, alleron granules.	Recognize non-living components, how they are formed and useful in the plant.	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
4	5	Plant tissues, permanent tissues, simple tissues, Brinkheemic tissue, collenchyma tissue, sklarenchyma tissue, cork tissue	recognize plant tissues, the function of each tissue, and its role in the function of the plant organ,	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
5	5	Plant tissues, permanent tissues, simple tissues, Brinkheemic tissue, collenchyma tissue, sklarenchyma tissue, cork tissue	recognize plant tissues, the function of each tissue, and its role in the function of the plant organ,	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
6	5	Plant tissues, complex tissues, epidermis, surrounding epidermis, vector tissues (phloem and xylem tissue).	recognize plant tissues, the function of each tissue, and its role in the function of the plant organ,	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
7	5	Plant tissues, mercetic, peripheral, interstital, lateral tissues, primary and secondary mercetology	recognize plant tissues, the function of each tissue, and its role in the function of the plant organ,	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports

8	5	Prederm, bark, commercial cork, lenticels, wound cork, leaf separation	recognize plant tissues, the function of each tissue, and its role in the function of the plant organ,	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
9	5	The growing apex in the stem, the apical cell theory, the theory of embryogenesis, the theory of the first mercet, the theory of the cover and the body, the theory of the growth of regions, the growing apex at the root	The student's knowledge of the developing bottle of the plant members and how the plant grows	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
10	5	Internal structure of the leg, epidermis, cortex, vascular cylinder	The student should learn the internal structure of the stem and the function of each part of it and	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
11	5	For the internal structure of the root, epidermis, cortex, vascular cylinder, vascular tissue, root zones, lateral roots are formed.	The student should learn the internal structure of the root and the function of each part of it and how to distinguish between them microscopically	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
12	5	Secondary thickening, of the stems, of the roots. Recognize the secondary growth of the stem, annual rings, secondary wood, secondary bark. Secondary thickening of vascular cambium, cork cambium,	The student should learn how to obtain secondary thickening in the plant and its benefit to the plant	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports

13	5	The internal structure of the leaf is dicotyledonous, monocotyledonous (leaf grass), identification of the internal structure of the leaf, upper epidermis, mesophyll, lower epidermis, carrier vessels (veins)	Teaching the student about the components of the leaf in the plant, the function of each component and its location in the leaf	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
14	5	Anatomy of aquatic and desert plants	Teaching the student the anatomical components that distinguish these plants from ordinary plants and the reason for their tolerance to these conditions.	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports
15	5	General review of all topics	Teaching students and reminding them of a summary of each topic	lecture Discussion Reports Laboratories	Quick and monthly exams, class activity and reports

11. Course Evaluation

- Daily quick exams (Kozat).
- Monthly exams (two or more).
- Evaluation of students' classroom activity .

Evaluate laboratory activities for students

- Assessments on writing scientific reports and homework .

12. Learning and Teaching Sources

Required textbooks (methodology, if any)	
Main references (sources)	- Anatomy of a plant – authored by Dr. Badri Owaid Al-Ani -1980

Recommended books and references (scientific journals, reports…)	- Plant morphology and anatomy - authorship . d. Hussein Al , Arousi – Dr. Emad Eddin Wasfi -2000 years Al-Ghamdi.Ahmed Ali Abu Amr, Metwally.Metwally Abdel Azim : 1428 AH 2007 AD , morphology and anatomy of the flower plant, second edition, Dar Al-Andalus for Publishing and Distribution, Hail - Solomon .Muhammad : 1424 AH 2003 AD , Plant Anatomy, First Edition, Dar Kunooz Ishbiliyah for Publishing and Distribution, Riyadh.
Electronic References, Websites	- International Information Network on Course Topic

Course Description Form of Organic Agriculture

1. Course Name:	
Organic agriculture	
2. Course Code:	
HOD-2104	
3. Semester / Year:	
Second semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
125 hours / 5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name : Nisreen Mohammad Hathal Email : nisreenmohammed@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	**- Introducing students to the concept of organic agriculture in general and its difference from traditional agriculture.** **- Study the effect of organic agricultural practices on plant growth and soil health.** **- Promoting awareness of sustainable agriculture by reducing dependence on industrial chemicals.** **- Promoting human health by providing high-quality food crops free of harmful chemicals.**

9. Teaching and Learning Strategies	
Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Historical summary of organic agriculture	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Nutritional value of organic agricultural products	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Sources of organic matter	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Organic agriculture requirements and conditions that must be met in the elements of organic agriculture	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5		Semester 1nd exam			
6	2	Organic matter and humus in agricultural soils	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
7	2	Humic acid, Fulvic acid, humine	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
8	2	Organic fertilizers and soil terminology, types of organic fertilizers	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
9	2	Agricultural courses	Organic Agriculture	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

10	**2**	**Bio fertilization**	**Organic Agriculture**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	Semester 2nd exam				
12	**2**	**Animal fertilizers (animal waste)**	**Organic Agriculture**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
13	**2**	**The effect of organic fertilizers on the quality of plant yield**	**Organic Agriculture**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	**Types of organic compounds found in organic matter and the method of their decomposition**	**Organic Agriculture**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	**Principles of organic farming**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	**Organic farming terminology**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	**Organic production**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	**Organic matter**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	**Organic matter**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	**organic fertilizers**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

8	**3**	**Humus formation**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	**Action of Humic and Fulvic in the soil**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	**Green fertilizers**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	**Industrial organic fertilizers**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	**Semester 2nd exam**				
13	**3**	**Compost**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	**Compost tea، Preparing compost,**	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation
Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	**Plant nutrition -Abu Dahi.1988**
Main References (Sources)	**Plant nutrition – alraes.1987**
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	

Course Description Form of Principles of Landscape design

1. Course Name:
Principles of Landscape design
2. Course Code:
HOD−2204
3. Semester / Year:
the first semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
150 hours / 6 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Raad Waheeb Mahmoud Email : raadalzuhairi@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	- A1- That the student becomes familiar with the sciences of garden engineering and design, ornamental plants, and methods of propagating them. A2- The student will be familiar with the science of soil fertility, modern puncturing methods, and remote sensing. A3- That the student becomes familiar with the sciences of surveying and engineering drawing and ways to apply them on the ground. A4- That the student can analyze and synthesize the components of a successful design. A5: To identify the strengths and weaknesses of previous educational programs and benefit from them. A6- The student should design an integrated map in garden engineering for a specific site requested in advance

9. Teaching and Learning Strategies

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Introduction, definition of the science of garden architecture and the history of its creation	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Garden styles throughout history: Chinese, Babylonian, Pharaonic, and Indian	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Modern French, English, Italian garden style.	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Types of gardens Aquatic rocky bonsai, etc	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Steps to design and implement gardens:	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

6	Semester 1st exam				
7	**2**	**Conditions that must be taken into account when creating gardens**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
8	**2**	**The right tree in the right location**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	**Global rates of green spaces**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Types of green spaces, their maintenance and irrigation methods	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	**Annual maintenance schedule and ways to control pests and weeds in gardens**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	Sustainable development goals City planning Sustainable city planning Green spaces within cities	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Using modern programs to identify and address tree planting problems	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

Practical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	**3**	**Drawing scale**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	**Engineering drawing tools**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Methods of measuring geometric shapes	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

4	**3**	**Learning on a bubble chart**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	**Learn to take notes from the site**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Getting to know AutoCAD		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	**Getting to know the instructions and keyboard in the program**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	**Drawing geometric shapes in AutoCAD**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	**Drawing a garden to scale using AutoCAD**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	**Drawing a garden to scale using AutoCAD**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Dividing the garden design into layers using AutoCAD		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Graduation project: Drawing a design proposal using AutoCAD for a public park		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture .
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	**-هندسة وتصميم الحدائق ، د.طلال الجلبي (1990).**
Main References (Sources)	**لزينة وتصميم الحدائق ، د. سامي كريم ومحسن خلف ا (1989).**
Recommended Books and References (Scientific Journals, Reports...)	STILGOE, John R. *What is landscape?*. MIT press, 2018. KNIGHT, Richard Payne. *The Landscape: A Didactic Poem. In Three Books. Addressed to Uvedale Price, Esq. By RP Knight*. Gregg, 1795. YARWOOD, Alf. *Introduction to AutoCAD 2004*. Routledge, 2013.
Electronic References, Websites	

Course Description Form of Nurseries and Plant propagation

1. Course Name:	
Nurseries and Plant propagation	
2. Course Code:	
HOD-2203	
3. Semester / Year:	
spring / 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
125 hours / 5 units	
Course Administrator's Name (Mention All, If More Than One Name)	
Name : Dr. Hiba Ahmed Jawad Email : Hibajawad@uodiyala . edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	The subject provides information concerning the fundamental principles involved in plant propagation, and server as a manual that describes useful techniques for propagation plants also it provides knowledge of the different plants and various possible methods by certain plants can be propagated
9. Teaching and Learning Strategies	

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	. The nursery, the importance of establishing a nursery, the conditions for establishing a nursery, and	**Nurseries and propagation**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
2	2	Sexual propagation (propagation by seeds). Dormancy in the seed, the transactions that end seed dormancy, the changes that	Nurseries and propagation	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
3	2	Treatments that encourage seed	**Nurseries and propagation**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
4	2	Cellular basis of seed propagation	Nurseries and propagation	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
5	2	Asexual propagation of plants (vegetative propagation),	**Nurseries and propagation**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Methods of propagating plants asexually, advantages and disadvantages of asexual propagation, vegetative foundations for asexual propagation of plants, propagation with pens...environmental conditions and their relationship to the success of propagation with pens	**Nurseries and propagation**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

8	**2**	Physiological and anatomical foundations of vegetative propagation, vegetative lineage, genetic changes that occur in vegetatively propagated plants, bud mutations, chimeras	Nurseries and propagation	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	Multiplication by specialized parts, multiplication by numbering,	**Nurseries and propagation**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Tubers, crabs, propagules, natural structures suitable for propagating plants vertically.	Nurseries and propagation	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	Machines and tools used in nurseries	Nurseries and propagation	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	Studying the most important service operations, such as irrigation and fertilization	**Nurseries and propagation**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Micropropagation of plants, propagation by tissue culture	Nurseries and propagation	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Types of nurseries, division of nurseries	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Structures used in plant propagation, greenhouses, shades, cold and heated	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

		tunnels			
3	**3**	Media used in propagation and development of horticultural plants, types of media	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Propagation by seeds, seed production, seed treatments before planting	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Seed extraction, planting seeds of some types of fruit and vegetable crops, individualizing and acclimating seedlings	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Propagation using pens, how to prepare pens	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Treating pens to increase the rooting rate, treating pens with growth regulators,	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Transplanting, individualizing seedlings, planting seedlings,	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Uprooting fruit tree seedlings, how to uproot, timing of uprooting, treatment of seedlings after uprooting	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Propagation by specialized parts, propagation by tubers, propagation by cuttings	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

12	Semester 2nd exam				
13	**3**	Propagating crabs, how to uproot and separate crabs, growing crabs in a nursery	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	A visit to some governmental or private nurseries, depending on what is available. A visit to the plant tissue culture laboratory, preparing the media	**Nurseries and propagation Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation	
Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.	
12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	Propagation of horticultural plants d. Muhammad Abbas Salman Main concepts of plant cell and tissue culture Dr. Mubasher Saleh Omar Dr. Abd al-Muttalib Sayyid
Main References (Sources)	- Journal of the Center for Biotechnology - Al-Nahrain University Diyala Journal of Agricultural Sciences - Diyala
Recommended Books and References (Scientific Journals, Reports...)	**International network for information on the subject of the course**
Electronic References, Websites	

Course Description Form Arabic language 2

1. Course Name:
Arabic language 2
2. Course Code:
UD12
3. Semester / Year:
first Semester/ 2025-2026
4.Description Preparation Date:
1/6/2026
5 . Available Attendance Forms :
Attending
6.Number of Credit Hours
50 hours / 2 units
7.Course administrator's name (mention all, if more than one name)
Name: Assistant teacher .Anaam salih mahdi Email: Anaamsalih53@gmail.com
8.Course Objectives
This curriculum seeks to learn the Arabic language correctly and to know and preserve its beginnings.
9.Teaching and Learning Strategies
1- That the student learns the basics of the Arabic language 2- The student recognizes common linguistic errors and tries to avoid them 3- The student can write clear and accurate spelling.
10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	2	For the student	Arabic	Explanation, presentation	the exam

		to recognize the importance of the Arabic language and to preserve it		of the model and lecture	
the second	2	The student will be familiar with a historical overview of the Arabic language	Arabic	Explanation, presentation of the model and lecture	the exam
the third	2	The student gets to know the letters of the alphabet and the alphabet	Arabic	Explanation, presentation of the model and lecture	the exam
the fourth	2	For the student to recognize common linguistic errors	Arabic	Explanation, presentation of the model and lecture	the exam
Fifth	2	For the student to know punctuation marks	Arabic		the exam
VI	2	The student gets to know general	Arabic	Explanation, presentation	the exam

		grammatical rules		of the model and lecture	
Seventh	2	The student gets to know numbers and counting	Arabic	Explanation, presentation of the model and lecture	the exam
VIII	2	The student will be familiar with writing the hamza in the Arabic language	Arabic	Explanation, presentation of the model and lecture	the exam
Ninth	2	For the student to recognize the difference between dā’ and dā’	Arabic	Explanation, presentation of the model and lecture	the exam
The tenth	2	For the student to recognize modal verbs	Arabic		the exam
eleventh	2	For the student to recognize the abrogated names	Arabic	Explanation, presentation of the model and lecture	the exam
twelveth	2	For the student to know the types of (what) in the Arabic language	Arabic	Explanation, presentation of the model and lecture	the exam

Thirteenth	2	The student should know the hamzat al-wasl and the hamzat al-qat`	Arabic	Explanation, presentation of the model and lecture	the exam
fourteenth	2	The student gets to know the sentence, the subject, and the predicate	Arabic	Explanation, presentation of the model and lecture	the exam
Fifteenth	2	The student gets to know the elements of the sentence	Arabic	Explanation, presentation of the model and lecture Explanation, presentation of the model and lecture Explanation, presentation of the model and lecture	the exam

11.Learning and Teaching Resources
1-The eloquent singer wrote about Arab books 2-Alfiyya Ibn Malik

Course Description Form of Plant Physiology

1. Course Name:
Plant Physiology
2. Course Code:
HOD-2103
3. Semester / Year:
First semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
125 hours / 5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Dr. Zeina Sami Rashid Email : zeinasami@uodiyala.edu.iq
8. Course Objectives
Introducing students to the basic concepts of plant physiology and the effect environmental factors surrounding of plant growth , with an emphasis on water relations, photosynthesis, transpiration, and respiration, in addition to evaluating the main physiological characteristics of the plant through the accompanying practical part.
9. Teaching and Learning Strategies

	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Familiarity with the history and development of physiology Plant and its relationship with other	Introductio n, definition of plant physiology.	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
2	2	Knowledge of the physical and chemical properties and functions of water in plants	Plant - water Relations. The	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
3	2	Identify diffusion, osmosis, and divide membranes according to their components	Diffusion and Osmosis : Plant cells and	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
4	2	Understanding the factors affecting the plasma membrane	The chemical potential of water	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
5	2	Identify on the chemical potential of water , water potential , Osmotic potential	The chemical potential of water	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Understand some examples and applications of the plant cell, water potential and its components	Examples and applications of the plant cell, water potential and its components	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
8	2	Introducing students to the concept of Plasmolysis and Imbibition.	Plasmolysis , Imbibition.	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	2	Knowledge the Mechanism of water absorption, water absorption from the soil,	Mechanism of water Absorption.	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

		movement and transport of water within the plant			
10	**2**	Knowledge the Mechanism of free transport of water, bleeding and guttation	Water Movement and water transport .Mechanism of water Translocation , Bleeding and Guttation	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	The student understands Respiration. is: its importance, types of Respiration.	Respiration.	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	Understanding the factors affecting the Respiration.	Respiration.	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	For the student to learn about Photosynthesis: its importance, mechanism, and factors affecting it	Photosynthesis	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Conducting experiments in the laboratory	Plant cell study under microscope.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Conducting experiments in the laboratory	Experiments of measuring diffusion.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Conducting experiments in the laboratory	Experiments on plasmolysis.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

4	**3**	Conducting experiments in the laboratory	Experiments on Imbibition.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Conducting experiments in the laboratory	Experiments of measuring transpiration.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Conducting experiments in the laboratory	Experiments on movement and translocation of water.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Conducting experiments in the laboratory	Experiments on solute transport and minerals.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Conducting experiments in the laboratory	Experiments on movement and translocation in the phloem.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Conducting experiments in the laboratory	Experiments on movement and translocation in the phloem.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Conducting experiments in the laboratory	Experiments on photosynthesis.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Conducting experiments in the laboratory	Experiments on photosynthesis.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Conducting experiments in the laboratory	Experiments on respiration	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation	
Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.	
12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	-Plant Physiology (1982). Dr. Faisal Abdel Qader and others, -Fundamentals of Plant Physiology (1991), Dr. Abdel Azim Kazem and Dr. Moayed Ahmed Al-Younis -Plant Physiology (1987) Dr. Abdul Hadi Al-Rayes and Dr. Abdul Azim Kazem
Main References (Sources)	
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal Plant physiology (2006) Taiz and Zeiger
Electronic References, Websites	

Course Description Form of Plant nutrition

1.	Course Name:
	Plant nutrition
2.	Course Code:
	HOD-2201
3.	Semester / Year:
	First semester / the second stage 2025-2026
4.	Description Preparation Date:
	1/6/2026
5.	Available Attendance Forms:
	Attending
6.	Number of Credit Hours (Total) / Number of Units (Total)
	125 hours / 5 units
7.	Course administrator's name (mention all, if more than one name)
	Name: **Assistant Professor·Ekhlas Meteab Ahmed Marir** Email: **ekhlasmeteab@uodiyala.edu.iq**
8.	Course Objectives
Course Objectives	The aim of teaching the profession is: 1. Studies the concept of plant nutrition 2. Examines the importance of the role of plant nutrients 3. It includes dividing nutrients into macro and microelements 4. Distinguishing between rare, useful, and essential nutrients 5. Functions of nutrients and their deficiency 6. Describe the transport of elements within the plant 7. The student should recognize the symptoms of element deficiency, its causes, and know its treatment 8. The student will learn about water stress, osmotic pressure, water transport within plant tissues, nutrient solutions, and hydroponic and sand cultures.
9.	Teaching and Learning Strategies
Strategy	15 -week attendance lectures, interspersed with two monthly exams, daily exams, and scientific reports
10.	Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

			1- Explaining the concept of plant nutrition and the plant's element content 2- The importance of the role of plant nutrients and their characteristics 3- Soil salinity and plant nutrition	ture with lanation sentation	daily exam
	2		1- Food crops and their role in plant nutrition 2- Composition of plant material 3- Factors that affect the plant's mineral and organic content	ture with lanation sentation	daily exam
	2		1- Different plant growth media	ture with lanation sentation	daily exam
	2		2- Readiness of nutrients in the soil and their absorption by the plant	ture with lanation sentation	daily exam
	2		1- Dividing nutrients into macro and micro elements 2- Distinguishing between rare, useful and essential nutrients	ture with lanation sentation	daily exam
	2		First month exam		
	2		1- Characteristics of nutrients 2- Nutrient elements: Nutrients, definition and division, mineral composition of the plant and the effect of lack of nutrients on the plant 3- Transport of elements within the plant	ture with lanation sentation	daily exam
	2		he elements potassium and magnesium and their physiological functions, identification and treatment. The elements calcium and magnesium and their physiological functions. The elements sulfur, nitrogen and phosphorus and their physiological functions, identification and treatment.	ture with lanation sentation	daily exam

			Characterization and treatment.		
	2		Supplementing the of lecture (10) to diagnose and treat deficiencies in the elements calcium, magnesium, sulfur, nitrogen, and phosphorus, and their physiological functions, diagnosis, and treatment.	ture with lanation sentation	daily exam
			Supplementing the of lecture (10) to diagnose and treat deficiencies in the elements calcium, magnesium, sulfur, nitrogen, and phosphorus, and their physiological functions, diagnosis, and treatment.	ture with lanation sentation	daily exam
	2		The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment.	ture with lanation sentation	daily exam
	2		Supplementing the of lecture (12) to The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment.	ture with lanation sentation	daily exam
	2		Supplementing the of lecture (14) to The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment.	ture with lanation sentation	daily exam
	2		Supplementing the of lecture (13) to The elements iron, manganese, phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, .identification and treatment		
	2		Second month exam		
	2		The elements iron, manganese,		

			phosphorus, calcium and copper and their physiological functions, identification and treatment. The elements zinc and copper and their physiological functions, identification and treatment.		
actical Part					
			1- Introduction to nutrients:	ture with lanation sentation	ım and rk report
			- Classification of nutrients	ture with lanation sentation	Exam and work report
			Supplementing - Classification of nutrients	ture with lanation sentation	Exam and work report
			Lecture continuation (1)	ture with lanation sentation	Exam and work report
			1- Chemical composition (inorganic) of the plant:	ture with lanation sentation	Exam and work report
			2- Food farms:		
			Aquatic and sand farms and their advantages and disadvantages in agriculture	ture with lanation sentation	ım and work report
			Necessary nutrients:	ture with lanation sentation	ım and work report
			1- Carbon, hydrogen and oxygen: 2- Lecture continuation (5)	ture with lanation sentation	ım and work report
			Functions of elements	ture with lanation sentation	ım and work report
			Symptoms of deficiency of major elements, their physiological functions, diagnosis and treatment, methods of treating cases, and the most important effects of interaction when supplemented	ture with lanation sentation	ım and work report
			Symptoms of lack elements in soil and plant	ture with lanation sentation	ım and work report
			Conduct Some anvil experiments to show the of nutrient and	ture with lanation	ım and work report

			analyze them	sentation	ım and work report
			Supplementing the of lecture (13)	ture with lanation sentation	
			Tours in agricultural fields to learn about the most important symptoms of deficiency of macro- and microelements and the extent of their impact on plants	ture with lanation sentation	ım and work report

11. Course Evaluation	
Examinations Monthly and daily exams with discussion questions inside the lecture The degree of participation in the questions related to the subject	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1- **Harborne, J.B. (1973):** Photochemical Methods A Guide to Modern Techniques of plant Analysis. Distributed in the USA by Halsted press,a Division of John Wiley & Sons, INC New york P. 1-271. 2- **Wagner, H.; Hiroshi, H. and Norman, R.F. (1988):** Economic and - Medicinal plant research. Volume 2. Academic press
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Iraqi academic Journal
Electronic References, Websites	

Course Description Form of Plant Ecology and Sustainable Agriculture

1. Course Name:	
Plant Ecology and Sustainable Agriculture	
2. Course Code:	
HOD–2202	
3. Semester / Year:	
Second semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
125 hours / 5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name :Prof. Dr. Ahlam Ahmed Hussein Email : ahlamahussein@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	**- Identification Students of effect physical factors on plants growth and development**
9. Teaching and Learning Strategies	

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Definition of Ecology . Development of Ecology Division of Ecology . Ecosystem . Envirnment	Plant Ecology	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Light waves, Types, (visible and invisible) wave length length of length Length of lighting period , Light intensity, influence of day length on plants	Plant Ecology	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Light waves, Types, (visible and invisible) wave length length of length Length of lighting period , Light intensity, influence of day length on plants	Plant Ecology	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	The important of lighting on biological activities motive of lowering light waves	Plant Ecology	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Temperacture, temperature flow age . Variation in the temperature gradient. Temperature overlaping . Day degree system . Influence of temperture on plants	Plant Ecology	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Effectual value of the temperature. Influence of temperture on plant function . Temperture hazard , low or high temperture adaption . Effect of temperture on	Plant Ecology	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

		plant sperad.			
8	**2**	Water as ecological factor for plants , forms of water in the nature and their effects on plants	**Plant Ecology**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	Plants texonomy in relation to water, effects of rain on plant spread	**Plant Ecology**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Wind. Kind of wind . Wind mass and fronts . Effect of wind on plant	**Plant Ecology**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	Atmospheric pressure. Factors effecting atmospheric pressure .Atmospheric pressure distrution . Air cercutation the main sphere of atmospheric pressure	**Plant Ecology**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	Plant environmental types in Iraq. Mountian ,Highland, Al--Jazera and south plain, High and desert	**Plant Ecology**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Iraq climate and it's effects on Horticultural plant speared	**Plant Ecology**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Practical studies of Biotanical Characterization	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	The method of taken the samples and it's affribute , the natural sequence	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Introduction to the methods of light intensity measurement and it's instruments	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

4	**3**	Analysis of the effects of light on the Biological activities in Horticulture plants	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Investigation on the influences of lighting on the growth , elongation of Horticural plant	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Introduction to methods of temperature measurement and it's instruments	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Measurement of the levels of temperature during one day and the variation in it (the term peratare of the air and the soil during a day	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Measurement of the levels of temperature during one day and the variation in it (the term peratare of the air and the soil during a day	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	aStudying the ifluence of the temperature on the different plants	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Identification of different type of water in the nature and studying the quantities of water eequired by the Horticultural plant	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Indentifiration of different ecosystem	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	studying the influence of the poliution in Horticulture plants	**Plant Ecology**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11. Course Evaluation					

Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.	
12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	- plant ecology, Kamal Hussein Shaltoot, 2009
Main References (Sources)	Basics of Ecology, by Bassem Youssef Al-Khafaji. 2015. Dhi Qar University / College of Science
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	

Course Description Form Biochemistry

2. Course Name:	
Biochemistry	
3. Course Code:	
HOD-2205	
4. Semester / Year:	
Second semester / 2025-2026	
5. Description Preparation Date:	
1/6/2026	
6. Available Attendance Forms:	
Attending	
7. Number of Credit Hours (Total) / Number of Units (Total)	
125 hours / 5 units	
8. Course administrator's name (mention all, if more than one name)	
Name: Assistant Lecturer . Eman Rahman Mahdi Abed **Email:** : **emanrahman@uodiyala.edu.iq** **Assistant Lecturer .** Noor Hatem	
9. Course Objectives	
Course Objectives	**-Introducing students to the basics of biochemistry according to the vocabulary of the biochemistry curriculum for second stage students. ne curriculum items included introducing the science of biochemistry d its importance and studying (Carbohydrates, lipid ,Proteins , Enzymes, and Nucleic acids)**
10. Teaching and Learning Strategies	
Strategy	**A 15 -week attendance lectures, interspersed with Three monthly exams, daily exams, and scientific reports**
11. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	2	)duction of biochemistry, the ponents of a living cell and their tions	Biochemistry	**ture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly, final exams and daily reports**
	2	ohydrates -its definition - ortance-classification no,oligo,poly-saccharides)	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly final exams and daily reports**
		monosaccharaides-isomerism- vatives of monosaccharaides -cyclic structure of monosaccharide	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthl, final exams and daily reports**
		osaccharides-reducing and non- ucing sugars	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly final exams and daily reports**
		saccharides -homo and hetro- polys saccharides	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly final exams and daily reports**
		1st exam			
		no acids-classification -structure- e important reaction-properties of amino acids	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly , final exams and daily reports**
		teins - their composition, structure, and divisions	Biochemistry	**Lecture ,dialogue , Discussion and brainstorming**	**daily ,monthly , final exams and daily reports**
		acids classification -structures- e importance of fatty acids	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly , final exams and daily reports**
		le lipids-fat and oils -waxes- ndex	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly , final exams**

					and daily reports
		npound and derived lipids - their nposition - their divisions	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly , final exams and daily reports**
		exam			
		yme-definition -classification - hanism action of enzyme-active and tive enzyme-the effective factors enzymes activity	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly final exams and daily reports**
		leic acids-biological roles- leotides-function of nucleotide- cture-classification	Biochemistry	**Lecture ,Dialogue , Discussion and Brainstorming**	**daily ,monthly final exams and daily reports**
		exam			

practical part

Week	urs	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**3**	Introduction and instructions	Biochemistry	**Observation Dialogue and Discussion**	**daily ,monthly , final exams and daily reports**
2	**3**	qualitative detection of carbohydrate neral detection-reducing and non-reducing ars-reducing power-aldoses and ketoses-pentoses and hexoses	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
3	**3**	qulitative detection of disaccharides from monosaccharide reducing property test -iodine test	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
4	**3**	qualtative detection of polysaccharides (general detection reducing property test-iodine test)	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
5	**3**	hydrolysis of starch -detection of starch hydrolytic products	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
6	**3**	the first exam and unknown			

7	**3**	detection of aromatic amino acid in protein	Biochemistry	**Observation Dialogue and discussion**	**ly ,monthly , final exams and daily reports**
8	**3**	detection of basic amino acid in protein	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
9	**3**	protein precipitation –denaturation	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
10	**3**	2nd exam +unknown			
11	**3**	detection of lipids (saturated and unsaturated fatty acid -cupper acetate test – iodine test)	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
12	**3**	saponification and emulsification test	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
13	**3**	rd exam 3			
14	**3**	General (carbohydrates and proteins)	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**
15	**3**	General (carbohydrates and proteins)	Biochemistry	**Observation Dialogue and discussion**	**daily ,monthly , final exams and daily reports**

12. Course Evaluation

Examinations

Monthly and daily exams with discussion questions inside the lecture

13. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	**Agricultural Biochemistry, written by (Dr. Ali Mohammed Hassan and Dr. Saad Khalil Shihab)**
Recommended books and references (scientific journals, reports…)	**Iraq academic journal**
Electronic References, Websites	

Course Description Form Medicinal and Aromatic Plants

1.	Course Name:
	Medicinal and Aromatic Plants
2.	Course Code:
	MEAP301
3.	Semester / Year:
	First semester / the Third stage 2025-2026
4.	Description Preparation Date:
	1/6/2026
5.	Available Attendance Forms:
	Attending
6.	Number of Credit Hours (Total) / Number of Units (Total)
	75 hours (2 Theoretical and 3 practical) 3.5 units
7.	Course administrator's name (mention all, if more than one name)
Name: **Assistant Professor·Ekhlas Meteab Ahmed Marir** Email: **ekhlasmeteab@uodiyala.edu.iq**	
8.	Course Objectives
	The aim of teaching the profession is:

Course Objectives	1. The importance of medicinal and aromatic plants in agricultural production. The most important problem facing the production of medicinal and aromatic plants in Iraq, and the possibility of overcoming them. 2. Teaching students the concept of medicinal and aromatic plants and their uses 3. Teaching students about the factors affecting medicinal and aromatic plants. 4. Teaching students about methods of propagating and cultivating medicinal and aromatic plants in their various species 5. Identify the bioactive components in it and how to extract them. 6. On the plant parts in which the bioactive components are concentrated 7. Teaching students about the common types of medicinal and aromatic plants. 8. Teaching students about all service operations required by medicinal and aromatic plants. 9. Teaching students about diseases that can be treated with medicinal and aromatic plants. 10. Modern research trends in the production of medicinal and aromatic plants. 11. Environmental and agricultural conditions and their impact on the production of medicinal and aromatic plants. 12- The student learns about the importance of medicinal and aromatic plants in agricultural production and their role in raising national income

9. Teaching and Learning Strategies

Strategy	15 -week attendance lectures, interspersed with two monthly exams, daily exams, and scientific reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	2		1- An introduction to the history of medicinal and aromatic plants in the world and the Arab world	ture with lanation sentation	daily exam
	2		1- Introduction historical study medicinal and aromatic plants. 2- Introducing the student to	ture with lanation sentation	daily exam

			economic and therapeutic importanc medicinal and aromatic plants		
	2		Collecting, preparing, handling and storing medicinal and aromatic plants.	ture with lanation sentation	daily exam
	2		1-Study the reality of medicinal and aromatic plants in Iraq 2- The importance of medicinal plants in preparing medicine and medical and aromatic supplies	ture with lanation sentation	daily exam
	2		An introductory study of medicinal plants	ture with lanation sentation	daily exam
	2		First month exam		
	2		Introducing the student to the economic and therapeutic importance of medicinal and aromatic plants	ture with lanation sentation	daily exam
	2		Collecting, preparing, handling and storing medicinal and aromatic plants.	ture with lanation sentation	daily exam
	2		- Study the reality of medicinal and aromatic plants in Iraq	ture with lanation sentation	daily exam
			2- The importance of medicinal plants in preparing medicine and medical and aromatic supplies.	ture with lanation sentation	daily exam
	2		Introducing the student to the divisions and classification of medicinal and aromatic plants	ture with lanation sentation	daily exam
	2		-1 Division and classification of medicinal plants plants	ture with lanation sentation	daily exam
	2		The Sustainable development(Management) and its relationship to Medicinal and Aromatic Plants	ture with lanation sentation	daily exam
	2		Division of secondary compounds in medicinal and aromatic plants, their uses, their most important chemical contents, and the plants that contain each of them.	ture with lanation sentation	daily exam
	2		Second month exam		
	2		- Use of medicinal and aromatic plants as treatment	ture with lanation sentation	daily exam
			The most important common medicinal and aromatic plants in Iraq The most important problems facing the production of medicinal and		

			aromatic plants in Iraq and the possibility of overcoming them The most important common medicinal and aromatic plants in Iraq The most important problems facing the production of medicinal and aromatic plants in Iraq and the possibility of overcoming them		
actical Part					
			The economic and therapeutic importance of medicinal and aromatic plants	ture with lanation sentation	ım and rk report
	3		The economic and therapeutic importance of medicinal and aromatic plants	ture with lanation sentation	Exam and work report
	3		The most important horticultural operations that take place for medicinal and aromatic plants during production	ture with lanation sentation	Exam and work report
	3		The most important horticultural operations that take place for medicinal and aromatic plants during production	ture with lanation sentation	Exam and work report
	3		The most important horticultural operations that take place for medicinal and aromatic plants during production	ture with lanation sentation	Exam and work report
	3		The most important horticultural operations that take place for medicinal and aromatic plants during production		
	3		The most important medicinal and aromatic plants that contain volatile and fixed oils	ture with lanation sentation	ım and work report
	3		Displaying examples of pictures and plant samples with an explanation of each type and class of plant, along with periodic visits inside the field to detect and explain medicinal and aromatic plants.	ture with lanation sentation	ım and work report
	3		The most important medicinal plants that contain active compounds	ture with lanation sentation	ım and work report
	3		The most important medicinal plants that contain alkaloids.	ture with lanation sentation	ım and work report
	3		1- Follow the most important medicinal plants that contain glycosides.	ture with lanation sentation	ım and work report
	3		The Sustainable development(Management) and its relationship to Medicinal and Aromatic Plants	ture with lanation sentation	ım and work report
	3		1- Medicinal plants that contain insect killers	ture with lanation	ım and work report

			2-- Medicinal plants that contain dyes and antibiotics Medicinal plants containing tannins and resins Medicinal plants that contain brown, mucous and gum substances	sentation	ım and work report
	3		Various ways to separate some active substances (volatile oils, fixed, alkaloids, kucloside, etc.	ture with lanation sentation	
	3		1- Medicinal plants that contain insect killers 2-- Medicinal plants that contain dyes and antibiotics	ture with lanation sentation	ım and work report

11. Course Evaluation

Examinations

Monthly and daily exams with discussion questions inside the lecture

The degree of participation in the questions related to the subject

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Al-Saadi, A. H. and et al. Medicinal Plants 2- Al-Shahat A. N. (1985). Medicinal Plants and Herbs. Publishing house, Madbouly Library, 496pp. 3- Harborne, J.B. (1973): Photochemical Methods A Guide to Modern Techniques of plant Analysis. Distributed in the USA by Halsted press,a Division of John Wiley & Sons, INC New york P. 1-271. 4- Wagner, H.; Hiroshi, H. and Norman, R.F. (1988): Economic and Medicinal plant research. Volume 2. Academic press
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Iraqi academic Journal
Electronic References, Websites	

Course Description Form of Design and analysis of agricultural experiments

1. Course Name:
Design and analysis of agricultural experiments
2. Course Code:
EXDA302
3. Semester / Year:
First semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (Theoretical & practical) 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Dr. Othman Khalid Alwan
1. Course objectives

1. Objectives of the academic program
The course examines the importance of agricultural experiments and how to develop their own designs
It includes knowledge of statistical analysis for each experimental design
Knowing the features of each design according to the factors that are to be studied
Methods of statistical analysis using manual methods or using a manual calculator
Study the types of modern software for statistical analysis for each experimental design.

Study the possibility of implementing a field experiment with one of the designs and analyze it statistically

2. Teaching and learning strategies

-Giving lectures.
- Using the PowerPoint lecture presentation method, using a projector, dialogue and discussion of
each slide that appears on the display screen with the students to convey theoretical information to the student.
- Involve students in writing the steps required to choose the appropriate design based on the data available to implement the experiment
Assigning students to homework to prepare reports on each design that is studied theoretically.
- Assigning students to follow up on the designs of graduation projects for fourth-year students and giving their comments on how to choose the appropriate design to experiment with each project

3. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
Quick and monthly exams, class activities, and homework	Presentation of the lecture, definition of each term, and knowledge of its role in	Introduction to the design and analysis of agricultural experiments,	Knowledge of the vocabulary of design and analysis of agricultural experiments	5	1

	each design				
Quick and monthly exams, class activities, and homework	Presentation of the lecture, definition of each term, and knowledge of its role in each design	The nature of the statistical symbols used in. The basic rules for designing scientific experiments - the requirements for a good experiment, the steps that are followed in scientific experiments	Knowledge of statistical symbols and steps for implementing the experiment	5	2
Quick and monthly exams, class activities, and homework	Presentation of the lecture, definition of design, and an example of it	Statistical tests required to be performed during and after statistical analysis	Knowledge of statistical tests and how to calculate them	5	3
Quick and monthly exams, class activities, and homework	Presentation of the lecture, definition of design, and an example of it	Experimental designs for one-factor experiments- Completely randomized design-	Knowledge of design and reasons for using it	5	4
Quick and monthly exams, class activities, and homework	Presentation of the lecture, definition of design, and an example of it	Completely randomized block design: Missing data and how to estimate them - The relative efficiency of this design -	Knowledge of design and reasons for using it	5	5
Quick and monthly exams, class activities, and homework	Presentation of the lecture, definition of	Latin square design	Knowledge of design and reasons for using it	5	6
Practical part			Knowledge of	5	7

exam		The first exam for the theoretical part	design and reasons for using it		
Writing a detailed report on each design in which the research project experiment	A field visit to the projects of fourth-stage students	Participation of third-stage students with fourth-stage students in choosing the appropriate design according to the factors studied for the fourth-stage student's graduation project	Knowledge of design and reasons for using it	5	8
Presentation of the lecture, definition of design, and an example of it	Presentation of the lecture, definition of design, and an example of it	Factorial experiments - factorial experimental designs - complete randomized design	Knowledge of design and reasons for using it	5	9
Presentation of the lecture, definition of design, and an example of it	Presentation of the lecture, definition of design, and an example of it	Randomized complete blocks Design	Knowledge of design and reasons for using it	5	10
Presentation of the lecture, definition of design, and an example of it	Presentation of the lecture, definition of design, and an example of it	Factorial experimental designs – using a Latin square design	Knowledge of design and reasons for using it	5	11
Presentation of the lecture,	Presentation of the lecture,	Split-plot Designs	Knowledge of design and reasons for using it	5	12
Exam for the practical part		The second exam for the theoretical part	Knowledge of design and reasons for using it	5	13

Writing a detailed report on the measurements that are recorded for each design in which the research project experiment was implemented	A field visit to the projects of fourth-stage students	Third stage students participate with fourth stage students on how to take the measurements required for the fourth stage student's graduation project	Knowledge of design and reasons for using it	5	14
Applications in the department's computer laboratory		Analysis of agricultural experiments according to statistical analysis programs using the computer - program - SPSS - gen stat. -	Teaching students how to use statistical analysis programs	5	15

4. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture.
The degree of participation in the questions related to the subject.

5. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	Design and Analysis of Agricultural Experiments. 1980. Dr. Khasha Mahmoud Al-Rawi and Dr. Abdul Aziz Mohammed Khalaf Allah. College of Agriculture and Forestry. University of Mosul. Iraq
Main References (Sources)	- Internet. Statistical Analysis Programs SPSS - SAS - GEN.STAT.

Course Description Form of Ornamental Plants 1

1. Course Name:	
Ornamental Plants 1	
2. Course Code:	
FLOR308	
3. Semester / Year:	
First semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours (Theoretical & practical) 2.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name : Prof. Dr. Abdul Kareem Abdul Jabbar Mohammad Saeed **Email : abdulkareemmohammad@uodiyala.edu.iq**	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	- Teaching students the concept of ornamental science and some concepts related to the development and production of ornamental plants. - Teaching students about groups of different ornamental plants. - Teaching students about methods of propagating and cultivating ornamental plants in their various groups. - Teaching students how to raise ornamental plants for use in gardens or in ornamental plant exhibitions. - Teaching students to use modern methods in producing ornamental plants. - Teaching students about all the service operations required by ornamental plants. - Teaching students about insect pests and diseases that can affect ornamental plants. -Teaching students how to raise ornamental plants for use in gardens, to produce cut flowers, or for use as anvil plants inside homes and other places.

9. Teaching and Learning Strategies	
Strategy	- Giving lectures. -Using the method of dialogue and discussion with students to convey theoretical information to the student. -Applying some theoretical vocabulary practically in the field. -Using modern laboratories. -Using the presentation method to deliver lectures. Assigning students to prepare scientific reports on their specialty. - Practical lessons in ornamental plant production facilities such as wooden canopies, greenhouses, etc.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	1	Definition of ornamental science - its development and importance	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
2	1	Divisions of ornamental science and ornamental plants	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
3	1	Studying the environmental factors that affect the growth and flowering of ornamental plants, such as light, temperature, and humidity	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
4	1	Studying some internal factors that affect the growth and flowering of ornamental plants, such as the carbon to nitrogen ratio, hormones, and dormancy phase.	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
5	1	Continuing the study of some internal factors that affect the growth and flowering of ornamental plants, such as the ratio of carbon to nitrogen, hormones, and the dormant phase.	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

6	1	Annuals - their division, study of summer and winter annual flowers	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
7	Semester 1st exam				
8	1	Biennial flowers, their types and methods of serving them	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
9	1	Perennial herbaceous flowers such as gerberas, violets, salvias...	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
10	1	Flowering bulbs such as daffodils, iris, tulips, anemone and cranium.....	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
11	1	Continuing the flowering bulbs such as daffodils, iris, tulips, anemone and cranium.....	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
12	1	Pot plants	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
13	1	Supplement with pot plants	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
14	Semester 2nd exam				
15	1	General Review	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject**	**Learning Method**	**Evaluation Method**
1	3	Identifying and studying some summer annual flowers/scientific names	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
2	3	Training on propagating some ornamental plants	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
3	3	Identifying winter flower seeds and viewing ornamental plant propagation facilities	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
4	3	Identifying winter flower seeds and viewing ornamental plant propagation facilities	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
5	3	Conducting pruning operations for some ornamental shrubs and vegetable hedges	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
6	3	Planting some winter annual seeds and performing service operations such as weeding, irrigation, fertilization...	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
7	Semester 1st exam				
8	3	Planting seeds of some biennial flowers	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
9	3	Identify some types of perennial herbaceous flowers and grow some of them	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

10	3	Identify some ornamental flowering bulbs	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
11	3	Planting some ornamental flowering bulbs in the pots	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
12	3	Identify some of the plants grown in anvils and methods of serving them	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
13	3	Continue identifying some of the plants grown in anvils and methods of serving them	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
14	Semester 2nd exam				
15	3	Conducting service operations for some ornamental plants	Ornamental plants 1	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

11. Course Evaluation

-Daily quick exams (COZs).
-Monthly exams (two).
-Evaluating students' classroom activity.
-Evaluating students' field activities.
- Evaluations on writing scientific reports and homework.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	
Main References (Sources)	Ornamental plants in Iraq Dr. Sami Karim Chalabi and Nisreen Khalil Al-Khayyat 2013
Recommended Books and References (Scientific Journals, Reports...)	Ornamentals D. Salem Muhammad Al-Sultan et al. 1992 Ornamental plants/Dr. Ahmed Mohamed Musa Tawajen 1987.
Electronic References, Websites	

Course Description Form of Plant growth regulators

1. Course Name:	
Plant Growth Regulators	
2. Course Code:	
PLGR300	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours / 3.5 units	
Course Administrator's Name (Mention All, If More Than One Name)	
Name : Dr. Hiba Ahmed Jawad Email : Hibajawad@uodiyala . edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	Definition of growth regulators and plant hormones and a definition of some of the terms used in expressions of growth regulators
9. Teaching and Learning Strategies	

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	. Introduction and definition of some terms	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
2	2	Auxin construction, auxin action mechanism, and auxin catabolism	Plant growth regulators	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
3	2	Cytokinins and physiological effects	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
4	2	Gibberellin	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
5	2	Alathilayn	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Abscisic acid and similar compounds	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
8	2	Jasmonic acid	Plant growth regulators	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	2	The role of jasmonic acid in plant protection and resistance	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	2	Salicylic acid	Plant growth regulators	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	2	Amino acids and polyamines	Plant growth regulators	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

12	Semester 2nd exam				
13	**2**	The role of growth regulators in plant tissue culture	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	The most important ways to add plant growth regulators	**Plant growth regulators**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Terminology and definition of some terms	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Auxin growth stimulants	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Auxin synthesis, auxin catabolism, and IAA derivatives	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Gibberellin, structure of gibberellin, its transport process, physiological effects of gibberellin	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Cytokinins Functions of cytokinins and applications of cytokinins	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Abscisic acid, physiological effects of abscisic acid	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Ethylene, physiological effects of ethylene	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Some physiological relationships of ethylene gas,	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

10	**3**	And the biosynthesis of ethylene	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Chloroplast	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Molecular structure and its relationship to the biological activity of hormones	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	The effect of hormones on plant body cells	**Plant growth regulators Production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation
Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	Plant growth regulators Dr. Hatem Jabbar Attia Dr. Khudair Abbas Jadoua Plant growth regulators Dr. Makki Alwan Al-Khafaji 2014
Main References (Sources)	- Journal of the Center for Biotechnology - Al-Nahrain University
Recommended Books and References (Scientific Journals, Reports...)	International network for information on the subject of the course
Electronic References, Websites	

Course Description Form of Vegetable Production 1

1. Course Name:
Vegetable Production1
2. Course Code: VEGP303
VEGP303
3. Semester / Year: Semester
First semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (Theoretical & practical) 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Dr. Adnan Ghazi Salman Email : adnanghazi@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	-Empowering - Enabling students to obtain knowledge and understanding of vegetable growing areas and the facilities required for them. Students are able to obtain knowledge and understanding of the environmental factors necessary for the growth of winter vegetable crops. - Enabling students to obtain knowledge and understanding of methods of producing vegetable seeds and methods of classifying them. - Enabling students to obtain knowledge and understanding of methods of growing and producing vegetables belonging to winter vegetable families. - Enabling students to obtain knowledge and understanding of the production of vegetable crops using modern methods of agriculture.

9. Teaching and Learning Strategies	
Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Introduction, definition of horticulture and some of the sciences related to this specialty, including the	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Environmental factors affecting vegetable crops Temperature: light, gases,	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Soil factors affecting the success of growing vegetable crops: soil texture, acidity and salinity of the soil	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Vegetable crops service operations. Irrigation, irrigation methods,	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Transplantation and acclimatization of vegetable crop seedlings.	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				Botanical
7	2	Plant families / winter vegetable crops - the Cruceferae family / appropriate environmental conditions, nutritional value, planting and harvesting dates	**Vegetable Production1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
8	2	study of vegetables belonging to the Alliaceae family - environmental conditions and nutritional	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

		value of these crops			
9	**2**	Study of vegetables belonging to the legumenosae family - environmental conditions and nutritional value - and planting dates for these crops.	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
10	**2**	Study of vegetable crops belonging to the umbileferae family. Environmental conditions - Nutritional value - Planting dates	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
11	**2**	vegetable crops - cruceferae family - Transplantation - Planting dates	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				Sola condi
13	**2**	-family fabaceae crops / nutritional value - suitable environmental conditions - cultivation methods	**Vegetable Production1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
14	**2**	Graminae family crops nutritional value - suitable environmental conditions - cultivation methods	**Vegetable Production 1**	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject**	Learning Method	**Evaluation Method**
1	**3**	identification of agricultural facilities such as vegetable fields and green houses	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
2	**3**	preparing the soil for planting vegetable crops	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
3	**3**	preparing the field soil for growing vegetables, dividing the field soil	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
4	**3**	preparation of plantets for cultivation in the field	**Vegetable Production** 1	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports

5	**3**	Methods of reproduction of vegetable crops	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Agricultural operations in green and plastic houses	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
8	**3**	Cruceferae family / botanical description of crops belonging to this family, varieties, cultivation method and service operations	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
9	**3**	Botanical description of Alliaceae family plants and pollination method	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
10	**3**	Study of the botanical description of crops of the legumenosae family, flowers and method of pollination	**Vegetable Production 1**	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
11	**3**	. Study the botanical description of Umbilefera family crops Flowers and pollination method - Varieties	**Vegetable Production 1**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				Botanical d crops Cu
13	**3**	Botanical description of the tomato crop - Methods of cultivation in greenhouses Limited and unlimited varieties	**Vegetable Production 1**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Botanical description of the cucurbitaceae family crops - the nature of flowering - the nature of pollination in these plants	**Vegetable Production 1**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture .
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	Production of vegetables crops. first part . Dr. Adnan Nasser et al. 1980 Vegetables production Produced by Al-Khader, Dr. Fakher Ibrahim Al-Rikabi and Dr. Abdul-Jabbar Jassim 1982
Main References (Sources)	-
Recommended Books and References (Scientific Journals, Reports...)	Academic journals
Electronic References, Websites	**Internet**

Course Description Form of Deciduous Fruits 1

1. Course Name:
Deciduous Fruits 1
2. Course Code:
DECF306
3. Semester / Year:
first semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (Theoretical & practical) 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Assist. Prof. Dr. Zeina hzber Email zeanahazber@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	-Teaching students about the types of fruits and dividing them according to regions, their various requirements, and their type and variety. -Teaching students the differences between evergreen fruits and deciduous fruits. -Teaching the student the environmental requirements necessary for the successful cultivation of different types and varieties of deciduous fruits. -Teaching the student the importance of pruning and raising deciduous fruit plants, the nature of bearing and flowering, and the types of fruit growth curves.

9. Teaching and Learning Strategies

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	2	Identifying and dividing types of fruits	Cultivation of fruit crops	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
2	2	Knowing the importance of providing low winter temperatures for the success of fruit	Dormancy and resting phase in the fruit	Scientific films	Quick and monthly exams, class activity and reports
3	2	Knowing the appropriate environmental conditions to give a good yield	Climatic requirements of fruit plants	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
4	2	Knowing the appropriate environmental conditions to give a good yield	Complement climatic requirements	Scientific films	Quick and monthly exams, class activity and reports
5	2	Distinguishing between types of flowers and types of pollination in fruits	Flowering in deciduous fruit	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports

6		Knowledge of compatibility and incompatibility in pollination and methods of pollination of fruit plants	Pollination, types and methods	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
7	Semester 1st exam				
8	**2**	Knowing how double fertilization and parthenocarpy fruiting occur	Fertilization and fruit setting	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
9	**2**	Identify the types of flower and fruit drop	Fall of flowers and fruits, virgin fruits and its types	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
10	**2**	Identify student about Alternate bearing in fruit trees	Alternate bearing in fruit trees	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
11	**2**	Identify the various types of growth of each group of fruits known when and their known types for each stage	Stages of fruit growth and types of growth curves	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
12	**2**		Fruit ripening and maturity standards	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
13	**2**	Identify student to the reasons for resorting to propagation by grafting and compounding in fruit	Selection of rootstocks for deciduous fruit trees	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
14	**2**	Identify student to the features of the rootstock groups used in vaccination and when to choose each rootstock	influence between origin and bud	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports

15	Semester 2nd exam				
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Identify student about Phenotypic structure of deciduous fruit tree	Phenotypic structure of deciduous fruit tree	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Identify some deciduous fruit such apricot, apple ..etc.	Identify some deciduous fruit plants	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Identify student about Sections of deciduous fruit plants	Sections of deciduous fruit plants, their scientific names, and the nature of the load in each of them.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Identify student about Flower buds of fruit trees	Flower buds of fruit trees and factors affecting their formation.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Identify student about type of flowers	Flowering and fruiting in fruit plants	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	**3**	Identify student of Establishing orchards according to sound scientific principles and planning	Establishing orchards according to sound scientific principles and planning		
7	Semester 1st exam				
8	**3**	Learn about the scientific trip to an orchard	A scientific trip to an orchard	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	The student learns the methods of Orchard service - irrigation	Orchard service - irrigation	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

10	**3**	The student learns the methods of Fertilization	Fertilization	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	The student will learn about Weeding and weed control	Weeding and weed control	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	**3**	Learn about the basics of the Breeding pruning of fruit trees	Breeding pruning of fruit trees	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
13	**3**	Know how to Pruning fruiting and renewal	Pruning fruiting and renewal	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	General Review	General Review	**Observation Dialogue & discussion**	
15	Semester 2nd exam				

11. Course Evaluation

Assigning students to homework to prepare scientific reports on the specialty.
Daily rapid exams (COZAT).
- Monthly exams (two or more).
- Evaluating students' classroom activity.
- Evaluations on writing research, scientific reports, and homework.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	- Fruit and vegetable production / Dr. Makki Alwan Al-Khafaji, Dr. Faisal Abdul Hadi Al-Mukhtar.
Main References (Sources)	- Fruit production for departments not specialized in horticulture / Dr. Ali Al-Douri, Dr. Adel Al-Rawi.
Recommended Books and References (Scientific Journals, Reports...)	- Fruit and vegetable production / Dr. Makki Alwan Al-Khafaji, Dr. Faisal Abdul Hadi Al-Mukhtar.
Electronic References, Websites	Ashs.org Actahort.com Springer

Academic Description Form of Irrigation and Drainage

12. Course Title:	
Irrigation and Drainage	
13. Course Code:	
IRRD305	
14. Semester / Year:	
First Semester / 2025-2026	
15. Date of preparation of this description :	
1/6/2026	
16. Available Forms of Attendance:	
Attending	
17. Number of Credit Hours (Total) / Number of Units (Total):	
75 hours / 3.5 units	
18. Course administrator's name (if more than one name)	
Prof. Dr. Mohammed Ali Abood	
19. Course Objectives	
− Irrigation systems technologies research in irrigation water sources and ways to control, exploit and deliver them to agricultural fields − Includes planning, design and implementation of irrigation facilities − Transmission and distribution of irrigation water in modern systems and study of ways to add it − Calculating the water needs of plants by studying the relationship of water, soil and climate using modern technologies − Study the problems related to the addition of water such as the problems of salinization, puncture and soil reclamation using the latest modern technologies − Calculating the cost of maintenance of irrigation and drainage projects within the production costs according to modern methods	
20. Teaching and Learning Strategies	
- Explanation and clarification - Lecture method - Student groups - Practical lessons in agricultural fields - Scientific trips to follow up irrigation and drainage projects in Iraq	

- Self-learning method

21. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	The importance of irrigation - the concept of water scarcity	To familiarize the student with the technologies of irrigation systems	5	1
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Physical soil properties associated with irrigation	The student should know about the flow in the pipes	5	2
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	Soil water classification	The student should know the types of flow	5	3
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Soil water voltage - ready water for the plant to dissolve the water in the soil	The student should be introduced to strip irrigation	5	4
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	Transmission and distribution of irrigation water	The student should know the irrigation of Al-Maroz	5	5
Quick and monthly exams,	Lecture, Discussion,	Water flow in channels and pipes. Irrigation water	The student should know the basin irrigation	5	6

classroom activity and reports	Reports, Labs	measurements			
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	Flow equations and progression and regression curves	To familiarize the student with the water consumption of the plant	5	7
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	Irrigation efficiency	To familiarize the student with water needs and schedule irrigation	5	8
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	Adequacy, efficiency and consistency of irrigation	The student should know about sprinkler irrigation	5	9
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	Water requirements of plants	The student should be introduced to drip irrigation	5	10
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Water consumption of the plant	The student should recognize Secondary energy losses	5	11
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Watering methods	The student should recognize Reynold's number	5	12
Quick and	Lecture,	Watering methods	To familiarize	5	13

monthly exams, classroom activity and reports	Discussion, Reports, Labs		the student with methods of measuring the adequacy, efficiency and consistency of irrigation		
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	Puncture and its importance in arid and semi-arid areas	To familiarize the student with the progress curve and the regression curve	5	14
Quick and monthly exams, classroom activity and reports	Lecture, Discussion, Reports, Labs	The importance of irrigation - the concept of water scarcity	To familiarize the student with the equipment and accessories of modern irrigation systems	5	15

22. Course Evaluation

- Theoretical tests
- Practical tests
- Reports and studies

23. Learning and Teaching Resources

Irrigation Basics and Applications Written by Dr. Nabil Ibrahim Al-Taif and Dr. Essam Khudair Hamza Al-Hadithi, 1988 Ministry of Higher Education and Scientific Research - University of Baghdad Irrigation and Puncture by Dr. Laith Khalil Ismail, 2000 Ministry of Higher Education and Scientific Research - University of Mosul Design and management of field irrigation systems written by Dr. Samir Mohamed Ismail, 2002 Faculty of Agriculture - Alexandria University Modern irrigation technologies and other topics in the water issue Written by Dr. Essam Khudair Al-Hadithi, Dr. Ahmed	Required textbooks (methodology, if any) Main references (sources)

Madloul Al-Kubaisi and Dr. Yas Khudair Hamza Al-Hadithi, 2010 Ministry of Higher Education and Scientific Research - Anbar University	
Iraqi academic scientific journals	Recommended books and references (scientific journals, reports…)
Soil Science Society Of America Library Genesis	Electronic References, Websites

Course Description Form of Honey bee breeding

1. Course Name:
Honey bee breeding
2. Course Code:
HOBB311
3. Semester / Year
First Semester / 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
Number of hours = 75, number of units = 3.5
7. Course administrator's name (mention all, if more than one name)
Name: Tareq Saadi Abbas –Muhaiman Khalifa Email: **tariq.saadi@uodiyala.edu.iq**
8. Course Objectives

Course Objective	**Teaching students and introducing them to the bee insect and the bee sect, importance of raising it, and learning about its external appearance a accessories, its importance in the life of the insect, its internal organs a tissues, its importance in pollinating plants, and its role in increasing pl production.**

9. Teaching and Learning Strategies

Strategy	Teaching students and introducing them to the bee insect a the bee sect, the importance of raising it, and learning about external appearance and accessories, its importance in the l of the insect, its internal organs and tissues, its importance pollinating plants, and its role in increasing plant production

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2	Honey bee strai genetic characteristics adopted to diagnc bee strains, go characteristics honey-producing strains	Honey bee breedi	Explanation, presentation the model a lecture	The exam
2	2	Honey bee strai genetic characteristics adopted to diagnc bee strains, go characteristics honey-producing strains	Honey bee breedi	Explanation, presentation the model a lecture	The exam
3		External anatomy the bee body (he and appendag thorax a appendages, abdomen a appendages).	Honey b breeding	Explanation, presentation the model a lecture	The exam
4	2	The digest system and appendages, t mechanics digestion, t method converting nec into honey, t excretory syst (its divisions, work and its role elimination).	Honey b breeding	Explanation, presentation the model a lecture	The exam
5	2	The circulato system, its divisio functions, t	Honey b breeding	Explanation, presentation the model a	The exam

		respiratory syste the first mont exam		lecture	
6	2	Its divisio respiratory stom and th distribution, nervous system	Honey b breeding	Explanation, presentation the model a lecture	The exam
7	2	The fem reproductive system, its divisio factors affecting t average number eggs laid by t queen, the m reproductive system, its divisio	Honey b breeding	Explanation, presentation the model a lecture	The exam
8	2	The life of t members of the b colony (the que the worker, t male)	Honey b breeding	Explanation, presentation the model a lecture	The exam
9	2	The vario phenomena in t lives of members the sect (expulsi false mothe theft), their caus signs of th appearance, methods controlling them	Honey b breeding	Explanation, presentation the model a lecture	The exam
10	2	The basic rules establishing apiary, t foundations beekeeping, and t	Honey b breeding	Explanation, presentation the model a lecture	The exam

		factors that help the success raising standa bee queens			
11	2	The importance bees in cro pollination plants. Montl exam	Honey b breeding	Explanation, presentation the model a lecture	The exam
12	2	The number beehives needed pollination per u of cultivated area	Honey b breeding	Explanation, presentation the model a lecture	The exam
13	2	Bee diseases a pests	Honey b breeding	Explanation, presentation the model a lecture	The exam
14	2	Bee diseases a pests	Honey b breeding	Explanation, presentation the model a lecture	The exam
15	2	The effect chemical pesticic on honey bees, a methods protecting be from the danger pesticides	Honey b breeding	Explanation, presentation the model a lecture	The exam

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbo	1. Al-Naji, Louay Karim. (1980). Beekeeping and silkworms. 2. Al-Ali, Abdel-Baqi Muhammad. (2011). Beekeeping .

(curricular books any)	3- **.The hive and the honey bee**
Main referen (sources)	
Recommended books and references (scientific journals, reports…)	Iraqi academic scientific journals
Electronic References, Websites	Library Genesis

Course Description Form of Horticultural plant diseases

1. Course Name:
Horticultural plant diseases
2. Course Code:
HORD312
3. Semester / Year:
Second semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours / 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Dr. Mohammed N,k.Hantoosh Email **:** **mohammedhantoosh@uoddiyala.edu.iq**
8. Course Objectives

1- The student gets to know the concept of plant diseases

2- The student should differentiate between pathological symptoms and pathological signs

3- The student gets to know the most important pathogens of plant diseases

4- The student gets to know the plant diseases that affect different fruit trees

9. Teaching and Learning Strategies

- Giving lectures.
- using the methods of dialogue, discussion, and explanation with students to convey theoretical information to them.
- Assigning students to collect infected plant samples with plant diseases and identify them in terms of the kind of symptoms and signs appearing on them in order to be able to diagnose them.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	5	The economic importance of orchard diseases	Introduction, kinds of losses caused by plant diseases.	lecture Discussion	Monthly exams and activities

2	5	Symptoms of plant diseases.	Local symptoms Systemic symptoms Local and systemic symptoms	lecture Discussion	Monthly exams and activities
3	5	Symptoms of plant diseases.	Symptoms caused by cell death include: -Topical-specific killing -General killing	Lecture and discussion	Monthly exams and activities
4	5	Symptoms of plant diseases.	-Symptoms caused by a decrease in tissue growth -Symptoms caused by an increase in tissue growth	Lecture and discussion	Monthly exams and activities
5	5	Signs of diseases	-Vegetative structures -Reproductive structures -Disease products	Lecture and discussion	Monthly exams and activities reports
6	5	Diseases of apples and pears	-Fungal diseases -Bacterial diseases - Non-parasitic diseases	Lecture and discussion	Monthly exams and activities
7	5	Diseases of apples and pears	-apples scab -Fire blight -Crown gall -Bitter pit	Lecture and discussion	Monthly exams and activities

8	5	Diseases of stone fruit trees	-Peach leaves curl -Powdery mildew	Lecture and discussion	Monthly exams and activities

11. Course Evaluation
- Monthly exams (two or more).

12. Learning and Teaching Sources	
Required textbooks (methodology, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	Diseases of field and horticultural crops; General Foundations and Diseases, Suleiman Muhammad Al-Shibl, King Saud University, 2007
Electronic References, Websites	− International Information Network on Course Topic

Course Description Form of Ornamental Plants 2

1. Course Name:	
Ornamental Plants 2	
2. Course Code:	
FLOR309	
3. Semester / Year:	
First semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours (Theoretical & practical) 2.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name: Prof. Dr. Abdul Kareem Abdul Jabbar Mohammad Saeed Email : abdulkareemmohammad@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	- Teaching students the concept of ornamental science and some concepts related to the development and production of ornamental plants. - Teaching students about groups of different ornamental plants. - Teaching students about methods of propagating and cultivating ornamental plants in their various groups. - Teaching students how to raise ornamental plants for use in gardens or in ornamental plant exhibitions. - Teaching students to use modern methods in producing ornamental plants. - Teaching students about all the service operations required by ornamental plants. - Teaching students about insect pests and diseases that can affect ornamental plants. -Teaching students how to raise ornamental plants for use in gardens, to produce cut

9. Teaching and Learning Strategies	
Strategy	- Giving lectures. -Using the method of dialogue and discussion with students to convey theoretical information to the student. -Applying some theoretical vocabulary practically in the field. -Using modern laboratories. -Using the presentation method to deliver lectures. Assigning students to prepare scientific reports on their specialty. - Practical lessons in ornamental plant production facilities such as wooden canopies, greenhouses, etc.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	1	Study of ornamental trees, their importance in afforestation, how to reduce environmental pollution.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
2	1	Study of ornamental shrubs, their benefits, importance and methods of pruning.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
3	1	Study of ornamental climbers, their common types in Iraq, care for them, and climbing methods.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
4	1	Study of hedge plants, their types, pruning and breeding, ornamental hedges and preventative hedges	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
5	1	Cacti and succulents, their adaptations, how to create rock gardens.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

6	1	Aquatic and semi-aquatic plants, their importance in ponds or water gardens, various examples.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
7	Semester 1st exam				
8	1	Ornamental palm trees.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
9	1	Lawns	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
10	1	Cut flowers, commercial importance, flower preservation solutions, flower storage and marketing.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
11	1	Flower arrangement, Japanese, Western European and free arrangement styles, the pots used.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
12	1	Interior landscaping plants: their definition, reproduction, uses, and needs.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
13	1	Ornamental grasses, identification plants, plants for patterns and decorations.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
14	Semester 2nd exam				
15	1	General Review	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject**	**Learning Method**	**Evaluation Method**
1	3	Planting seeds of some types of trees	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
2	3	Identify some shrubs and plant their seeds	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
3	3	Identify some plant hedges and plant their seeds	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
4	3	Learn about some climbers, how to prune, raise, and grow them	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
5	3	Identify some thorny and succulent plants, plant, fertilize, and care for them.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
6	3	Identify some aquatic and semi-aquatic plants and methods of propagating them and using in gardens.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
7	Semester 1st exam				
8	3	Identifying some ornamental trees, methods of propagating them, and performing service operations such as weeding, irrigation, and fertilizing some trees.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
9	3	Identify the seeds of some types of lawns and how to grow them.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

10	3	Identifying the seeds of some commercial cut flowers and planting their seeds in growing media.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
11	3	Flower arranging training.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
12	3	Identify the different types of shade plants.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
13	3	Identify the seeds of some specific plants and plant them.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports
14	Semester 2nd exam				
15	3	Conducting various service operations for some ornamental plants.	Ornamental plants 2	Lecture, discussion, reports, practical work in the fields	Daily, monthly and final exams and daily reports

11. Course Evaluation

-Daily quick exams (COZs).
-Monthly exams (two).
-Evaluating students' classroom activity.
-Evaluating students' field activities.
- Evaluations on writing scientific reports and homework.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	
Main References (Sources)	Ornamental plants in Iraq Dr. Sami Karim Chalabi and Nisreen Khalil Al-Khayyat 2013
Recommended Books and References (Scientific Journals, Reports...)	Ornamentals D. Salem Muhammad Al-Sultan et al. 1992 Ornamental plants/Dr. Ahmed Mohamed Musa Tawajen 1987.
Electronic References, Websites	

Description of the horticultural plant breeding

1. Course name
2. Horticultural plant breeding
PLAB310
3. Semester/Year:
First semester / 2025-2026
4. Date this description was prepared
1/6/2026
5. Available attendance forms :
Attending
6. Number of study hours (total)/number of units (total):
75 hours (5 hours each week for 15 weeks) /3.5 units
7. Name of the course administrator (if more than one name is mentioned):
Mr. Dr. Aziz Mahdi Abd and Zainab Hassan Akram **azizmabd@uodiyala.edu.iq**
7. Objectives of the course
- Teaching students some genetic sciences related to plant breeding and improvement. **- Teaching students how to breed and improve the characteristics of different varieties and types of fruit plants, whether self-pollinated, cross-pollinated, vegetatively propagated.** **- Teaching students how to raise and improve the characteristics of different varieties and types of vegetable plants, whether self-pollinated, cross-pollinated, or vegetatively propagated.** **- Teaching students how to breed and improve the characteristics of different varieties and types of ornamental plants, whether self-pollinated, cross-pollinated, or vegetatively propagated.** **- Teaching students to use genetic engineering methods to improve horticultural crops.** **- Teaching students to use some of the materials used to produce new products.** **- Teaching students how to raise horticultural crops that are resistant to various diseases.**

- Teaching students how to raise horticultural crops that are resistant to harsh environmental conditions.
8. Teaching and learning strategies
- Enabling students to obtain knowledge and understanding of the basics of horticultural plant breeding. **- Enabling students to obtain knowledge and understanding of methods of breeding and improving horticultural plants to obtain new genetic structures (varieties) that are suitable for the Iraqi environment.** **- Enabling students to obtain knowledge and understanding of methods for transferring desired genes into commercial varieties.** **- Enabling students to obtain knowledge and understanding of producing vegetable crops that are resistant to harsh environmental conditions.** **- Enabling students to obtain knowledge and understanding of producing modern varieties suitable for organic agriculture to implement the concept of sustainable agriculture.**

9. Course Structure			
Theoretical part			
Week	Hours	Topics Covered	Lab. Experiment Assignments
1	5	Introduction to the science of evolution Methods plant breeding science and its related specifications and successful .plant breeders	Identify the tools used in plant breeding experiments
2	5	Reproduction systems in the .plant	Life for flowering plants, horticultural
3	5	.Male infertility and types	Methods of control in the self-pollination
4	5	Lack of sexual self-compatibility and situations .and means to overcome them	Methods of insulation between plants through breeding programs
5	5	Genetic variations and their relation to breeding and .improving the plant	Methods of castration in self-pollinated plants and humoral
6	5	Inheriting qualitative and quantitative traits and genetic equivalent and some estimate .genetic parameters	Lack of sexual self-compatibility and means to overcome it
7	5	Gene duplication and the strength of the hybrid internal and horticultural plant breeding	Divide the plants according to the nature and appreciation rate of vaccination
8	5	Genetic improvement of self-pollinated plants	Mutations and their role in horticultural crop breeding
9	5	Cannot detect language. Please .choose it manually	The most important uses of replication in improving crops Bustnbh
10	5	Genetic improvement of plants humoral Vaccination	The goals and methods of breeding and improving the family Solanaceae plants - tomatoes, eggplant
11	5	Complement the genetic improvement of plants humoral Pollination	The goals and methods of breeding and improvement of Cucurbitaceae family - and pumpkins option
12	5	Methods of breeding crops	Tarbah goals and methods and

		.Propagated	improve family Alqraeih-sophistication and watermelon
13	5	Genetic improvement of plants through genetic engineering	Breeding aims and methods improve family Alnrjsuh-onion family and pretzels – okra
14	5	Breeding and genetic improvement using mutations	The aims and methods of breeding and improvement of pomegranate
15	5	Breeding and genetic improvement to withstand pests and environmental tensile	Mutation aims and methods improve the vines

10. Learning and teaching resources

- Foundations of breeding and genetics of field crops / Dr. Hamid Jaloub Ali
- Breeding and improving plants\Dr. Medhat Majeed Al-Sahuki and others

- Raising vegetable crops\Dr. Ahmed Abdel Moneim Hassan
- Horticultural plant breeding\Dr. Ahmed Muhammad Abu Zaid Akl and others
- Basics of plant breeding rules\Dr. Ali Al-Khashin
- Basics of plant breeding\Dr. Ahmed Abdel Moneim Hassan
- An electronic website concerned with plant breeding and improvement

Course Description Form of Deciduous fruits 2

1. Course Name:
Deciduous fruits 2
2. Course Code:
DECF307
3. Semester / Year:
Second semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (Theoretical & practical) 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Assistant Professor. Dr. zeana hazber Email : zeanahazber@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	Introduce students to the types of fruits independently for each crop - Defining applications of the necessary requirements for the success of all types of fruit - Introducing the student to the types of nutritional needs necessary for the success of various deciduous fruit cultivation and industries. - Introducing students to the different types of fruits you are studying - The artist who wants to invest between the stages of modernity and maturity for each genre and the period necessary for each - The student's fashion comes at the deadline for each type of fruit according to what suits her - Inviting the growing student to grade the fruit according to its size and the importance of this in marketing the fruit

9. Teaching and Learning Strategies

Strategy	- Giving lectures. - Using the method of dialogue and discussion with students to convey Theoretical information to the student. - Applying theoretical lessons in the laboratory. - Using modern laboratories. - Using projectors during lectures.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	5	Knowing the importance of the crop at the local and global levels	Pomegranate fruit - apple	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
2	5	Recognizing the shape of the leaf to distinguish it from other types and	Botanical description of the apple tree, the nature of pregnancy	Scientific films	Quick and monthly exams, class activity and reports
3	5	The student performs fruit service operations	Appropriate environmental factors and service operations	Lecture, discussion, reports,	Quick and monthly exams, class activity and reports
4	5	Identifying dwarfed, semi-dwarfed, activated,	The abundance of apples and the origins used in them	Scientific films	Quick and monthly exams, class activity and reports
5	5	Identify self-compatible, partially and	Pollination and fruit setting	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports

6	Semester 1st exam				
7	5	Identifying the pear plant in terms of its original habitat and the reality and purposes of its production locally and globally	Pear	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
8	5	Identify the reality of the plant, previously and currently, and its difference from other apples	Quince	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
9	5	Learn about the reality of this group and what distinguishes it from other fruits	Hard stone fruit	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
10	5	Identify the features of each species, its difference from the other, and their environmental needs	Peaches and nectarines	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
11	5	Introducing the student to the nutritional and economic importance of apricots and the most important countries producing them	Apricot	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	5	The importance of the crop and the most important assets used to multiply it	Pears	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
14	5	The student learns botanical description, nature Pregnancy and methods of reproduction	Almonds	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
11. Course Evaluation					

Assigning students to homework to prepare scientific reports on the specialty. Daily rapid exams (COZAT). - Monthly exams (two or more). - Evaluating students' classroom activity. - Evaluations on writing research, scientific reports, and homework.	
12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	Deciduous fruit / Dr. Alaa Abdel Razzaq Al-Jumaili, Majed Abdel Wahab Ahmed Abu Al-Saad Deciduous fruits - their cultivation - care and production / Prof. Dr. Atef Muhammad Ibrahim
Main References (Sources)	Fruit production for departments not specialized in horticultu ، Adel Al-Rawi
Recommended Books and References (Scientific Journals, Reports...)	Fruit and vegetable production / Dr. Makki Alwan Al-Khafaji, Dr. Faisal Abdul Hadi Al-Mukhtar
Electronic References, Websites	Plant Biotechnology - USDA NIFA

Course Description Form of Vegetable Production 2

1. Course Name:
Vegetable Production 2
2. Course Code:
VEGP304
3. Semester / Year:
Second semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (Theoretical & practical) 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Dr. Adnan Ghazi Salman Email : adnanghazi@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	The subject's vocabulary included defining areas for growing vegetable crops - knowing the environmental factors affecting the cultivation of vegetable crops such as temperature, light, gases, and soil factors - soil acidity, soil salinity - soil texture - processes of serving vegetable crops, irrigation and fertilization - defining the seedling and acclimatization process - dividing vegetable crops according to their response to conditions. Environmental - botanical division of vegetable crops - identifying some of the plant families to which vegetable crops belong - winter vegetable crops - the Cruciferous family - the narcissidic family - the leguminous family - summer vegetable crops - the nightshade family - the cucurbit family -

9. Teaching and Learning Strategies

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Introduction, definition of horticulture and some of the sciences related to this specialty, including the	Vegetable production 2	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Environmental factors affecting vegetable crops Temperature: light, gases,	Vegetable production 2	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Soil factors affecting the success of growing vegetable crops: soil texture, acidity and salinity of the soil	Vegetable production 2	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Vegetable crops service operations. Irrigation, irrigation methods,	Vegetable production 2	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Transplantation and acclimatization of vegetable crop seedlings.	Vegetable production 2	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Botanical division of vegetable crops according to plant families, genera	Vegetable production 2	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

		and varieties			
8	**2**	Plant families / winter vegetable crops - the Cruceferae family / appropriate environmental conditions, nutritional value, planting and harvesting dates	**Vegetable production 2**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	study of vegetables belonging to the Alliaceae family - environmental conditions and nutritional value of these crops	**Vegetable production 2**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Study of vegetables belonging to the legumenosae family - environmental conditions and nutritional value - and planting dates for these crops.	**Vegetable production 2**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	Study of vegetable crops belonging to the umbilefera family. Environmental conditions - Nutritional value - Planting dates	**Vegetable production 2**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	Summer vegetable crops - Solanaceae family - Potatoes - Tuber dormancy - Transplantation - Planting dates	**Vegetable production 2**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Solanaceae family / Tomato - Environmental conditions - Nutritional value - Plant breeding methods - Cultivation dates in Iraq	**Vegetable production 2**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	**3**	identification of agricultural facilities such as vegetable fields and green houses	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	preparing the soil for planting vegetable crops	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	preparing the field soil for growing vegetables, dividing the field soil	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	preparation of plantets for cultivation in the field	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Methods of reproduction of vegetable crops	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Agricultural operations in green and plastic houses	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Cruceferae family / botanical description of crops belonging to this family, varieties, cultivation method and service operations	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Botanical description of Alliaceae family plants and pollination method	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Study of the botanical description of crops of the legumenosae family, flowers and method of pollination	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	. Study the botanical description of Umbilefera family crops Flowers and pollination method - Varieties	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				

13	**3**	Botanical description of Solanaceae family crops Cultivation method - Flowers and pollination – Varieties	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Botanical description of the tomato crop - Methods of cultivation in greenhouses Limited and unlimited varieties	**Vegetable production 2**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation	
Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.	
12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	Production of vegetables crops. part 2 . Dr. Adnan Nasser et al. 1980 Vegetables production Produced by Al-Khader, Dr. Fakher Ibrahim Al-Rikabi and Dr. Abdul-Jabbar Jassim 1982
Main References (Sources)	Vegetable crop production - Ahmed Hassan Abdel Moneim - Arab Republic of Egypt Basics of vegetable production and technology of open and protected agriculture - Ahmed Hassan Abdel Moneim - Arab Republic of Egypt
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	**INTERNET**

Course Description Form of Farm management

1. Course Name:	
Farm management	
2. Course Code:	
FARM405	
3. Semester / Year:	
Semester First (2025 −2026)	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours / 3.5 unite	
7. Course administrator's name (mention all, if more than one name)	
Name: Ali Ghedan Zaidan Email: alizaidan@uodiyala.edu.iq	
13. Course Objectives	
Course Objectives	**roduce students to the concept of knowledge of farm management, l how to achieve economic and student with all the knowledge and rmation pertaining to the management and production elements uding land management and capital management and business nagement in order to manage the plant and animal production projects**
14. Teaching and Learning Strategies	
Strategy	iving lectures. Brainstorming Thinking strategy according to the student's ability, for example (if e student is able to learn the concept of applying the concept of ricultural economics on the farm, both in terms of achieving timization of resources and production, as well as how to dispose production in detail. Critical thinking strategy in learning. Critical Thinking is a term at symbolizes the highest levels of thinking, which aims to pose a problem and then analyze it logically to reach the desired solution.

15. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	lements of the general rinciples in the anagement and dministration of farm	Farm management	odel view and ure	and monthly exam rts and class activities
	5	esolution economic oncepts, decision-making, ecisions farm types and ages of achieving the goals	Farm management	del view and lecture	and monthly exam rts and class activities
3	5	he factors affecting the noice of project gricultural work, the ualifications of the successful management	Farm management	del view and lecture	and monthly exam rts and class activities
4	5	Farm management science jobs evolution of agricultural labor productivity	Farm management	del view and lecture	and monthly exam rts and class activities
5	5	Farm economic unit costs and income from agricultural production process	Farm management	del view and lecture	and monthly exam rts and class activities
6	5	Types profits types of losses of assets and conduct product	Farm management	del view and lecture	and monthly exam rts and class activities
7	5	Farmland Economic Principles used in the administration of farm principle determine the best production level	Farm management	del view and lecture	and monthly exam rts and class activities
8	5	Principle of substitution and replacement	Farm management	del view and lecture	and monthly exam rts and class activities
9	5	Principle of marginal revenue equa	Farm management	del view and lecture	and monthly exam rts and class activities
10	5	Principle of opportunity costs of alternative principle of comparative advantage	Farm management	del view and lecture	and monthly exam rts and class activities
11	5	Farm planning and the use of farm partial budget	Farm management	del view and lecture	and monthly exam rts and class activities
12	5	Concepts public roads administration farm	Farm management	del view and lecture	and monthly exam rts and class activities
13	5	Farm management in risk conditions and uncertainty	Farm management	del view and lecture	and monthly exam rts and class activities
14	5	Economic efficiency on the farm gauges	Farm management	del view and	and monthly exam rts and class

				lecture	activities

16. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

17. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Samurai, Hashim Alwan.1984. Farm business management. Baghdad University Press. Iraq.
Main references (sources)	1-Erhomh and Shalluf, Ali Ahmed and Faisal.1998.osasaat Adarhalmzara .mnchorat Omar Al-Mukhtar University. 2. Ruwais, Khaled.2009. Management of agricultural enterprises. King Saud University. College of Food and Agriculture. Department agricultural of economics .pp.213
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form of Plant Tissue Culture

1. Course Name:	
Plant Tissue Culture	
2. Course Code:	
PLTC404	
3. Semester / Year:	
first semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours (Theoretical & practical) 3.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name : Prof. Dr. Ayad Assi Obaid Email : ayadassi@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	Teaching students the basics of science related to growth. - Teaching students about reproductive systems in horticultural plants. - Teaching students how to remove cells and transplant them. - Teaching students how food environments work. - Teaching students sterilization methods. - Teaching students agricultural methods. - Teaching students the stages of plant growth and plant transportation.

9. Teaching and Learning Strategies	
Strategy	- Giving lectures. - Using the method of dialogue and discussion with students to convey Theoretical information to the student. - Applying theoretical lessons in the laboratory. - Using modern laboratories. - Using projectors during lectures.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	2	Familiarity with the history and development of tissue culture	Introduction and historical overview of the development of tissue culture and	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
2	2	Identify the factors affecting the success of plant cell and tissue transplantation	Factors affecting the success of plant cell and tissue transplantation	Scientific films	Quick and monthly exams, class activity and reports
3	2	Identify the stages followed in Micropropagation.	Stages followed in Micropropagation. Factors affecting each of these stages and the processing of phenolic compounds	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
4	2	Learn about the practical applications of plant cell and tissue cultivation	Practical applications of plant cell and tissue culture in the field of plant breeding and improvement to produce healthy plants from infections with specific pathogens.	Scientific films	Quick and monthly exams, class activity and reports
5	2	Learn about the practical applications of plant cell and tissue cultivation	Practical applications of plant cell and tissue culture in the field of plant breeding and improvement to produce healthy plants from infections with specific pathogens.	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
6	Semester 1st exam				

7	**2**	The student learns the methods of producing some pharmaceutical compounds	Production of some pharmaceutical compounds	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
8	**2**	The student will learn rapid pedigree propagation	Rapid breeding	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
9	**2**	The student learns the induction and growth of callus	Induction and growth of callus	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
10	**2**	The student learns the nature of multiple alleles in protoplast fusion and cultivation	Protoplast fusion and cultivation	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
11	**2**	To learn about plant organ transplantation	Plant organ transplantation	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	The student will learn to cultivate embryos	Embryo culture	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
14	**2**	The student will know how somatic embryos are formed	Somatic embryogenesis	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Learn about the basics of the laboratory, preparing media and samples, and sterilization	Getting started with Tissue culture : Media preparation , Sterile technique and laboratory equipment	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Learn about the basics of the laboratory, preparing media and samples, and sterilization	Getting started with Tissue culture : Media preparation , Sterile technique and laboratory equipment	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Learn about the basics of the	Getting started with Tissue culture : Media	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

		laboratory, preparing media and samples, and sterilization	preparation , Sterile technique and laboratory equipment		
4	**3**	Learn about the basics of the laboratory, preparing media and samples, and sterilization	Getting started with Tissue culture : Media preparation , Sterile technique and laboratory equipment	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Know how to control acidity	Organic addition, Osmotic and PH effects.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Know how to control acidity	Organic addition, Osmotic and PH effects.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Method Sterilization.	Sterilization.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Type of Explant using in plant tissue culture.	Explant using in plant tissue culture.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Method of isolation and culture of meristem	The use of meristem and shoot tip culture in microprapagation in vitro .	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Method of isolation and culture of meristem	The use of meristem and shoot tip culture in microprapagation in vitro .	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Method of Callus Initiation	Callus Initiation	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Knowing ways to treat physiological problems	Problems of Establishment	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11. Course Evaluation					

Assigning students to homework to prepare scientific reports on the specialty. Daily rapid exams (COZAT). - Monthly exams (two or more). - Evaluating students' classroom activity. - Evaluations on writing research, scientific reports, and homework.	
12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	Plant biotechnology T. K. Ramawat. Biotechnology dr. A. E. Aubaida and dr. A. A. Mahmood
Main References (Sources)	plant biotechnology RAMAWAT 2004 – Quantitative ge ،Abdel-Moneim
Recommended Books and References (Scientific Journals, Reports...)	Basics of plant tissue culture Dr. Muhammad Abbas Salman Main concepts of plant cell and tissue culture Dr. Mubasher Saleh Omar Dr. Abd al-Muttalib Sayyid Muhammad
Electronic References, Websites	Ashs.org Actahort.com Springer

Course Description Form Horticulture seed production

1. Course Name:
Horticulture seed production
2. Course Code:
HOSP403
3. Semester / Year:
First semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (Theoretical & practical) 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Dr. Mohammed Daher Adb al-Hadi Email : mohameddaher@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	The aim of this course is give the students information about the importance of improved seeds and the methods that use to produce and store them, the factors affecting of seed production , germination and extraction, and also aims to ho to maintain its vitality, storage and circulation in the market within the laws and regulations prevailing in Iraq

9. Teaching and Learning Strategies

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	2	Seed definition, fertilization, seed formation, and polyembryony.	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Seeds identification (seed morphology, seed autonomy and chemical components of seeds)	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	seed importance , propagation of vegetable crops , seeds orders , production of improved	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Institutions of improved seed production.	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Variant and purity of varieties, sustain of breeder seed in self and cross pollination crops	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Field inspection (determinate of field state before and after F, I. The feature of field inspector , methods of choosing samples	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
8	2	Factors effect of flowering and seed formation (light, plant age, temperature, photoperiodisim and vernalization	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
9	2	Seeds vitality and factors effect of vitality	Horticultural seed production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

10	**2**	Seeds dormancy (importance of external dormancy and methods to overcome it. The role of light to overcome the dormancy , the dormancy in vegetative parts of plant.	**Horticultural seed production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	Seeds preparation (determine of harvest date, drying extraction, grading and packaging of seeds.	**Horticultural seed production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	Methods of vegetable seeds production(seed to seed, seed propagation, methods of extraction of some vegetables families seeds	**Horticultural seed production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Methods of seeds storage and packaging	**Horticultural seed production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

Practical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	**3**	Recognition of vegetables families and horticultural plants	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Seeds testing and testing tools	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Steps of seed testing and recognition of Iraqi and global seed institutions	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Seed germination testing and measure rate of germination in dishes	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Seeds weight and purity testing	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

6	Semester 1st exam				
7	**3**	Seed vitality testing by using tetrazolium pigment	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Seedlings evaluation	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Methods of potato seeds production	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Methods of seeds drying	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Types of vegetables seeds packaging	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Seeds treating of chemicals in stores to prevent diseases	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Practical Visiting of seed production institutions	**Horticultural seed production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture .
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	Production of vegetable seeds. Written by Dr. Izz al-Din Sultan, University of Mosul. 1983-1 Production, physiology and approval of vegetable seeds. Written by. Dr. Ahmed Abdel Moneim Hassan - 1993-2
Main References (Sources)	

Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	**Internet**

Course Description Form of Green Houses Operation

1. Course Name:	
Green Houses Operation	
2. Course Code:	
GRHO401	
3. Semester / Year:	
First semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours (Theoretical & practical) 3.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name :Prof. Dr. Ahlam Ahmed Hussein Email : ahlamahussein@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	**To Stimulate Scientific Kowlage of theoretical and Field Work Information Forth Graduate Specialized Farmers To Serve the Society**
9. Teaching and Learning Strategies	

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Defines of green house	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Type of Greenhouses and historical Development	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Advantages of Greenhouses studies	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Types of Greenhouses Trunks	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Types of cladding material	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Method of protection	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
8	2	Greenhouses Environment	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
9	2	Greenhouses heating	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
10	2	Greenhouses cooling	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
11	2	CO_2 Enrichment	Green houses	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

12	Semester 2nd exam				
13	**2**	**Greenhouses Agro – operation**	**Green houses**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	**Greenhouses Disease**	**Green houses**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	**Defines of green house**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	**The type and design of Greenhouses**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	**Method of Greenhouses construction**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	**Root media pert 1**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	**Root media pert 2**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	**Scientific gurney**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	**Agricultural operation of Greenhouses**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	**Methods of Soil Sterilization**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	**Methods of Irrigation**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11	**3**	**Methods of plant Training and pruning**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	**Weed control and Disease and Insect Control**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	**Weed control and Disease and Insect Control**	**Green houses**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture .
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	**Protected agriculture, Fadel Musleh Hammadi. 1990**
Main References (Sources)	**Panl V.nelson,2003, Greenhouse Operation and Management, pear Education, Ine , upper saddle River , New gersey.**
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	

Course Description Form of Evergreen fruit

1. Course Name:	
Evergreen fruit	
2. Course Code:	
EVEF402	
3. Semester / Year:	
First semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours (Theoretical & practical) 3.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name : Ahmed thamer homed Email : **Ahmedhomed@uodiyala.edu.iq**	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	**Teaching students the concept of Evergreen fruit science and some concepts related to the development and production of. Evergreen fruit** **- Teaching students about groups of differen Evergreen fruit t.** **- Teaching students about methods of propagating and**
9. Teaching and Learning Strategies	

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	The importance of evergreen fruit trees	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Blooming , Pollination , Fertilization , Fruitest and development of the fruits	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	citrus	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Olive, Origin, plant description	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Olive, Origin, plant description	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Olive,	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
8	2	Mango	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
9	2	Banana	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
10	2	Loguate and Pineapple	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
11	2	Coffe and Guava	Evergreen fruit	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

12	Semester 2nd exam				
13	**2**	**fertilization**	**Evergreen fruit**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	**irrigation**	**Evergreen fruit**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Botanical Description	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Bud characteristics	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Weed control and pert management	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Weed control and pert management	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Planning and establishment of orchards	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Cultivation off shoots	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Cultivation off shoots	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Study olive Varieties	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Fertilizaion	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11	**3**	Cultivars and species characteristics	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Fertilizaion	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Visit to an orchard	**Evergreen fruit**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture .
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	**- Evergreen fruit Dr. Maki Alwan Kafaje and .... et al. 1990**
Main References (Sources)	**2- Evergreen fruit D. Agaa Gwad et al. 1990**
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	

Course Description Form of Landscaping

1. Course Name:
Landscaping
2. Course Code:
LAND400
3. Semester / Year:
the first semester/ 2025-2026
4. Description Preparation Date:
1/6/2026
5. Available Attendance Forms:
Attending
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (Theoretical & practical) 3.5 units
7. Course Administrator's Name (Mention All, If More Than One Name)
Name : Raad Waheeb Mahmoud Email : raadalzuhairi@uodiyala.edu.iq
8. Course Objectives

Course Objectives: Graduating students who are able to:	- A1- That the student becomes familiar with the sciences of garden engineering and design, ornamental plants, and methods of propagating them. A2- The student will be familiar with the science of soil fertility, modern puncturing methods, and remote sensing. A3- That the student becomes familiar with the sciences of surveying and engineering drawing and ways to apply them on the ground. A4- That the student can analyze and synthesize the components of a successful design. A5: To identify the strengths and weaknesses of previous educational programs and benefit from them. A6- The student should design an integrated map in garden engineering for a specific site requested in advance

9. Teaching and Learning Strategies

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	Introduction, definition of the science of garden architecture and the history of its creation	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	Garden styles throughout history: Chinese, Babylonian, Pharaonic, and Indian	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Modern French, English, Italian garden style.	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Types of gardens Aquatic rocky bonsai, etc	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	Steps to design and implement gardens:	landscape	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

6	Semester 1st exam				
7	**2**	**Conditions that must be taken into account when creating gardens**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
8	**2**	**The right tree in the right location**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	**Global rates of green spaces**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Types of green spaces, their maintenance and irrigation methods	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	**Annual maintenance schedule and ways to control pests and weeds in gardens**	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**2**	Sustainable development goals City planning Sustainable city planning Green spaces within cities	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Using modern programs to identify and address tree planting problems	landscape	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

Practical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	**3**	**Drawing scale**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	**Engineering drawing tools**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Methods of measuring geometric shapes	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

4	**3**	**Learning on a bubble chart**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	**Learn to take notes from the site**	landscape	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Getting to know AutoCAD		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	**Getting to know the instructions and keyboard in the program**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	**Drawing geometric shapes in AutoCAD**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	**Drawing a garden to scale using AutoCAD**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	**Drawing a garden to scale using AutoCAD**		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Dividing the garden design into layers using AutoCAD		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Graduation project: Drawing a design proposal using AutoCAD for a public park		**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11. Course Evaluation					
Examination Monthly & daily exams with discussion questions inside the lecture . The degree of participation in the questions related to the subject.					
12. Learning and Teaching Sources					

Required Textbooks (Curricular Books, If Any)	**-هندسة وتصميم الحدائق ، د.طلال الجلبي (1990).**
Main References (Sources)	**لزينة وتصميم الحدائق ، د. سامي كريم ومحسن خلف ا (1989).**
Recommended Books and References (Scientific Journals, Reports...)	STILGOE, John R. *What is landscape?*. MIT press, 2018. KNIGHT, Richard Payne. *The Landscape: A Didactic Poem. In Three Books. Addressed to Uvedale Price, Esq. By RP Knight*. Gregg, 1795. YARWOOD, Alf. *Introduction to AutoCAD 2004*. Routledge, 2013.
Electronic References, Websites	

Course Description Form of Production of grapes and small fruits

1. Course Name:	
Production of grapes and small fruits	
2. Course Code:	
GRAS406	
3. Semester / Year:	
second semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours (Theoretical & practical) 3.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name : Prof. Dr. Zeina Sami Rashid Email : zeinasami@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	- Teaching students to Classification of Grape . - Teaching students to Suitable environment for agriculture of Grape . - Teaching students to The phenotypic appearance of the grapevine . - Teaching students to The annual growth cycle of a grape vine. - Teaching students about methods of propagating and cultivating. - Teaching students to Raising and pruning grapes Study of grapes and small fruits (strawberry, raspberry, blackberry, blueberry, currant,,

9. Teaching and Learning Strategies	
Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	2	Learn about the importance of grapes	Grapes, economic importance and nutritional value.	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
2	2	Learn about the botanical description and components of the vine	Grape classification	Scientific films	Quick and monthly exams, class activity and reports
3	2	Learn about the botanical description and components of the vine	Grape classification	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
4	2	The student will learn the appropriate environment for growing vines, including temperatures and humidity.	Suitable environment for agriculture.	Scientific films	Quick and monthly exams, class activity and reports
5	2	The student will learn the appropriate environment for growing vines, including temperatures and humidity.	Suitable environment for agriculture.	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports

6	**2**	Introduction to the fungal recipe and the components of the vine	Phenotypic structure of grapevine.	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
7	Semester 1st exam				
8	**2**	Introduction to the fungal recipe and the components of the vine	Phenotypic structure of grapevine.	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
9	**2**	Learn about the life cycle of grapes	The annual growth cycle of a grape vine.	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
10	**2**	Learn about the annual growth cycle of a grape vine	The annual growth cycle of a grape vine.	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
11	**2**	Identify student about Propagation of grape	Propagation of grape	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
12	**2**	Know how to Pruning fruiting and renewal	Raising and pruning grapes	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
13	**2**	Learn about the importance of raspberry, blackberry, blueberry, cranberry, blueberry, cranberry	Study of small fruits (strawberry, raspberry, blackberry, blueberry, cranberry, blueberry, cranberry) in terms of their importance, the appropriate environment for them, their reproduction, cultivation, and service operations.	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
14	**2**	Learn about the importance of raspberry, blackberry,	Study of small fruits (strawberry, raspberry, blackberry, blueberry, cranberry,	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports

		blueberry, cranberry, blueberry, cranberry	blueberry, cranberry) in terms of their importance, the appropriate environment for them, their reproduction, cultivation, and service operations.		
15	Semester 2nd exam				
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Learn student parts of the vine.	Identify the parts of the vine	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
2	**3**	Teaching students how to propagate grapes in a nursery	Preparing a nursery to propagate grapes in various ways.	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
3	**3**	Teaching students how to propagate grapes in a nursery and methods of reproduction	Preparing a nursery to propagate grapes in various ways.	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
4	**3**	Teaching students how to propagate grapes in a nursery and methods of reproduction	Breeding pruning, fruit pruning	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
5	**3**	Learn students how to perform both types of pruning	Breeding pruning, fruit pruning	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports

6	**3**	Establishing means of support and planning the vineyard	Creating support media, planning and establishing the vineyard		
7	Semester 1st exam				
8	**3**	Teaching students about vineyard breeding methods, such as vine breeding and cane breeding	Creating support media, planning and establishing the vineyard	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Know how to Pruning fruiting and renewal	Pruning fruiting and renewal	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Teaching students how to serve the vine, such as fertilizing and irrigation	Some agricultural service operations	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Teaching students how to serve the vine, such as Teaching students how to serve the vine, removing the leaves and setting the bunches	Some agricultural service operations	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	**3**	Introducing the student to the types of fruits with small fruits, the appropriate conditions for their successful cultivation, and methods of reproduction.	Methods of cultivation and production of strawberries, raspberries, blackberries, blueberries, currants, cranberries, cranberries, and service and harvesting processes.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

13	**3**	Introducing the student to the types of fruit with small fruits, service processes, signs of ripeness, and method of harvesting	Methods of cultivation and production of strawberries, raspberries, blackberries, blueberries, currants, cranberries, cranberries, and service and harvesting processes.	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	General Review	General Review	**Observation Dialogue & discussion**	
15	Semester 2nd exam				

11. Course Evaluation

Assigning students to homework to prepare scientific reports on the specialty.
Daily rapid exams (COZAT).
- Monthly exams (two or more).
- Evaluating students' classroom activity.
- Evaluations on writing research, scientific reports, and homework.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	- Cultivation and production of vines / Dr. Ibrahim Hassan Al-Saidi.
Main References (Sources)	- Grape classification/Dr. Ibrahim Hassan Al-Saidi.
Recommended Books and References (Scientific Journals, Reports...)	- Grape production / Dr. Jabbar Abbas and Dr. Mohammed Abbas.
Electronic References, Websites	Ashs.org Actahort.com Springer

Course Description Form of Plant Biotechnology

1. Course Name:	
Plant Biotechnology	
2. Course Code:	
PLAB414	
3. Semester / Year:	
Second semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours (Theoretical & practical) 3.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name : Prof. Dr. Ayad Assi Obaid Email : ayadassi@uodiyala.edu.iq	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	- Teaching students the basics of genetic sciences Related to horticulture. - Teaching students about the nature of genetic Material. - Teaching students how to prepare plasmids. - Teaching students methods of gene transfer. - Teaching students methods for detecting mutant cells. - Teaching students the steps needed to reach. Transformed plant.

9. Teaching and Learning Strategies	
Strategy	- Giving lectures. - Using the method of dialogue and discussion with students to convey Theoretical information to the student. - Applying theoretical lessons in the laboratory. - Using modern laboratories. - Using projectors during lectures.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	2	Familiarity with the history of plant biotechnology	Plant biotechnology basic concepts	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
2	2	Learn about the historical introduction and applications of	Historical introduction and applications of biotechnology	Scientific films	Quick and monthly exams, class activity and reports
3	2	Identify the nature of genetic material and its replication	The nature and frequency of genetic material	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
4	2	Identify gene expression in plants	Gene expression in plants	Scientific films	Quick and monthly exams, class activity and reports
5	2	Identify the gene clone	Gene clone	Lecture, discussion, reports, laboratories	Quick and monthly exams, class activity and reports
6	Semester 1st exam				
7	2	For the student to learn about cloning vectors	Clone vectors	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
8	2	The student learns the basics of genetic engineering in plants	Genetic engineering in plants	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
9	2	The student learns the induction and growth of callus	Genetic transformation in plants and its applications	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
10	2	The student learns the nature of genetic transformation in plants and its applications	Genetic transformation using Agrobacterium	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports

			bacteria		
11	2	To learn about methods of direct gene transfer into plants	Methods of direct gene transfer into plants	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	2	To learn about methods of direct gene transfer into plants	Methods of direct gene transfer into plants	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
14	2	The student's knowledge of the DNA replication reaction and its applications	DNA replication reaction and its applications	Lecture, discussion, reports, laboratories	Daily, monthly and final exams and daily reports
Practical part					
Week	Hours	Required learning outcomes	Unit or Subject Name	Learning Method	Evaluation Method
1	3	Laboratory identification of cells	Plant cell growth measurement in labs	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
2	3	Knowledge of chromosomal replication methods	Double haploid production of barley	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
3	3	Methods of protoplast fusion	Protoplast fusion for petonia	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
4	3	View laboratory samples	Protein extraction and purification from plant	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
5	3	Learn about extraction methods	DNA extraction and purification from plant	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	3	Learn about extraction methods	Qualitative and quantitative of plant DNA	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports

8	3	Learn about electrical relay methods	gel electro Polaris for DNA and protein	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
9	3	Learn about electrical relay methods	DNA stating methods	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
10	3	Learn about electrical relay methods	DNA hybridization methods (southern blot ion)	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
11	3	Knowing the methods of genetic variation	Application of RAPD and SSR technique	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	3	Knowing the methods of genetic variation	Application of AFLP technique	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports
14	3	Learn about the method of injection with a gene gun	Genetic transformation in tobacco by gen gun	Observation Dialogue & discussion	Daily, monthly and final exams and daily reports

11. Course Evaluation
Assigning students to homework to prepare scientific reports on the specialty. Daily rapid exams (COZAT). - Monthly exams (two or more). - Evaluating students' classroom activity. - Evaluations on writing research, scientific reports, and homework.
12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	Plant biotechnology T. K. Ramawat. Biotechnology dr. A. E. Aubaida and dr. A. A. Mahmood

Main References (Sources)	plant biotechnology RAMAWAT 2004 – Quantitative gen ،Abdel-Moneim
Recommended Books and References (Scientific Journals, Reports...)	plant genetics (practical part) Ghassan Ayash and others
Electronic References, Websites	Plant Biotechnology - USDA NIFA

Course Description Form Fertilizers and Soil fertility

18.	Course Name:
Fertilizers and soil fertility	
19.	Course Code:
SOFF412	
20.	Semester / Year:
2025-2026 Second semester / fourth stage	
21.	Description Preparation Date:
1/6/2026	
22.	Available Attendance Forms:
Attending	
23.	Number of Credit Hours (Total) / Number of Units (Total)
75 hours (2 Theoretical and 3 practical) 3.5 units	
24.	Course administrator's name (mention all, if more than one name)

me: Mohammed Taha Haraz
ail: ztmm84@gmail.com

25.	Course Objectives
rse Objectives	**The aim is to introduce students to the principles and techniques used in manufacturing and preparing fertilizers, methods of expressing them, and how to calculate the percentages added to the soil**
26.	Teaching and Learning Strategies
ategy	A 15 -week attendance lectures, interspersed with two monthly exams, daily exams, and scientific reports
27.	Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
			tilizers, their types and classification	ture with lanation sentation	ly exam
			rogen fertilizers	ture with lanation sentation	ly exam
			sphate fertilizers.	ture with lanation sentation	ly exam

			tilizers containing potassium	ture with lanation sentation	ly exam
			fur, calcium and magnesium fertilizers	ture with lanation sentation	ly exam
			ronutrient fertilizers		
			ronutrient fertilizers	ture with lanation sentation	ly exam
			l Nutrients, water use and other ractions	ture with lanation sentation	ly exam
			ilizer evaluation and mixing	ture with lanation sentation	ly exam
			rient management basics	ture with lanation sentation	ly exam
			nomics of using fertilizers	ture with lanation sentation	ly exam
			vironmental problems associated with use of fertilizers	ture with lanation sentation	ly exam
			imal use of chemical fertilizer nologies in Iraqi agriculture	ture with lanation sentation	ly exam
			nester second exam Fertiliser lysis dern technologies and crop ductivity		
			ricultural challenges and portunities ms and concepts related to ilizers and their interactions with		
ıctical part					
			ilizer technologies ilisers e chemical principles associated with lizers	ture with lanation sentation	ım and work ort

			ogen ple nitrogen fertilizers	ture with lanation sentation	am and work ort
			sphorus sphate fertilizers ple mineral phosphate fertilizers	ture with lanation sentation	am and work ort
			assium ash fertilizers most important potassium fertilizers used rtilize agricultural lands fur fur fertilizers	ture with lanation sentation	am and work ort
			ronutrient fertilizers	ture with lanation sentation	am and work ort
			fertilizer Fe nganese Fertilizers Mn	ture with lanation sentation	am and work ort
			c fertilizers Zn	ture with lanation sentation	am and work ort
				ture with lanation sentation	am and work ort
			boron fertilizers Copper Fertilizers Cu mybdenum Fertilizers Mo	ture with lanation sentation	am and work ort
			mpound or mixture fertilizers vantages of compound fertilizers	ture with lanation sentation	am and work ort
			minology related to compound and mixed lizers	ture with lanation sentation	am and work ort
			anic fertilizer rces of organic fertilizers ditions and specifications of good organic lizer	ture with lanation sentation	am and work ort
			culations of the amount of added lizers	ture with lanation sentation	am and work ort
			hods of adding solid fertilizersl	ture with lanation sentation	am and work ort
28. Course Evaluation					

Examinations Monthly and daily exams with discussion questions inside the lecture The degree of participation in the questions related to the subject	
29. Learning and Teaching Resources	
quired textbooks (curricular books, if any)	, Nour al-Din Shawqi, 2010, Fertilizer chnologies and Their Uses, College of Agriculture, iversity of Baghdad. (under publication)
in references (sources)	Naimi, Saadallah (1999) Fertilizers and soil ility. Ministry of Higher Education and Scientific search, University of Mosul.
Recommended books and references (scientific journals, reports...)	ssan, Nouri Abdel Qader, Hassan Al-Dulaimi, and if Al-Ithawi, 1990. Soil fertility and fertilizers, nistry of Higher Education and Scientific search. Baghdad University.
ctronic References, Websites	rad, Kazem Mashhout, 1984. Practical tests of ilizers and soil fertility. Albasrah university

Course Description Form of Principles of Date palm production

1. Course Name:	
Date palm production	
2. Course Code:	
DAPP411	
3. Semester / Year:	
second semester/ 2025-2026	
4. Description Preparation Date:	
1/6/2026	
5. Available Attendance Forms:	
Attending	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours (Theoretical & practical) 3.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name : Ahmed Thamer Homed Email : **Ahmedhomed@uodiyala.edu.iq**	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	**- Teaching students the concept of Date palm science and some concepts related to the development and production of. Date palm** **- Teaching students about groups of different Date palm** **- Teaching students about methods of propagating and cultivating** **in their various groups. -**
9. Teaching and Learning Strategies	

Strategy	A 14 week attendance lectures, interspersed with two monthly exams, daily exams & reports.

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	2	The importance of Date palm trees	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
2	2	propagation methods	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
3	2	Date palm varieties	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
4	2	Environmental factors	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
5	2	pollination of the date palm	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	2	Date palm trees of clean	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
8	2	Date palm trees of servce	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
9	2	irrigation	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
10	2	Way to store dates	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports
11	2	Cultivation off shoots	Date palm production	Lecture Dialogue & discussion Brainstorming	Daily, monthly and final exams and daily reports

12	Semester 2nd exam				
13	**2**	fertilization	**Date palm production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	Date palm trees of diseases	**Date palm production**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Botanical Description	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Visit to an orchard	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	Botanical Description Of seeds	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Anatomy of the date palm trunk and leaves	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Anatomy of the date palm trunk and leaves	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	Semester 1st exam				
7	**3**	Cultivation off shoots	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	Morphological description of the flowers	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	Morphological description of the flowers	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	Study olive Varieties	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11	**3**	Morphological description of the fruit	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	Semester 2nd exam				
13	**3**	Natural root structure	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Visit to an orchard	**Date palm production**	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation

Examination
Monthly & daily exams with discussion questions inside the lecture .
The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources

Required Textbooks (Curricular Books, If Any)	**- Date palm Dr. Baker.1986**
Main References (Sources)	**2- Date palm D. Sbana Hasan**
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	

Academic Description Form of Postharvest fruit storage

24.	**Course Title:**
	Postharvest fruit storage
25.	**Course Code:**
	POFS410
26.	**Semester / Year:**
	Second Semester / 2025-2026
27.	**Date of preparation of this description :**
	1/6/2026
28.	Available Forms of Attendance:
	Attending
29.	Number of Credit Hours (Total) / Number of Units (Total):
	75 hours / 3.5 units
30.	Course administrator's name (if more than one name)
	Assist. Prof. Khaled Ibrahim Mustafa
31.	Course Objectives
	- Teaching students some sciences related to the fruits of horticultural crops. - Teaching students how to store different fruits. - Teaching students how to store different fruits of vegetables. - Teaching students how to store flowers of different types of ornamental plants. - Teaching students to determine the ripening date of horticultural crops. - Teaching students to use some materials used to extend the shelf life of crops. - Teaching students how to pack horticultural crops and deliver them to the consumer. - Teach students how to study the chemical changes that occur in horticultural crops.
32.	Teaching and Learning Strategies
	– Training students to obtain the scientific skills necessary for storing fruits. – Training students to obtain practical skills in the use of modern laboratory equipment for measuring the quality of fruits of horticultural crops. – Providing students with the practical field skills necessary to determine

the date of ripening and harvesting fruits .

- Training students to obtain the skills required to work in the specialty of care and storage of horticultural crops, including accuracy in work, patience and dealing with fruits on the basis that they are a living organism.

33. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Introduction to the historicity of the development of post-harvest science	The importance of cold storage for horticultural crops.	2	1
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Causes of damage to horticultural crops after harvest.	Identify the causes of damage to horticultural crops after harvest.	2	2
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Stages of formation and growth of fruits and horticultural crops .	Learn about the stages of formation and growth of fruits and horticultural crops	2	3
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Measures of completion of ripening in fruits .	Recognize the measures of maturity completion in fruits	2	4
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Fruit transactions after harvest. .	The student should learn how to conduct fruit transactions after harvest .	2	5

Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Methods of rapid cooling of fruits after harvesting.	The student should learn how to conduct rapid cooling methods for fruits after harvesting.	2	6
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	The chemical composition of the fruits and the changes that occur in them during ripening and storage.	The student should learn the chemical composition of the fruits and the changes that occur in them during ripening and storage.	2	7
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Respiration in horticultural crops and the phenomenon of clymacteric	The student should learn how to measure spiration in horticultural crops and the phenomenon of climetic.	2	8
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Ethylene and its relationship to the physiology of fruit ripening.	To teach the student the effect of ethylene and its relationship to the physiology of fruit ripening.	2	9
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Industrial ripening .	The student should learn how to perform the process of artificial ripening.	2	10
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Methods of storing horticultural crops..	The student should learn methods of storing horticultural crops.	2	11

Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Factors affecting the speed of weight loss in fruits .	The student should learn about the factors affecting the speed of weight loss in fruits	2	12
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Optimal conditions for storing some horticultural crops	Teaching the student on the optimal conditions for storing some horticultural crops	2	13
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Quality Indicators in Horticultural Crops	The student learns about the quality indicators in horticultural crops	2	14
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Pick and store ornamental plants..	Teach the student how to pick and store ornamental plants.	2	15
Practical part					
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	The Histological and morphological fruit characters .	Practical applications	3	1
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	The Histological and morphological fruit characters .	Practical applications	3	2
Quick and monthly exams, classroom activity and	Lecture, discussion, reports, laboratories,	Studying the ripening indices.	Practical applications	3	3

reports					
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Studying fruit frimness and pectins.	Practical applications	3	4
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Studying the changes in organic acids and PH in the fruits.	Practical applications	3	5
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Studying the changes in Ascorbic acid contentin the fruits.	Practical applications	3	6
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Studying the changes in total sugars and reducing sugar and plant pigments in fruits.	Practical applications	3	7
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Studying the changes in total sugars and reducing sugar and plant pigments in fruits.	Practical applications	3	8
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Studying the changes in respiration in the fruit and the methods of measuring the rate of resperition.	Practical applications	3	9
Quick and monthly exams, classroom activity and	Lecture, discussion, reports, laboratories,	Studying the changes in respiration in the fruit and the methods of	Practical applications	3	10

reports		measuring the rate of resperition.			
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	The studying of different methods of storing	Practical applications	3	11
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	The studying of different methods of storing	Practical applications	3	12
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Horticultural commidity and the case student given by the students during practical class.	Practical applications	3	13
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Horticultural commidity and the case student given by the students during practical class.	Practical applications	3	14
Quick and monthly exams, classroom activity and reports	Lecture, discussion, reports, laboratories,	Visiting some cold stires in the area.	Practical applications	3	15

34. Course Evaluation

- Daily quick exams (Kozat).
- Monthly exams (two or more).
- Evaluation of students' classroom activity.

Evaluate laboratory activities for students

- Assessments on writing scientific reports and homework .

35. Learning and Teaching Resources

	Required textbooks

	(methodology, if any)
Care and storage of horticultural crops \ Prof. Ghaleb Nasser Al-Shammari	Main references (sources)
Physiology of horticultural crops after harvest \ d. Abdul Ilah Mikhlif Al-Ani	Recommended books and references (scientific journals, reports…)
International Information Network on Course Topic	Electronic References, Websites