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

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description 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 students to achieve, proving whether they have 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 sophisticated, inspiring, stimulating, realistic and applicable.

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 (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students 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 members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: University of Anbar

Faculty/Institute: College of Agriculture

Scientific Department: Field Crops

Academic or Professional Program Name: Agricultural concepts

Final Certificate Name: BSc in Agricultural sciences

Academic System: By Semester

Description Preparation Date: 1 / 9 / 2024

File Completion Date: 14 / 4 / 2024

Signature:

Head of Department Name:

Assist.Prof.Dr. Abdullsamad Hashim Noaman

Date: 14 / 4 / 2024

Signature:

Scientific Associate Name:

Assist.Prof.Dr. Osama Hussein Mahedi

Date: 14 / 4 / 2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Asst. Prof. Dr. Waleed Ismaal Kurdi

Date: 14/ 4 / 2024

Signature:

Approval of the Dean

Prof. Dr. Idham Ali Abed

14\4\2024

1. Program Vision

Preparing scientifically qualified cadres and opening up to society to transfer modern agricultural technologies and keep pace with global development in the agricultural sector.

2. Program Mission

The main goal of the department's administration is to provide society with resources and staff working in various educational and pedagogical fields, as well as the industrial, banking, security, and economic sectors through:

1- Two agricultural engineer teachers graduated with high-level qualifications capable of modernizing the infrastructure in the field of agriculture.

2- Developing students, providing them with modern technologies, and providing services to the community and the labor market.

3- Building leadership qualities in graduates by training them to work as one team.

4- Support and provide a good work environment for students and faculty members.

5 - Caring for, supporting and encouraging outstanding students.

3. Program Objectives

1- Preparing graduates with high theoretical and practical skills to meet the needs of industry, technological development and community service in the field of agricultural engineering.

2- Providing the graduates with the applied practical skills and the necessary engineering background according to the scientific developments taking place in the methodological vocabulary and modern teaching methods to pursue postgraduate studies in the various specializations of agricultural engineering.

3- Preparing graduates to participate actively in building and rebuilding the country and achieving economic and social benefits for society.

4. Program Accreditation

Study plans for all stages and for the coming years

5. **Other external influences**
Instructions and instructions related to the program

6. **Program Structure**				
Program Structure	**Number of Courses**	**Credit hours**	**Percentage**	**Reviews***
Institution Requirements	**14**	**17**	**9.90%**	**Basic**
College Requirements	**21**	**67**	**39.06%**	**Basic**
Department Requirements	**27**	**87.50**	**51.02%**	**Basic**
Summer Training	**1**			
Other				

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

7. Program Description

First Year

Course Description	Couse Name	Course Code	Class Hours	Units
1st Semester \Core	Field Crops	**AFC1911**	**2**	**3.5**
1st Semester \Core	Organic chemistry	**AFC1912**	**2**	**3.5**
1st Semester \Core	Plant Science	**AFC1913**	**2**	**3.5**
1st Semester \Core	Plane surveying	**AFC1914**	**2**	**3**
1st Semester \Core	Mathematics	**AFC1915**	**2**	**3**
1st Semester \Core	Engineering Drawing	**AFC1916**	**2**	**1.5**
1st Semester \Core	Human Rights	**AFC1917**	**2**	**3.5**
2nd Semester \Core	Biochemistry	**AFC1918**	**2**	**3.5**
2nd Semester \Core	English Language	**AFC1919**	**2**	**1**
2nd Semester \Core	Principles of Field Crops	**AFC19120**	**2**	**3.5**
2nd Semester \Core	Principles of Soil	**AFC19121**	**2**	**3.5**
2nd Semester \Core	Principles of Animal Production	**AFC19122**	**2**	**3.5**
2nd Semester \Core	Computer Skills	**AFC19123**	**-**	**3**
		Total	**24**	**39.5**

2.11Second Year

Course Description	Couse Name	Course Code	Class Hours	Units
1st Semester \Core	**Principles of Horticulture**	**AFC 1921**	**2**	**3.5**
1st Semester \Core	**Agricultural Mechanizations**	**AFC1922**	**2**	**3.5**
1st Semester \Core	**Agricultural guidance**	**AFC1923**	**2**	**2**
1st Semester \Core	**Principles of Food Industries**	**AFC1924**	**2**	**3.5**
1st Semester \Core	**Soil Fertility**	**AFC1925**	**2**	**3.5**
1st Semester \Core	**Plant classification**	**AFC1926**	**2**	**3.5**
1st Semester \Core	**Computer Skills**	**AFC1927**	**-**	**3.5**
1st Semester \Core	**Biology**	**AFC1928**	**2**	**3.5**
2nd Semester \Core	**Oil & Sugar Crops**	**AFC1929**	**2**	**3.5**
2nd Semester \Core	**Principles Of Statistics**	**AFC19220**	**2**	**3.5**
2nd Semester \Core	**Plant ecology**	**AFC19221**	**2**	**3.5**
2nd Semester \Core	**Irrigation and drainage**	**AFC19223**	**2**	**3.5**
2nd Semester \Core	**Freedom and democracy**	**AFC19224**	**2**	**1**
2nd Semester \Core	**Arabic Language**	**AFC19225**	**1**	**1**
2nd Semester \Core	**English Language**	**AFC1919**	**1**	**1**
		Total	**28**	**43.5**

11.3Third Year

Course Description	Couse Name	Course Code	Class Hours	Units
1st Semester \Core	**Plant Genetics**	**AFC1931**	**2**	**3.5**
1st Semester \Core	**Design & Experiment analysis**	**AFC1932**	**2**	**3.5**
1st Semester \Core	**Mechanizations & Field crops Machinery**	**AFC1933**	**2**	**3.5**
1st Semester \Core	**Field crops Insect**	**AFC1934**	**2**	**3.5**
1st Semester \Core	**Salinity and reclamation**	**AFC1935**	**2**	**3.5**
1st Semester \Core	**Forage Crops**	**AFC1936**	**2**	**3.5**
1st Semester \Core	**Fiber Crops**	**AFC1937**	**2**	**3.5**
2nd Semester \Core	**Cereal Crops**	**AFC1938**	**2**	**3.5**
2nd Semester \Core	**Legume Crops**	**AFC1939**	**2**	**3.5**
2nd Semester \Core	**Field Crops diseases**	**AFC19310**	**2**	**3.5**
2nd Semester \Core	**Bee Breading**	**AFC19311**	**2**	**3.5**
2nd Semester \Core	**Computer Skills**	**AFC19312**	**2**	**3.5**
2nd Semester \Core	**Seed Technology**	**AFC19313**	**2**	**3.5**
		Total	**26**	**45.5**

4.11 Fourth Year

Course Description	Couse Name	Course Code	Class Hours	Units
1st Semester \Core	**Medicinal Plants**	**AFC1941**	**2**	**3.5**
1st Semester \Core	**Plant physiology**	**AFC1942**	**2**	**3.5**
1st Semester \Core	**Weed Biology**	**AFC1943**	**2**	**3.5**
1st Semester \Core	**Field Crops Management**	**AFC1944**	**2**	**3.5**
1st Semester \Core	**Molecular Genetics**	**AFC1946**	**2**	**3.5**
1st Semester \Core	**Landfarming**	**AFC1945**	**2**	**3.5**
1st Semester \Core	**Project Graduation**	**AFC1947**	**2**	**1.5**
2nd Semester \Core	**Plant Breeding**	**AFC1948**	**2**	**3.5**
2nd Semester \Core	**Growth Regulators**	**AFC1949**	**2**	**3.5**
2nd Semester \Core	**Weed Control**	**AFC19410**	**2**	**3.5**
2nd Semester \Core	**Seminars**	**AFC19411**	**2**	**3.5**
2nd Semester \Core	**Pasture Management**	**AFC19412**	**2**	**3.5**
2nd Semester \Core	**Environmental Stress**	**AFC19413**	**2**	**3.5**
1st Semester \Core	**Project Graduation**	**AFC19414**	**2**	**1.5**

8. Expected learning outcomes of the program

Knowledge:

-The student has the ability to know and understand the principles, theories, and fundamentals in agricultural engineering.
-The student has the ability to understand modern and advanced scientific topics in the field of agricultural engineering.
-The student should be able to understand mathematics and equations for major studies.
- Have a student able to solve engineering problems and design agricultural parts and the foundations of their theoretical applications.
- The student shall be able to understand the basics of the laboratory devices that are used in agricultural examination.

Skills :

- Description and analysis of agricultural applications.
-Analyze problems related to agricultural engineering and discussing the possible solutions
-Using computer programs for agricultural engineering to analyze these problems.

Ethics :

Preparing engineering designs for agricultural parts and systems.

Analyzing and discussing the results of engineering tests for use in design and evaluation processes.

The ability to write and draft engineering technical reports on the results of scientific examinations and tests.

The ability to extract test results and their effects from the test.

9.Teaching and Learning Strategies :

1. **Daily theoretical lectures.**
2. **Practical lectures in laboratories.**
3. **Graduation projects for final stage students and their discussion.**

10.Evaluation methods :

- **Monthly and quarterly written exams.**
- **Rapid exams (Quizzes).**
- **Homework.**
- **Writing scientific reports.**

11.Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	field crops	Plant breeding crop production Plant environment	NO		3	NO
Assistant Professor	field crops	Plant breeding Plant Physiology Quality of crops Physiology of weed Seed technology Fiber technology			14	
Teacher	field crops	Plant breeding Plant Physiology Plant genetics Count my life			8	
assistant teacher	field crops	field crops			1	

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12.Acceptance Criterion
Approving admission conditions for students in accordance with the regulations of the Ministry of Higher Education and Scientific Research (central admission) • To pass the department's personal interview. • Must be fit for medical examination. • High school average. • The college's absorptive capacity.

13.The most important sources of information about the program
Market needs. • Local trends of the governorate. • Studies and questionnaires

14.Program Development Plan
Developing the program through evaluation results through which the highest levels of educational success and student outcomes are achieved

Program Skills Outline

Please put (√) in the boxes corresponding to the individual learning outcomes of the evaluated program

Year \ Course			Required learning outcomes of the program															
Couse mane	**Course code**	**Core or elective**	**Knowledge and understanding**				**Subject-specific skills**				**Thinking skill**				**General and transferable skills (Or) Other skills related to employability and personal development**			
1st Year			**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D2**	**D2**	**D3**	**D4**
Field Crops	**AFC1911**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Organic chemistry	**AFC1912**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Plant Science	**AFC1913**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Plane surveying	**AFC1914**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Mathematics	**AFC1915**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Engineering Drawing	**AFC1916**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Human Rights	**AFC1917**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Biochemistry	**AFC1918**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
English Language	**AFC1919**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Principles of Field Crops	**AFC19120**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Principles of Soil	**AFC19121**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Principles of Animal Production	**AFC19122**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Computer Skills	**AFC19123**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2nd Year			**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D2**	**D2**	**D3**	**D4**
Principles of Horticulture	**AFC 1921**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Agricultural Mechanizations	**AFC1922**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Agricultural guidance	**AFC1923**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Principles of Food Industries	**AFC1924**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Soil Fertility	**AFC1925**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Plant classification	**AFC1926**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Computer Skills	**AFC1927**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Biology	**AFC1928**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Oil & Sugar Crops	**AFC1929**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Principles Of Statistics	**AFC19220**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Plant ecology	**AFC19221**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Irrigation and drainage	**AFC19223**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Freedom and democracy	**AFC19224**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Arabic Language	**AFC19225**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
English Language	**AFC1919**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3rd Year			**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D2**	**D2**	**D3**	**D4**
Plant Genetics	**AFC1931**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Design & Experiment analysis	**AFC1932**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Mechanizations & Field crops Machinery	**AFC1933**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Field crops Insect	**AFC1934**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Salinity and reclamation	**AFC1935**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Forage Crops	**AFC1936**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Fiber Crops	**AFC1937**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Cereal Crops	**AFC1938**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Legume Crops	**AFC1939**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Field Crops diseases	**AFC19310**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Bee Breading	**AFC19311**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Computer Skills	**AFC19312**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Seed Technology	**AFC19313**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
4th Year			**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D2**	**D2**	**D3**	**D4**
Medicinal Plants	**AFC1941**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Plant physiology	**AFC1942**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Weed Biology	**AFC1943**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Field Crops Management	**AFC1944**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Molecular Genetics	**AFC1946**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Landfarming	**AFC1945**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Project Graduation	**AFC1947**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Plant Breeding	**AFC1948**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Growth Regulators	**AFC1949**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Weed Control	**AFC19410**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Seminars	**AFC19411**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Pasture Management	**AFC19412**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Environmental Stress	**AFC19413**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Project Graduation	**AFC19414**	**Core**	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
		Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

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

Course Description Form

1. Course Name:

Environmental stress

2. Course Code:

AFC19412

3. Semester / Year:

Semesters (Second Semester)

4. Description Preparation Date:

2023-2024

5. Available Attendance Forms:

Weekly

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

75 hours (Theoretical 30 hours and practical 45 hours)/ 3Units

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

Name: Waleed Abdulsattar Taha El-Fahdawi
Email:ag.waleed.abdal@uoanbar.edu.iq

8. Course Objectives

A- Expand the student's theoretical and practical perceptions.

B- Learn about modern technologies related to environmental stress.

C-Identify the biotic and abiotic factors related to environmental stress.

D-Identify the types of stress and the representative and metabolic processes of the plant under str conditions.

9. Teaching and Learning Strategies

1- The method of giving lectures regarding the theoretical framework of the subject.

2- Method of explanation, interpretation and linking.

3- Explanation method using electronic demonstration aids (Data show).

4-Using the regular blackboard and pen to explain and explain some of the things that need to clarified to the student

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(2theoretical +3 practical)**5**	Environment Stress	Introduction to environmental stress	Lecturing (theoretical and practical)	Daily and monthly test + scores on activities, reports and attendance
2			Stress of abiotic factors (climate and non-climate) (temperature, humidity and rain).		
3			Stress of abiotic factors (light, invisibleradiation and Photoperiodism).		
4			Water stress		
5			Water stress		

6			Water stress and physiological processes in the plant		
7			Salt stress		The first month exam
8			Crops tolerate to salinity		
9			Data on crop tolerance to salinity and methods used to increase tolerance.		
10			Representative and metabolic processes of the plant under stress conditions.		
11			Oxidative stress		
12			Stress of metallic elements		
13			High heat stress		
14			Low heat stress		
15			Pollution stress		The second month exam

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1-The water tension in plants. Dr. Bassam Taha Yassin. Faculty of Science - University of Mosul. 1992. 2-Scientific foundations for managing, producing and improving field crops. Ministry of Higher Education and Scientific Research - Iraq. Pp. 1067. Dr. Iyad Hussein Ali Al-Maeeni and Dr. Muhammad Awaid Ghadeer Al-Obaidi. 2018. 3- Inheritance and breeding of crops due to environmental stress (drought, high temperature, environmental pollution). part One. The Egyptian Library. For printing, publishing and distribution. Alexandria. The Egyptian Arabic Republic. Hassan Odeh Awad. 2009.
Main references (sources)	1-Plant breeding under conditions of various environmental stresses and scarce resources (low input) and its physiological foundations. 2005. Dr. Mr. Hamid Al-Saidi. Faculty of Agriculture - Tanta University - Egypt. On p. 331. 2-Fundamentals of plant physiology. Dr. Bassam Taha Yassin, 2001.
Recommended books and references (scientific journals, reports...)	1-Arabic and English scientific magazines 2-Ashraf, M., M. Ozturk, H.R. Athar. 2009. Salinity and Water Stress: Improving Crop Efficiency. Pp. 244
Electronic References, Websites	Lectures from the Internet.

Course Description Form

1. Course Name:
Field crops management.
2. Course Code:
AFC1944
3. Semester / Year:
Spring 2023−2024.
4. Description Preparation Date:
10.4.2024.
5. Available Attendance Forms:
The audience.
6. Number of Credit Hours (Total) / Number of Units (Total)
5 units (2 theoretical +3 practical).
7. Course administrator's name (mention all, if more than one name)
Name:Dr. Muaiad Hadi + Dr. Omer Ismail . Email: ag.moaead.hadei@uoanbar.edu.iq
8. Course Objectives

Course Objectives	1-Determining the human role in providing food and population increase and the consequences of increasing the food gap, and productivity factors. 2-Research on the management of crops scattered in Iraq and the world and the benefit from them and the adaptation of crops in their broad and narrow sense. 3 -Knowledge of the management of the field crops before and after planting and the various agricultural processes accompanying them. 4-Shed light on the types of irrigation canals and irrigation methods and reduce irrigation losses. 5-Calculation of plant density and seed quantities according to the crop, the role of plant density in intercepting light and increasing. 6-Clarifying the role of the main, secondary and rare fertilizers in growth, increasing the yield and symptoms of deficiency of elements on the plant, the relationship of the types of elements to metabolic processes. 7-Paying attention to adding soil conditioners - using hemp and green manure and adding gypsum and agricultural sulfur to repair saline and saline-alkaline soi

9. Teaching and Learning Strategies

Strategy	1-Providing students with the basics and additional topics related to previous learning outcomes of skills, to solve scientific problems. 2- Asking the students, during the practical laboratories and the field field side, to arrive at conducting many plant tests such as methods of planting, slipping, grafting, hoeing, soil division and waving. 3- Conducting a set of plant and soil tests such as plowing, smoothing, leveling, fertilization methods, irrigation methods, and by the academic staff. 4- Students' participation in the actual examinations.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Man and food: food production, population increase, food gap, productivity factors.	Fieldcrops management	Conducting the plowing, watching its specifications and judging it after identifying its defects in terms soil moisture, the size of the soil masses and the distance between the plowing lines.	Conducting d and monthly t through quest about the subjec determine t comprehension
2	5	Land service: Plowing, its importa depth, and its relationship to the growth of different crops, and its role in eliminating jungles, preparing elements, and increasing water conservation in the Smoothing: The depth of smoothing the machines used for the growth of the crop.	Fieldcrops management	Divide the field and settle for planti the following week. Students can divided into several groups, each group working together to grow a particular crop.	=
3	5	Dividing the field: leveling the l and its relationship to dividing field and the area of planting boar	field crops management	Cultivation of one or more crops at same date and plant density using methods of prose, stripes, and not recording observations of growth occurrence in subsequent weeks, collecting and categorizing data according to each studied trait of t field characteristics of the plant.	=
4	5	Irrigation Channels: Irriga systems, nature of irrigation strea and irrigation losses from wa according to the method used and method appropriate to the nature the land and the crop.	field crops management	Planting a crop on several dates and recording the data to know the eff of the dates.	=
5	5	.Crop service: planting dates and their impact on calculating the thermal units needed for crop growth, light energy and its relationship to planting date, temperature. The difference in the effect of planting dates for winter summer crops on changing the date of harvest and the amount of harvest.	field crops management	Cultivating a crop with several plant densities and recording the data to know the effect of the densities.	=

6	5	Plant density and seed quantities according to the crop, the role of plant density in intercepting light a increasing yield, optimal densities main crops, optimal planting distances for crops planted in lines, how to calculate plant densities an their relationship to the leaf area guide.	field crops managemen	Cultivation of a crop with severa doses of nitrogen and recording c to know the effect of nitrogen Dose.	=
7	5	Fertilization - the role of main, secondary and rare fertilizers in growth, yield increase a symptoms of element deficiency on the plant, the relationship of th types of elements to the metabolic processes in the plant and synthesis of various plant compounds, naming some elements for the plant, and the optimal quantities for the use of elements.	field crops managemen	Cultivation of a crop with severa doses of (NPK) to compare it wi nitrogen fertilization only.	=
8	5	Seeds - seed quality, seed quantities plant densities and their calculations.	field crops managemen	Cultivate a crop and irrigate it wi several different irrigations (5 and 10 days), or every week or two, and record data on growt to know the role of water in this and record the signs of water deficit.	=
9	5	Soil improvers - the use of animal and green manure and the a ddition of gypsum and agricultura sulfur to repair saline and alkaline saline soils and its relationship to the electrical conductivity and pH of the soil solution and the readines the elements for the plant, and the equations for estimating th quantities of gypsum and sulfur according to the specifications of soil analysis.	field crops managemen	Cultivation of two crops with tw factors, one of which is the bus removed manually and the othe without removal (although a pesticide can be used for comparison and note-taking).	=
10	5	Bush control - the most important common bush herbicide in major crops. Fine bush herbicides. Broadleaf herbicides. Pesticides recommended in Iraq to control weed plants of major crops. weed election.	field crops managemen	Extracting leguminous plants to study bacterial complexity, node size and rhizobia activity.	=
11	5	Irrigation of crops - the role of water in the dissolution of elements, absorption and plant growth. The number of irrigations for the crop a the determination of the depth of irrigation and how to calculate it. Water rations for major crops.	field crops managemen	Each group of students writes down the percentage of insects and diseases and attempts to diagnose them for each planted crop.	=

		Calculating the amount of water needed for the field on the farm.			
12	5	Methods and depth of cultivation scattered cultivation in merows ar terraces and cultivation in lines and importance to the type of crop. Th relationship of the nature of root growth in each method and its reflection on the growth of the crop.	field crops managemen	Study of sections of root, stem, flowers, ovaries, pollen grains a embryo sac.	=
13	5	Crop adaptation - temperature, light, quality, intensity and duration, humidity, air	field crops managemen	Each group of students follows th signs of maturity on the crop ar conducts some moisture tests o the seeds and their suitability fo harvest.	=
14	5	Control of diseases and insects - the main insect diseases that affect field crops and how to prevent them before their emergence and control them when they appear and the recommended pesticides in Iraq	field crops managemen	Choosing a research topic about managing a specific crop for each student and writing it according to the teacher's directio	=
15	5	Plant organs and their functions - plant cell and its organelles, root stem, leaves, leaf area. Maturity a harvest - how to harvest and the appropriate time for the crop, an estimate the losses from the crop. Storage of the yield - types stores and storage, storages of seeds and grains and their specifications and storage conditions in them such a temperature, humidity and pesticides, methods of drying the yield in the field and in the store, a titration of moisture in the seeds before and at storage.	field crops managemen	Each student presents his report t the students, discusses it and gives it a grade.	=

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-The scientific basis for the management, production and improvement of field crops. Dr. Iyad Hussein Al-Muaini and Prof. Muhammad Awaid Ghadeer Al-Obaidi. College of Agriculture - University of Anbar, 2018. 2- Introduction to plant physiology. Dr.. Mrs. Omar Al-Huwairis and Dr. Tayeb Haj Ali Ahmed. Khartoum . Khartoum University Publishing House, 2010. 3- A strategy for managing and irrigating field crops. NS. Dr.. Nemat Abdel Aziz Noureddine and I. Dr.. Mohamed Fawzy Hamed and d. Hani Saber Saudi. Academic Library. Cairo . Arab Republic of Egypt, 2013. 4- Plant nutrition guide. Dr.. Youssef Muhammad Abu Dahi and d. Supporter Ahmed Younis. College of Agriculture - University of Baghdad, 1988. 5- Reclamation and improvement of desert lands. Dr.. Maher Georgy Naseem.

	Faculty of Agriculture - Saba Pasha - Alexandria University (first edition). 2006 . 6- Production and improvement of field crops (part one). Abdul Hamid Ahmed Al-Younes, University of Baghdad - College of Agriculture, 1993. 7- Grain production. Mr. Dr. Abdel Hamid Mohamed Hassanein, Faculty of Agriculture - Azhar University, Arab Republic of Egypt 2019. 9 - Principles of field crop production. Dr.. Muhammad Hazal Kazem Al-Baldawi and d. Aladdin Abdul Majeed Al-Jubouri and d. Conciliator Abdul Razzaq Suhail Al-Na College of Agriculture - University of Baghdad, 2014. 10- Lectures on crop management. so. Medhat Majeed Al-Sahoki, College of Agriculture - University of Baghdad, 2012.
Main references (sourc	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	11 - Lectures and statistics from the cluster network.

Course Description Form

1. Course Name: Pastures management
2. Course Code: **AFC19411**
3. Semester / Year: second
4. Description Preparation Date: 2024-4-10
5. Available Attendance Forms: in person
6. Number of Credit Hours (Total) / Number of Units (Total)
30 Theoretical Hours + 45 Practical Hours 3 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. yas amen mohammed Email: ag.yass.ameen@uoanbar.edu.iq
8. Course Objectives
A - Studying the scientific aspects related to the exploitation and development of natural pastures in general and in Iraq in particular and how to develop it. B- Expanding the student's theoretical and practical understandings.
9. Teaching and Learning Strategies

Strategy	-Increasing students' awareness of modern trends in managing and protecting pastures. -Using Power Point presentation methods to convey information well and clearly to the student And Urging students to take advantage of Google search engines while asking them to submit scientific reports on the topics given to them in the academic subject. - Semester and final exams are considered a reflection of the student's commitment and cognitive and skill achievement.

10. Course Structure

Week	Hours	Subject Name	Required learning outcomes	Teaching Methods	Evaluation Methods
1	5	Pastures management	The importance of natural pastures		
2	5	Pastures management	Types of natural pastures		
3	5	Pastures management	Factors affecting pastures		
4	5	Pastures management	Pastures, soil and water conservation		
5	5	Pastures management	Effects of plant vegetation - desertification		
6	5	Pastures management	Grazing arrangement		
7	5	Pastures management	The effect of grazing on plant reproduction and plant composition		
8	5	Pastures management	Grazing systems		
9	5	Pastures management	Proper exploitation of natural pastures		
10	5	Pastures management	The condition of the pasture and its ruling		
11	5	Pastures management	Classification of pasture conditions		
12	5	Pastures management	Grazing in the Mesopotamian plain		
13	5	Pastures management	Grazing in the Iraqi desert		
14	5	Pastures management	Harmful and poisonous plants in pasture lands		
15	5	Pastures management	Poisoning and bloating in pasture animals		

11. Course Evaluation

Daily and monthly tests through questions on the subject of the study subject.
• Grades on the student's participation in research and scientific reports.
• Student activities through the possibility of applying some rules and homework at home during the school season regarding the academic subject.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Natural Pasture Management - Written by Dr. Ramadan Al-Takriti and Mr. Abbas Mahdi Al-Hassan - 1981 - University of Mosul.

Main references (sources)	Fodder crops and pastures (Part One) - written by Dr. Muhammad Al-Sayyid Radwan and Dr. Abdullah Qasim Al-Fakhri - 1975 - University of Mosul.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Scientific articles from the Internet and scientific journals specialized in this course

Course Description Form

1. Course Name: Weed Science and weed control methods

2. Course Code: **AFC19410**

3. Semester / Year: Seasonal / 2nd attempt

4. Description Preparation Date: 19 /03/ 2024

5. Available Attendance Forms: Weekly

6. Number of Credit Hours (45) Number of Units (3)

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

Name: Ahmed A. Almarie
Email: ag.ahmed.abdalwahed@uoanbar.edu.iq

8. Course Objectives

Course Objectives	Students acquire scientific knowledge in categorizing and diagnosing weeds and knowing their damages. Students benefit by identifying the types of weed, their damages, and how to control them.

9. Teaching and Learning Strategies

Strategy	1. lecture. 2. Explanation and clarification. 3. Use of electronic means of clarification (Data show). 4. practical lessons in agricultural fields

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Oral	Introduction in weeds	Oral & power point	Weekly & monthly Exam
2	5	Oral	Weeds is it friend or	Oral & power point	Weekly & monthly Exam

			enemy		
3	5	Oral	Weed Classification	Oral & power point	Weekly & monthly Exam
4	5	Oral	Weed Dispersal Methods	Oral & power point	Weekly & monthly Exam
5	5	Oral	Weed Losses	Oral & power point	Weekly & monthly Exam
6	5	Oral	Allelopathy	Oral & power point	Weekly & monthly Exam
7	5	Oral	Weed Control Methods	Oral & power point	Weekly & monthly Exam
8	5	Oral	Chemical Weed Control	Oral & power point	Weekly & monthly Exam
9	5	Oral	Weed Competition	Oral & power point	Weekly & monthly Exam
10	5	Oral	Herbicides Translocation	Oral & power point	Weekly & monthly Exam
11	5	Oral	Modern methods in Weed control	Oral & power point	Weekly & monthly Exam
12	5	Oral	Herbicides Residues	Oral & power point	Weekly & monthly Exam
13	5	Oral	Classification of Herbicides Groups	Oral & power point	Weekly & monthly Exam
14	5	Oral	Improving Herbicides Efficacy	Oral & power point	Weekly & monthly Exam
15	5	Oral	The Latest Researches in Weed Control	Oral & power point	Weekly & monthly Exam

11. Course Evaluation

daily oral, monthly, and written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Korres, N. E., Burgos, N. R., & Duke, S. O. (Eds.). (2018). Weed control: sustainability, hazards, and risks in cropping systems worldwide. CRC Press. 2- Gressel, Jonathan. Molecular biology of weed control. Vol. 1. CRC Press, 2002.
Main references (sources)	Weed Control Methods. Ghanem Saadallah Hassawi and d. Baqer Abdul Khalaf Al-Jubo Ministry of Higher Education and Higher Educat - University of Baghdad. 1982.
Recommended books and references (scientific journals, reports…)	- Control Weed. Dr. Baqer Abdullah Khalaf Al-Jubouri and d. Ghanem Saadallah Hassawi and Faeq Tawfiq Chalabi. Ministry of Higher Education and Higher Education - University of Baghdad. 1985. - Weeds and Principles of control Methods. Dr. Salem Hammadi Antar Al-Obaidi. Ministry of Higher Education, Education Sciences a. 2009
Electronic References, Websites	www.weed science.com

Course Description Form

1- Course Name: Fiber Crops	
2- Course Code: **AFC1937**	
3- Semester / Year: 2024	
4- Description Preparation Date: spring	
5- Available Attendance Forms: Direct	
6- Number of Credit Hours (Total) / Number of Units (Total): 75 / 5	
7- Course administrator's name (mention all, if more than one name)	
Name: Assist Prof. Abdullsamad Hashim Noaman Email: ag.abdullsamad.hashim@uoanbar.edu.iq	
8- Course Objectives	
Course Objectives	• The student will be acquainted with the scientific bases in Fiber Crops, both theoretical and practical. • Expand the student's theoretical and practica knowledge. • Getting acquainted with the modern techniques related to Fiber Crops. • Identifying biotic and abiotic factors related to Fiber Crops.
9- Teaching and Learning Strategies	
Strategy	1- Providing students with theoretical and practical scientific knowledge on the subject of Fiber Crops of all kinds. 2- Students benefit from practical experiences in the subject Fiber Crops and its relationship to various growth factors and the conditions surrounding the plant.

10- Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5(2theory+ practical)	Fiber Crops	Fiber Crops	Giving lectures (theoretical and practical) (e-learning)	Daily and monthly test + scores on activities, reports and attendance
2	5	Fiber Crops	Fiber Production		
3	5	Fiber Crops	Fiber Classification		
4	5	Fiber Crops	Cotton		
5	5	Fiber Crops	Cotton Cultivars		
6	5	Fiber Crops	Cotton Flowering		
7	5	Fiber Crops	Cotton Bolls &Seeds		first month exam
8	5	Fiber Crops	Cotton Fiber or Lint		
9	5	Fiber Crops	Cotton Ecology		
10	5	Fiber Crops	Plant Density of Cotton		
11	5	Fiber Crops	Management of Cotto		
12	5	Fiber Crops	Picking of Cotton		
13	5	Fiber Crops	Flax		
14	5	Fiber Crops	Fertilization , Harvest Retting of Flax		
15	5	Fiber Crops	Natural Properties Flax		second month exam

11- Course Evaluation

1-Weekly exams (quiz) and quarterly and final exams (theoretical and practical).
2- Interaction within the lecture.
3- Attendance.
4- Commitment and discipline in the classroom and laboratory.
5- Preparing scientific reports and presenting them with scientific explanations.

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fiber Crops Field crop production
Main references (sources)	Oil Crops
Recommended books and references (scientific journals, reports…)	Egyption cotton production and processing technology
Electronic References, Websites	

Course Description Form

13.	Course Name: Plant ecology
14.	Course Code: **AFC19221**
15.	Spring semester/semester
16.	The date this description was prepared is 4-8-2024
17.	Available Attendance Forms: morning and evening, 95% morning and 75% evening
18.	Number of Credit Hours (Total) / Number of Units (Total) Five hours of theory + practical
19.	Course administrator's name (mention all, if more than one name)
	Name: Prof. Dr. Omar Ismail Mohsen Email:

20. Course Objectives	
Course objectives: We explain to students the importance understanding environmental factors, including climatic and o oceanic conditions, and their relationship to	Course objectives: We explain to students importance of understanding environmental fact including climatic and other oceanic conditions, their relationship to

21. Teaching and Learning Strategies	
Strategy	

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical practical		Lecture 1: Concepts of ecology		Daily exam participation in lesson + writ scientific report

					monthly exams
2	2 theoretical practical		Lecture 2 Climatic factors		
3	2 theoretical practical		The first month's exam is theoretical		
4	2 theoretical practical		Lecture 3 Light as an environmental factor		
5	2 theoretical practical		Lecture 4 Heat and climate change		
6	2 theoretical practical		Lecture 5 Water and its different forms		
7	2 theoretical practical		Lecture 6: Dividing plants according to their need water		
8	2 theoretical practical		A quick review of the lectures included in the sec month exam and the second mo theoretical exam		
9	2 theoretical practical		Lecture 7 Air as an environmental factor		
10	2 theoretical practical		Lecture 8 Topographic factors and their impact the environment		
11	2 theoretical practical		Lecture 9: Soil as an important environmental fa in the life of plants		
12	2 theoretical practical		Lecture 10: The concept of biotic factors and t impact on the environment		
13	2 theoretical practical		Lecture 11: The effect of animals on plants and t environment		
14	2 theoretical practical		Lecture 12, the concept of environmental pollut with the third month exam		
15	2 theoretical practical		Lecture 1: Concepts of ecology		

23. 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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Ecology, Dr. Hikmat Abbas Al-Ani and Dr. R Hashim Bakr, 1984.
Main references (sources)	Environmental science Dr. Hikmat Abbas Al-Ani Dr. Raad Hashim Bakr, 1986. Second edition.
Recommended books and references (scientific journals, reports…)	Plant ecology, Dr. Majeed Rashid Al-Hilli and Hikmat Abbas Al-Ani.
Electronic References, Websites	Plant ecology, Dr. Mohamed Ahmed Mujahid, 2(Egypt.
	Plant ecology (theoretical part), Dr. Mohamed As

	Sallo M and D. Suhail Nader, 2007-2008, Damas University.
	Environmental science and pollution Dr. Hussein Ali Saadi 2002, College of Education for Girls.
	Plant ecology (theoretical part), Dr. Qasim Muhamm Shinawa - 2016, Al-Muthanna University.
	Environmental science and pollution Dr. Hussein Ali Saadi 2002, College of Education for Girls.

Course Description Form

1. Course Name: **Plant Breeding**

2. Course Code: **AFC1948**

3. Semester / Year: **Course Spring**

4. Description Preparation Date: **2024**

5. Available Attendance Forms: **Direct**

6. Number of Credit Hours (Total) / Number of Units (Total) 75 / 5

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

Name: Prof. Dr. Zeyad Abdul-Jabar Abdul-Hamed
Email: ag.zeyad.abdul-hamed@uoanbar.edu.iq

Course Objectives :

8.

The student learns about the scientific foundations for designing and analyzing theoretical and practical plant breeding	**Learn about modern technologies relevant to For genetic engineering relevant in plant breeding**

9. Teaching and Learning Strategies

Strategy	**A** - Expanding the student's theoretical and practical plant breeding **B**- Access to recent and critical experiments related to plant breeding **C**-Learn about methods for plant breeding, processes, and conditions surrounding the research plant breeding

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(30 hours theoretical + 45 practical) (75 hours 5 hours (2 + 3)	theoretical and practical	Introduction to the history of plant breeding, the first researchers in genetics and plant breeding	theoretical and practical	Theoretical and practical tests
2	5	Reproduction systems	theoretical and	theoretical	Theoretical

		in plants, sexual reproduction and asexual reproduction,	practical	and practical	and practical tests
3	5	theoretical and practical	Cell, nucleus, chromosome, nitrogenous bases, cistron, codon, and gene	theoretical and practical	Theoretical and practical tests
4	5	theoretical and practical	Genetic variations, mutagens and mutations, qualitative and quantitative traits, and major and minor genes.	theoretical and practical	Theoretical and practical tests
5	5	theoretical and practical	Society genetics and Hardy-Weinberg's law, genetic action	theoretical and practical	Theoretical and practical tests
6	5	theoretical and practical	First month exam	theoretical and practical	Theoretical and practical tests
7	5	theoretical and practical	Mixed varieties with multiple parents, and their development, development of breeds, transfer of traits to breeds, isolation distances	theoretical and practical	Theoretical and practical tests
8	5	theoretical and practical	Quantitative genetics, improving crop yield and the genes responsible for it,	theoretical and practical	Theoretical and practical tests
9	5	theoretical and practical	Breeding self-pollinating crops, raising pure lines, and preserving the purity of the variety.	theoretical and practical	Theoretical and practical tests
10	5	theoretical and practical	Breeding cross-pollinated crops, quantitative selection, selection evidence, and developing strains, hybrids, and even pairs	theoretical and practical	Theoretical and practical tests
11	5	theoretical and	The theory of hybrid	theoretical	Theoretical

		practical	vigor, repetitive selection of all types, prediction of the yield of hybrids and synthetic varieties, method of hybridizing yellow corn plants.	and practical	and practical tests
12	5	theoretical and practical	Breeding vegetative crops, reproduction and variety selection	theoretical and practical	Theoretical and practical tests
13	5	theoretical and practical	Second month exam	theoretical and practical	Theoretical and practical tests
14	5	theoretical and practical	Education to resist various epidemic	theoretical and practical	Theoretical and practical tests
15	5	theoretical and practical	Applications of genetic engineering in plant breeding and genetically modified plants,	theoretical and practical	Theoretical and practical tests

11. Course Evaluation

1-Weekly tests (quiz) and semester and final exams (theoretical and practical).
2- Interaction within the lecture.
3- Attendance.
4- Commitment and discipline within the classroom and laboratory.
5- Preparing scientific reports, providing scientific explanations and presenting them
6-Expanding the student's theoretical and practical understandings
7- Learn about modern techniques relevant to plant breeding
8- Identify the surrounding factors related to the science of plant breeding
9-Learn about plant breeding and field planning operations.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book of Plant breeding and improvement
Main references (sources)	Book of The basics of breeding and inheriting field crops
Recommended books and references (scientific journals, reports…)	Book of Principles of selection and plant genetic improvement
Electronic References, Websites	hpp// **Principles of plant breeding. com.**

Course Description Form

1. Course Name: **Experiment Design**

2. Course Code: **AFC1932**

3. Semester / Year: **Course Autumn**

4. Description Preparation Date: **2024**

5. Available Attendance Forms: **Direct**

6. Number of Credit Hours (Total) / Number of Units (Total) 75 / 5

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

Name: Prof. Dr. Zeyad Abdul-Jabar Abdul-Hamed
Email: ag.zeyad.abdul-hamed@uoanbar.edu.iq

Course Objectives :

8.

The student learns about the scientific foundations designing and analyzing theoretical and practi experiments	**Learn about modern technologies relevant to designing experiments**

9. Teaching and Learning Strategies

Strategy	**A** - Expanding the student's theoretical and practical understandings **B**- Access to recent and critical experiments related to experimental design **C**-Learn about methods for designing experiments, processes, and conditions surrounding the research or experiment

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	(30 hours theoretical + 45 practical) (75 hours 5 hours (2 + 3)	Look and work Explanation and interpretation with Use means Electronic clarification	Introduction to the history of statistics, first researchers in designing experimer studying statistical tests	theoretical practical	Theoretical and practical tests

2	5	Look and work Explanation and interpretation with Use means Electronic clarification	An introduction to the history of statistics, the first researchers in statistics and experimental design,	heoretical and practical	Theoretical and practical tests
3	5	Look and work Explanation and interpretation with Use means Electronic clarification	The importance of designing experimer for the researcher	theoretical and practical	Theoretical and practical tests
4	5	Look and work Explanation and interpretation with Use means Electronic clarification	Sources of differenc in the design of experiments	theoretical and practical	Theoretical and practical tests
5	5	Look and work Explanation and interpretation with Use means Electronic clarification	Completely randomized CRD isometric design	theoretical and practical	Theoretical and practical tests
6	5	Look and work Explanation and interpretation with Use means Electronic clarification	Solve iso-repeated whole-randomized CRD exercises	theoretical and practical	Theoretical and practical tests
7	5	Look and work Explanation and interpretation with Use means Electronic clarification	Completely randomized CRD design with unequal replicates.	theoretical and practical	Theoretical and practical tests
8	5	Look and work Explanation and interpretation with Use means Electronic clarification	Solve the exercises a complete randomi CRD isometric replication design.	theoretical and practical	Theoretical and practical tests
9	5	Look and work Explanation and interpretation with Use means Electronic clarification	Randomized comple block design (RCBI	theoretical and practical	Theoretical and practical tests
10	5	Look and work Explanation and interpretation with Use means Electronic clarification	RCBD Randomized Complete Block Design Exercises	theoretical and practical	Theoretical and practical tests

11	5	Look and work Explanation and interpretation with Use means Electronic clarification	Missed View Rating	theoretical and practical	Theoretical and practical tests
12	5	Look and work Explanation and interpretation with Use means Electronic clarification	latin square design	theoretical and practical	Theoretical and practical tests
13	5	Look and work Explanation and interpretation with Use means Electronic clarification	split experiences	theoretical and practical	Theoretical and practical tests
14	5	Look and work Explanation and interpretation with Use means Electronic clarification	Split plot experiments exercises	theoretical and practical	Theoretical and practical tests
15	5	Look and work Explanation and interpretation with Use means Electronic clarification	Orthogonal comparisons experiments and trend analysis	theoretical and practical	Theoretical and practical tests

11. Course Evaluation

1-Weekly tests (quiz) and semester and final exams (theoretical and practical).
2- Interaction within the lecture.
3- Attendance.
4- Commitment and discipline within the classroom and laboratory.
5- Preparing scientific reports, providing scientific explanations and presenting them
6-Expanding the student's theoretical and practical understandings
7- Learn about modern techniques relevant to Design of experiments

8- Identify the surrounding factors related to the science of Design of experiments
9-Learn about Design of experiments and field planning operations.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Book of Statistical methods book for agricultural research
Main references (sources)	Book of Agricultural experiment design and analysis book
Recommended books and references (scientific journals, reports…)	Book of applications in the design and analysis of experiments
Electronic References, Websites	hpp// **Principles of experimental design. com.**

Course Description Form

1- Course Name: plant classification	
2- Course Code: **AFC1926**	
3- Semester / Year: 2024	
4- Description Preparation Date: Autumn	
5- Available Attendance Forms: Direct	
6- Number of Credit Hours (Total) / Number of Units (Total): 75 / 5	
7- Course administrator's name (mention all, if more than one name)	
Name: Assist Prof. Abdullsamad Hashim Noaman Email: ag.abdullsamad.hashim@uoanbar.edu.iq	
8- Course Objectives	
Course Objectives	• The student will be acquainted with the scientific bases in plant classification, both theoretical and practical. • Expand the student's theoretical and practi knowledge. • Getting acquainted with the mode techniques related to pla classification. • Identifying biotic and abiotic factors related to plant classification.
9- Teaching and Learning Strategies	
Strategy	3- Providing students with theoretical and practical scientific knowledge on the subject of plant classification of kinds. 4- Students benefit from practical experiences in the subject plant classification and its relationship to various grov factors and the conditions surrounding the plant.
10- Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5(2theory+ practical)	plant classification	Taxonomy , history , importance and relationship to other sciences	Giving lectures (theoretical and practical) (e-learning)	Daily and monthly test + scores on activities, reports and attendance
2	5	plant classification	Systems of Classification (Artificial , Natural , Phylogenetic)		
3	5	plant classification	Nomenclature , Common names		
4	5	plant classification	Scientific nomenclature		
5	5	plant classificatior	Spermatophytes Class Gymnospermae Class Angiospermae		
6	5	plant classification	Monocotyledone Dicotyleadone		
7	5	plant classification	Phytography Terminology of Vegetative Organs		first month exam
8	5	plant classification	Roots and shapes		
9	5	plant classification	Stems and shapes		
10	5	plant classification	Buds , Leaves		
11	5	plant classification	Leaf parts , Simple leaf , Compound Leaf , Stipules , Visture types		
12	5	plant classification	Flower , Floral parts , Aestivation Placentation		
13	5	plant classification	Inflorescences , Cymose , Racemose		
14	5	plant	Fruits and Seeds ,		

		classification	Simple fruits , Aggregate fruits		
15	5	plant classification	Pollen Grains Pollination , Pollination , self pollination and cross pollination		second month exam

11- Course Evaluation

1-Weekly exams (quiz) and quarterly and final exams (theoretical and practical).
2- Interaction within the lecture.
3- Attendance.
4- Commitment and discipline in the classroom and laboratory.
5- Preparing scientific reports and presenting them with scientific explanations.

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	Classification of Spermatophytes
Main references (sources)	Morphology and anatomy
Recommended books and references (scientific journals, reports…)	Plant Physiology
Electronic References, Websites	

Course Description Form

1. Course Name:
Seed technology
2. Course Code:
AFC19313
3. Semester / Year:
2023−2024
4. Description Preparation Date:
9/4/2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
No. of Credit (25)/ No. of Unit (3)
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Chyad Ali Email: ag.ahmedch.ali@uoanbar.edu.iq

8. Course Objectives	
Course Objectives	introducing the student to a set of grain and seed production techniques and the suitability of these seeds to the factors Storage, marketing, and application of all health conditions that qual for the manufacturing process of these grains

9. Teaching and Learning Strategies	
Strategy	Graduating a specialized cadre who understands the selection of technical and practical methods in testing healthy and prepared seeds. For a specific manufacturing process and producing excellent quality this process

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5		Seeds - meaning - importance - diagnosis and seed examination in the world and Iraq	Theoretical + practical	Reports material + observations + daily exams
2	5		Seed chemical compositions - importan - cultivation and quality.	Theoretical + practical	Reports material + observations + daily

					exams
3	5		Dormancy in seeds - factors affecting dormancy	Theoretical + practical	Reports material + observations + daily exams
4	5		Vitality and germinatio	Theoretical + practical	Reports material + observations + daily exams
5	5		Growth regulators for seeds and plants	Theoretical + practical	Reports material + observations + daily exams
6	5		Midterm 1	Theoretical + practical	Reports material + observations + daily exams
7	5		Certified seed productio proliferation and production fields	Theoretical + practical	Reports material + observations + daily exams
8	5		Field inspection	Theoretical + practical	Reports material + observations + daily exams
9	5		Seed certification and preparation system	Theoretical + practical	Reports material + observations + daily exams
10	5		Harvesting, drying and storing seeds	Theoretical + practical	Reports material +

					observations + daily exams
11	5		Pests and diseases of seeds in storage and moisture content - healthy moisture levels	Theoretical + practical	Reports material + observations + daily exams
12	5		Midterm 2	Theoretical + practical	Reports material + observations + daily exams
13	5		Preparing seeds for processing	Theoretical + practical	Reports material + observations + daily exams
14	5		Legislation and laws for trading certified and approved seeds	Theoretical + practical	Reports material + observations + daily exams
15	5		General review + discussions + solving questions	Theoretical + practical	Reports material + observations + daily exams

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

11. Learning and Teaching Resource	
Required textbooks (curricular books, if any)	SEED TECHNOLOGY- R.L. Agarwal
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Oil and sugar crops

2. Course Code:

AFC1929

3. Semester / Year:

Second Semester (Spring) 2023-2024

4. Description Preparation Date:

7 / 4 / 2024

5. Available Attendance Forms:

Attendance (study and exams)

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

75 hours (30 theoretical + 45 practical) / Number of Units : 3

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

Name: Asst.Prof.Dr.Ismail Ahmed Sarhan + Asst. teacher Amer Hashem
Email: ag.ismail.ahmed@uoanbar.edu.iq

8. Course Objectives

Course Objectives	
1- Providing students with knowledge of the nature and function of agricultural methods from an academic and professional point of view **2- Understand the nature of agriculture work based on international and local statistical standards** **3- Providing students with information related to programs and files related to farming methods**	**4 - Dissemination of knowledge in the fields of agricultural sciences and human nutrition and work on its application to serve the community.** **5- Providing the agricultural sector with specialized cadres with expertise, knowledge and skill in the field of agriculture and production to provide food security**

9. Teaching and Learning Strategies

Strategy	1- Adopting the method of giving lectures and linking each topic with examples from the reality of agricultural work. 2- Giving the students some simple practical exercises that are discussed by them and solved during the lecture, with the participation of all students in the section with the professor, to give the subject a kind of interaction. 3 - Demonstrating the students' ability to give some possibilities and other ways to solve some problems. 4- Preparing reports on specific topics.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	5	Providing students with information about oil crops and their importance in providing food security	Oil crops: their definition, their economic importance, the most important crops the represent, oils and their types.	Ettendance	Discussion, daily exams, monthly exams

the second	**5**	Statement of the importance sunflower as an oil crop	Sunflower: its importance, methods of cultivation, suitable soil for it, date of planting it, crop service, harvest and pests that infect it	Ettendance	Discussion, daily exams, monthly exams
the third	**5**	Explanation of the importance of sesame as an oil crop	Sesame: methods of cultivation, its economic importance, suitable soils for it, and the service harvest of the crop	Ettendance	Discussion,daily exams,monthly exams
The fourth	**5**	Statement of the importance Pea nut as an oil crop	Pea nut:its importance, methods of cultivation, suitable soil for it, its harvest and the pests that infect it	Ettendance	Discussion,daily exams,monthly exams
Fifth	**5**	Explanation of the importanc soybean as an oil crop	Soybean:its importance , methods of cultivation, suitable soil for it, its harvest and pests that affect it	Ettendance	Discussion,daily exams,monthly exams
sixth	**5**	Statement of the importance safflower as an oil crop	Safflower:economic importance, origin, types varieties, botanical descript suitable environment and soil and crop service processes	Ettendance	Discussion,daily exams,monthly exams
Seventh	**First month exam**				
Eighth	**5**	Statement of the importance rapeseed as an oil crop	Rapeseed:economic importance, origin, Types and varieties, botanical description, appropriate environment	Ettendance	Discussion, daily exams, monthly exams
Ninth	**5**	Explanation of the importance castor as an oil crop	Castor: its importance, methods of cultivation, suitable soil for it, the service of the crop and its medicinal uses	Ettendance	Discussion, daily exams, monthly exams
The tenth	**5**	Statement of the importance sugar crops as strategic crops	Sugar crops: an introduction historical overview of sugar cane, its geographical distribution, suitable soils, and its cultivation methods.	Ettendance	Discussion, daily exams, monthly exams
Eleven	**5**	Explanation of the importance sugar cane as a major crop for the production of sugar	Soil and crop service operati (hoeing, fertilization, grafting, grafting) for sugar cane plants, sugar cane breeding methods, sugar cane genetics	Ettendance	Discussion, daily exams, monthly exams
Twelveth	**5**	Explain the importance of sugar cane as an industrial crop	Chemical components of sugar cane plants, bush control operations, diseases and insects of sugarcane plants, ripening, harvesting production of raw sugar.	Ettendance	Discussion, daily exams, monthly exams
Thirteenth	**5**	Explanation of the importance of sugar beet as an industrial crop	Sugar beet: its economic importance, geographical distribution, development of sugar beet cultivation, the most important problems of	Ettendance	Discussion, daily exams, monthly exams

			cultivation, stages of its growth and methods of breeding it		
Fourteenth	**5**	Clarification of soil and service operations for the sugar beet crop	Soil and crop service factors (planting date, planting methods, seed classifications crop service operations (mowing, weeding, fertilizing, irrigation, harvesting, yield, agricultura cycles)	Ettendance	Discussion, daily exams, monthly exams
Fifteenth	**Second month exam**				

11. Course Evaluation

1- Through the students' participation in the lecture, based on their prior preparation for the subject.
2- Giving them an exercise as homework and asking the students to bring the solution on a separate sheet in the subsequent lecture.
3- Giving the students a specific case study and dividing the students into groups to write a report about that study
4 - Evaluation through daily and monthly examinations

12. Learning and Teaching Resources

Required textbooks (curricu books, if any)	1 - Mahmoud Al-Shaer and others. 2015. Oil, sugar and fiber crops 2- Al-Baldawi and others. 2014. Principles of field crop production. 3- Safar, Nasser Hussein. 1990. Oil and sugar crops. 4 - Rizk and Ali. 1981. Oil and sugar crops
Main references (sources)	Using the results obtained from scientific research, master's thes and doctoral dissertations
Recommended books and references (scientific journals, reports…)	Scientific articles and periodic reports on the reality of agriculture from FAO and others
Electronic References, Websites	Lectures and studies from the Internet

Course Description Form

1-Course Name:
Forage and pastures crops
2- Course Code:
AFC1936
3- Semester / Year:
Semester 2/ Year: 2023-2024
4- Description Preparation Date:
8/4/2024
5- Available Attendance Forms:
Classrooms and Laboratories
6- Number of Credit Hours (Total): / Number of Units (Total):
Number of Credit Hours (Total): 75 / Number of Units (Total): 3
7- Course administrator's name (mention all, if more than one name)
Name: Dr. Abdullah Mahmood Saleh Email: ag.abdullah.mahmood@uoanbar.edu.iq
8- Course Objectives

Course Objectives	• Introducing the importance of forage crops • Studying the ways to improve fodder production, storage a utilization • Studying the necessary ways to improve forage production, stor and utilization
9- Teaching and Learning Strategies	
Strategy	1. The method of giving lectures. 2. Explanation, interpretation, and linking method. 3. Explanation method using electronic illustrations. 4. field observations

10- Course Structure

Week	Hours	Required learning outcomes	Unit or topic name	Education method	Evaluation method
1	5	Introduction to forage crops	A historical overview of the beginning and development of forage crops and their importance in human and animal life, taxonomy of forage crops and places of origin	Lectures	Exams
2	5	Legume forage crops	Leguminous forage crops and their importance	Lectures	Exams
3	5	Legume forage crops	Alfalfa, its types, importance, appropriate environment, methods of cultivation, field practice.	Lectures	Exams

4	5	Legume forage crops	Clover, its types, importance, favorable environment, methods of cultivation, field practice.	Lectures	Exams
5	5	Forage crops	Annual Medic, its types, importance, appropriate environment, methods of cultivation, field practice.	Lectures	Exams
6	5	Forage crops	Sweet clover, its types, importance, appropriate environment, methods of cultivation, field practice	Lectures	Exams
7	5	Grass summer forage crops,	Sorghum, and Sudan grass its types, importance, appropriate environment, methods of cultivation, field practice.	Lectures	Exams
8	5	Grass summer forage crops	Corn and millet its types, importance, appropriate environment, methods of cultivation, field practice.	Lectures	Exams
9	5	Grass winter forage crops	barley, oats and rye grass, types and varieties, field practice	Lectures	Exams
10	5	Forage crops	Intercropping and agricultural cycles	Lectures	Exams
11	5	Forage crops	Harvesting and storage	Lectures	Exams
12	5	Manufacture of hay and silage	Manufacture of hay and silage by traditional and modern methods, aerobic and anaerobic reactions, compounds resulting from fermentation.	Lectures	Exams
13	5	Toxic substances and compounds in forage crops	Toxic substances and compounds in forage crops and ways to prevent them	Lectures	Exams
14	5	Estimation of forage quality trail	Dry matter, digestibility and protein,	Lectures	Exams
15	5	Estimation of forage quality trail	Estimation of carbohydrates, fiber and ash	Lectures	Exams

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.

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	Forage Crops / Written by Dr. Muhammad Al-Sayyid Radwan and Dr. Abdullah Qasim Al-Fakhri / University of Mosul / 1975 Forage crops and pastures / written by Ramadan Al-Takriti and Dr. Hikmat As Rumi and Dr. Tawakkol Younis University of Baghdad / 1981
Main references (sources)	Tropical Forage Legumes.Edit By P.J.Skern Rome.1977

Recommended books and references (scientific journals, reports…)	Forage Seed Production. Temperate Spec Edited By D.T.Fairey andJ.G.Hampton C international.1997.U.K PP420
Electronic References, Websites	https://en.wikipedia.org/wiki/Forage

Course Description Form

1. Course Name:

Biochemistry

2. Course Code: **AFC1918**

3. Semester / Year:

Spring semester of 2023−2024

4. Description Preparation Date:

8/4/2024

5. Available Attendance Forms:

Physical + laboratory

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

(75) Number of Units (3)

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

Name: Hamid abdalkader ajaj
Email: ag.hamid.abdalkader@uoanbar.edu.iq

8. Course Objectives

Course Objectives
The course aims to introduce the student to the chemical structures and the vital importance of organic compounds in living cells such as all kinds of carbohydrates, all kinds of fats, amino acids and all kinds of proteins, nucleic acids (DNA and RNA), enzymes and their mechanism of action and factors affecting their effectiveness. As well as introducing the student to the most important qualitative and quantitative reagents for sugars, fats and proteins

9. Teaching and Learning Strategies

Strategy

Definition of biochemistry, a brief review of biochemistry vocabulary that will be given during the semester.
• Enable students to acquire knowledge, science, and knowledge of plant cells, cell components and their functions.
• Introducing students to carbohydrates, their importance and their divisions.
• Introducing students to fats - their definition - their importance - fatty acids - their divisions - their structures - their interactions.
• Introducing students to amino acids - their divisions - their structures - properties of amino acids - their interactions.
• Introducing students to proteins - their definition - their divisions - levels of protein synthesis - denaturation.
• Introducing students to nucleic acids - their importance - nucleotides - their functions - their structure - types of nucleic acids.
• Introducing students to enzymes - their definition - the mechanism of enzyme action - their classification - inactive and active enzymes - factors affecting the speed of an enzymatic reaction.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
25/2/2024	5	Theoretical and practical	Introduction to the science of biochemistry - the components and functions of a living cell.	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework

3/3/2024	5	Theoretical and practical	Carbohydrates - definition - importance - divisions - (monosaccharides, polysaccharides, polysaccharides)	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
7/3/2024	5	Theoretical and practical	Monosaccharides - Analogs in monosaccharides - Derivatives of monosaccharides - cyclic structure of sugars	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
10/3/2024	5	Theoretical and practical	Low Polysaccharides - Reducing and Non-Reducing Types	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
17/3/2024	5	Theoretical and practical	Polysaccharides - their homogeneous and heterogeneous types	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
19/3/2024	5	Theoretical and practical	first month exam	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
24/3/2024	5	Theoretical and practical	Fats - definition - importance - fatty acids - divisions - structures - interactions - geometric similarities of fatty acids	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
27/3/2024	5	Theoretical and practical	Categories of fats - simple fats - their types (oils, fats and waxes) - their structures - fat constants	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
31/3/2024	5	Theoretical and practical	Compound and Derived Fats - Types - Structures	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
7/4/2024	5	Theoretical and practical	Amino acids - their divisions - structures - properties of amino acids - their interactions	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
14/4/2024	5	Theoretical and practical	Peptides - proteins - their definition - their divisions - levels of protein synthesis - denaturation	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
21/4/2024	5	Theoretical and	second month exam	In-person +	A monthly exam,

		practical		laboratory	laboratory exam, assignments, and homework
28/4/2024	5	Theoretical and practical	Nucleic acids - their importance - nucleotides - their functions - their structure - types of nucleic acids	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
2024/ 5/ 5	5		Enzymes - their definition - the mechanism of enzyme action - their classification - inactive and active enzymes - factors affecting the rate of the enzymatic reaction	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework
12/5/2024	5		Exam	In-person + laboratory	A monthly exam, laboratory exam, assignments, and homework

11. Course Evaluation

Biochemistry is a basic subject given to some scientific departments at different academic levels. At the end of the semester, the student is able to collect sufficient information about the components of the living cell, the organic compounds that make up it, and their vital importance within the bodies of living organisms, whether plants, animals, or humans. It is considered a basis for other courses.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Biochemistry - Part One (1) and (2). Written by Dr. Ali Hassan Al-Daoudi. External sources:
Main references (sources)	Basics of Biochemistry - written by Dr. Basil Kamel Al-Dalaly.
Recommended books and references (scientific journals, reports…)	Practical Biochemistry Written by: Dr. Ali Hassan Al-Dawadi
Electronic References, Websites	S.P.Singh.2007. A Textbook of Biochemistry , Fourth Edition , CBS Publishers Distributors& New-Delhi. Banglore.

Course Description Form

1. Course Name: Principles of field crops

2. Course Code: **AFC19120**

3. Semester / Year: Autumn

4. Description Preparation Date:9/4/2024

5. Available Attendance Forms: presence only

6. Number of Credit Hours (Total) / Number of Units (Total): 45 hours per semester/3 hours per week

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

Name: Ahmed Shehab Abdullah Ramadan
Email: ag.ahmed.shehab@uoanbar.edu.iq

8. Course Objectives

Course Objectives	Teaching students the basics of field crop science from both theoretical and applied aspects, providing them with the required knowledge in growing field crops and how to deal with, manage, produce and improve them, and mastering the various crop service operations from planting to maturity and post-harvest operations, in addition to studying how to preserve and maintain the soil, sustaining its productivity, and mastering modern irrigation methods.

9. Teaching and Learning Strategies

Strategy	-Education strategy, collaborative concept planning. -Education strategy brainstorming. -Education strategy notes series

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Introduction to crop science and recent statistics on food production in the world		Theoretical	Weekly, monthly and daily exams and exam End of year.
2	3	Morphological characteristics of field crop families			
3	3	Methods of classifying field crops			
4	3	Factors affecting crop production (heat, light, and CO2)			
5	3	Humidity, rain and water rating			
6	3	Semester exam			
7	3	Plowing and preparing the land for agriculture			
8	3	Crop service factors			
9	3	Seed and grain grading science			
10	3	Types of weeds and methods of its combating			
11	3	Agricultural cycles, their types and benefits			
12	3	Principles of crop breeding and improvement			
13	3	Stages of production and multiplication of seeds improved			
14	3	A brief idea about the most important crops grown in Iraq in the form of tables			
15	3	Semester exam			

11. Course Evaluation

The distribution is as follows: 15 marks for the monthly and daily exams and participation for the theoretical aspect for the first month, 15 marks for the monthly and daily exams and participation for the theoretical aspect for the second month, and 30 marks for the theoretical final for the final exams.

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1-Principles of field crops: Dr. Majeed Mohsen Al-Ansari and others, 1891, Higher Education Press, Iraq. 2-Field crop production: Dr. Majeed Mohsen Al-Ansari 1891, Dar Al-Kutub Press - University, Mosul. 3-Production and improvement of field crops: Dr. Abdul Hamid Ahmed Al-Younis, 1883, Dar Al-Kutub Directorate for Printing and Publishing - Baghdad. 4-Understanding crop production Dr. Hatem Jabbar Attia and Dr. Karima Muhammad Wahib 1898, Higher Education and Scientific Research Press.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Scientific research
Electronic References, Websites	Google

Course Description Form

1- Course Name: legume crops

2- Course Code: **AFC1939**

3- Semester / Year: Semester

4.Description Preparation Date: 8/4/2024

5.Available Attendance Forms: in person

6.Number of Credit Hours (Total) 5 / Number of Units (Total) 3

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

Name: Adil Hais Abdulkafoor & Amer Hashem
Email: ag.adil.hais@uoanbar.edu.iq

8.Course Objectives : This course introduces the student to the crops of the winter and summer legume family, their scientific names, their botanical description, their economic importance, the dates and methods of their cultivation, the most important obstacles to their productivity, the environmental conditions affecting their growth and increasing their productivity, the most important pests and diseases that affect the plants of this family, and ways to combat them.

9.Teaching and Learning Strategies :

1-Understand the nature of the work of agricultural vocabulary.
2 - Distinguish between each of the types of cultivation and treatment methods.
3- Distinguishing between three terms (land, marketing, and ultimate beneficiary)

10. Course Structure :

- Training the student on how to use information sources to maintain and develop his basic information.

• Develop the student's style of transferring information to the work environment.

Training the student to conduct scientific research to solve problems at work and develop its methods

11.

The week	hours	Required learning outcomes	Unit/course or topic name	education method	Evaluation method
1	5(2 +3)	legume crops	Leguminous seed crops - the importance of legumes in nutrition.	electronic	Discussion, daily exams, monthly exams
2	5(2 +3)	legume crops	symbiotic nitrogen fixation - formation of knots - cross-fertilization groups - engineering of nitrogen fixation genes.	electronic	Discussion, daily exams, monthly exams
3	5(2 +3)	legume crops	Interlaced farming.	electronic	Discussion, daily exams, monthly exams
4	5(2 +3)	legume crops	Beans - Origin - Geographical Distribution - Economic importance - Uses of Beans	electronic	Discussion, daily exams, monthly exams
5	5(2 +3)	legume crops	Nutritional value of beans - chemical composition of seeds - varieties - genetic sources.	electronic	Discussion, daily exams, monthly exams
6	5(2 +3)	legume crops	Beans breeding programs - maturity - harvest - components of the yield	electronic	Discussion, daily exams, monthly exams
	first month exam				
7	5(2 +3)	legume crops	Alkaloids: their composition, composition, effects and chemical extraction methodsChickpea - Economic importance and use - Chemical composition of chickpea seeds.	electronic	Discussion, daily exams, monthly exams
8	5(2 +3)	legume crops	Varieties - Harvest - Nitrogen fixation for chickpeasmethods	electronic	Discussion, daily exams, monthly exams
10	5(2 +3)	legume crops	Lentils - economic importance - nutritional value - maturity - harvest.	electronic	Discussion, daily exams, monthly

					exams
11	5(2 +3)	legume crops	Mong bean - economic importance - nutritional value - maturity - grit	electronic	Discussion, daily exams, monthly exams
12	5(2 +3)	legume crops	Beans - economic importance - nutritional value - maturity - harvest.	electronic	Discussion, daily exams, monthly exams
13	5(2 +3)	legume crops	Cowpea - economic importance - nutritional value - maturity - harvest.	electronic	Discussion, daily exams, monthly exams
14	5(2 +3)	legume crops	Soybeans - economic importance - nutritional value - maturity - harvest	electronic	Discussion, daily exams, monthly exams
15	5(2 +3)	legume crops	Field pistachios - economic importance - nutritional value - maturity - harvest. Peas - economic importance - nutritional value - maturity - harvest	electronic	Discussion, daily exams, monthly exams
	second month exam				

12. Infrastructure

Required readings: • **Course Books** • **other**.	Production of field crops, d. Salah El-Din Abdel-Razzaq Shafshak and d. Abdel Hamid Al-Sayed Al-Dababi, 2008, Dar Al-Fikr Al-Arabi, Egypt. 1- Pulses Crops, Dr. Hamid Gloub Ali 1990 Higher Education Press - Mosul. 2- Principles of field crop production, Martin, Leonard, and stamp, 3rd edition, Macmillan publishing company, inc 1975 3- The wheat book, principles and practice, Ander son w.k. , and j.r. Garling. Australia. 2006. 4- Production and Improvement of Field Crops, Dr. Abdul Hamid Ahmed Al-Younes, 1993, Directorate of Dar Al-Kutub for Printing and Publishing - Baghdad. 5- Cereals and Pulses Crops (Practical Part), Dr. Kamel Muhammad Al-Khafaji, University of Baghdad 2009. 6- The course vocabulary (practical) and includes the following: The characteristics of the legume family in general and the botanical description of the bean crops, chickpeas, lentils, mung, soybeans, peas, beans and hartman.

Course Description Form

1- Course Name: Plant Growth Regulators
2- Course Code: **AFC1949**
3- Semester / Year: years , season spring
4- Description Preparation Date: 2024
5- Available Attendance Forms: Presence
6- Number of Credit Hours (Total) / Number of Units (Total)75 (5 hours weekly)
7- Course administrator's name (mention all, if more than one name)
Name: assistant prof. Bushra Shaker Jassim Email: ag.bushra.shaker@uoanbar.edu.iq

8- Course Objectives

Course Objectives

- **Teaching students the basics of scie related to growth**
- **Teaching students about the types of pl growth regulators**
- **Teach students how to treat plants with pl growth regulators**
- **Teaching students the physiological effects plant growth regulators**
- **Teaching students the applications of us plant growth regulators in the field of f crops**
- **Teach students the role of plant gro regulators in increasing crop production**

9- Teaching and Learning Strategies

Strategy

A. Knowledge and Understanding

A1- Enable students to acquire knowledge of the basics of science related to development.

A2- Enable students to know the methods of controlling growth through treatment with plant growth regulators

A3 - Know the means and types of plant growth regulators.

A4- Enabling students to obtain knowledge and understanding of the plant's hormonal needs.

A5 - Enable students to obtain knowledge and understanding of ways to improve hormonal growth.

10- Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Terms related to p growth regulators their applications	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
2	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Plant growth regulat Auxins	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
3	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Gibberellins	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
4	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Gibberellins	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
5	5	Knowledge terminology related plant growth regula and their applications	Get to know gibberelli	Lecture, discussion, reports, laboratories	Quick and mon exams, class acti and reports

		Using electronic mea		science movie	
6	5	First Exim		Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
7	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	abscisic acid	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
8	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Other compounds that as plant growth regulat	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
9	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Examples applications for preparation and use different concentration plant growth regulators	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
10	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Physiological effects plant growth regulat rooting, ap dominance, dormancy seeds and shoots.	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
11	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Vegetative grov flowering, setting growth and developn of fruits	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
12	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	For maturity, ag precipitation and phenomenon of floa (exchange of pregnar تبادل	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
13	5		Second Exim	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
14	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Use of growth regula in tissue culture and m propagation	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
15	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	The foliar applica system and the interac of climatic factors: H light, humidity, rain wind	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports

11- Course Evaluation

Quick daily exams.
-Monthly exams (two or more).
- Evaluation of the students' classroom activity
- Assessments on writing research, scientific reports and homework
-Direct oral exams
-Classroom and home activities

12- Learning and Teaching Resources	
Required textbooks (curricular books, if any)	plant growth regulators. Dr. Makki Alwan Al-Khafaji .2014 Regulators of growth and flowering. Dr. Emad El Din Wasfi. 1995 Plant Hormones T. K. Davies 1995
Main references (sources)	Actahort.com Ashs.org Springler
Recommended books and references (scientific journals, reports…)	Journal of Biotechnology Center - Al-Nahrain University Diyala Journal of Agricultural Sciences - University of Diyala Iraqi Journal of Agricultural Sciences University of Baghdad
Electronic References, Websites	https://arab-ency.com.sy/ency/details/10085/19

Course Description Form

1- Course Name: General Plant
2- Course Code: **AFC1913**
3- Semester / Year: years , season spring
4- Description Preparation Date: 2024
5- Available Attendance Forms: Presence
6- Number of Credit Hours (Total) / Number of Units (Total)75 (5 hours weekly)
7- Course administrator's name (mention all, if more than one name)
Name: assistant prof. Bushra Shaker Jassim

Email: ag.bushra.shaker@uoanbar.edu.iq

8- Course Objectives

Course Objectives

- **Teaching students the basics of scie related to plant**
- **Teaching students about the types of plant**
- **Teach students how to treat plants with pl growth regulators**
- **Teaching students the relationship v physiology plant**
- **Teaching students the applications of us plant morphology in the field of field crops**
- **Teach students the type of plant**

9- Teaching and Learning Strategies

Strategy	A. Knowledge and Understanding A1- Enable students to acquire knowledge of the basics of science related to development. A2- Enable students to know the methods of controlling growth through treatment with plant growth regulators A3 - Know the means and types of plant growth regulators. A4- Enabling students to obtain knowledge and understanding of the plant's hormonal needs. A5 - Enable students to obtain knowledge and understanding of ways to improve hormonal growth.

10- Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge terminology related plant growth regula and their applications Using electronic mear	plant cell	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
2	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Prokaryotic and ي eukaryotic cell	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
3	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Cell wall mitochondria, chloroplast	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
4	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Plant structure growth, development	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
5	5	Knowledge terminology related	Root and modified root	Lecture, discussion,	Quick and mon exams, class acti

		plant growth regula and their applications Using electronic mea		reports, laboratories science movie	and reports
6	5	First Exim	Exim	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
7	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Stem and modifie stem	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
8	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Leaves and modified leaves	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
9	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Tissue systems three	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
10	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Xylem, phloem	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
11	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Parenchyma cholenchyma, sclerenchyma	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
12	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Cell cycle	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
13	5		Second Exim	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
14	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	Transport in vascular plant	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports
15	5	Knowledge terminology related plant growth regula and their applications Using electronic mea	photosynthesis= Cellular respiration	Lecture, discussion, reports, laboratories science movie	Quick and mon exams, class acti and reports

11- Course Evaluation

Quick daily exams.
-Monthly exams (two or more).
- Evaluation of the students' classroom activity
- Assessments on writing research, scientific reports and homework
-Direct oral exams

-Classroom and home activities

12- Learning and Teaching Resources	
Required textbooks (curricular books, if any)	General Botany
Main references (sources)	Botany
Recommended books and references (scientific journals, reports…)	Journal of botany
Electronic References, Websites	https://www.barnesandnoble.com/b/books/biology-life-sciences/botany/_/N-29Z8q8Z18ca

Course Description Form

1- Course Name:
Principle of Molecular Genetics
2- Course Code:
AFC1946
3- Semester / Year:
Fall season 2023−2024
4- Description Preparation Date:
04−04−2024
5- Available Attendance Forms:
- Electronic Classes and - Classrooms
6- Number of Credit Hours (Total) / Number of Units (Total)
30
7- Course administrator's name (mention all, if more than one name)
Name: Dr Mohammed Hamdan Al-Issawi Email: ag.mohammed.hamdan@uoanbar.edu.iq
8- Course Objectives

Course Objectives	**1− Increase students' knowledge about the nature genetic materials and its structure and how to expressed inside cells** **2− Increase students' knowledge about the techniq based on PCR**
9- Teaching and Learning Strategies	
Strategy	• Providing students with theoretical and practical scientific knowledge on the subject of molecular genetics • The ability of understanding the structure of DNA and RNA • The ability using molecular techniques using PCR.
10- Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Molecular genetics Introduction	Introduction about molecular genetics and the developme of this science	Lectures	Exam
2	2	**Molecular genetic Applications**	Explaining application molecular genetic	Lectures	Exam
3	2	**Experiments: Pr of Genetic mate (DNA) -1**	Explaining experiments t proved DNA is genetic materials	theoretical and practi lectures	Exam
4	2	**Experiments: Pr of Genetic mate (DNA) -2**	Explaining experiments t proved DNA is genetic materials	theoretical and practi lectures	Exam
5	2	DNA and R Structure -1	The structure nucleic acids and unique structure	theoretical and practi lectures	Exam
6	2	**DNA and R structure - 2**	The structure nucleic acids and unique structure	theoretical and practi lectures	Exam
7	2	**Gene Expression**	To exploit the gen information and h gene is expres inside cells	theoretical and practi lectures	Exam
8	2	**Gene Expres Regulation**	Focus on regulation of the g expression which controlled by cells	theoretical and practi lectures	Exam
9	2	**Genetic Code**	Explain the reading the genetic codes	theoretical and practi lectures	Exam
10	2	Protein Synthesis	The product of g expression proteins	theoretical and practi lectures	Exam
11	2	**DNA replication**	DNA replicat during cell divisi	theoretical and practi lectures	Exam
12	2	**Genetic Mutation**	Explain the chan in gene or nitrog base which leads changes in ge expression	theoretical and practi lectures	Exam
13	2	**Genetic Mutation**	Explain the chan in gene or nitrog base which leads changes in ge	theoretical and practi lectures	Exam

			expression		
14	2	**Extranuclear DNA**	Focus on the genet material outside nucleus such as mitochondria and chloroplasts	theoretical and practi lectures	Exam
15	2	**Epigenetics**	Epigenetic explain some traits which cannot be explaine by genetics	theoretical and practi lectures	Exam

11- Course Evaluation

Term Tests: 15
Lab: 10
Quizzes: 15
Project: 10
Final: 50

12- Learning and Teaching Resources

Required textbooks (curricular books, any)	Course books Other
Main references (sources)	Zahra M Alkhafaji and Hassan M Abu-Almaali. 2013. PCRing a Primer Design. University of Baghdad, Baghdad. P, 304.
Recommended books and references (scientific journals, reports…)	Mahmood M. Refaat and Saad B. Aloutabi. 2008. Introduction Biotechnology. The General Egyptian Association of Internatio Books and Documents,
Electronic References, Websites	https://www.bankofbiology.com/2018/08/molecul basis-of-inheritance.html#google_vignette

1- Course Name:
Principle of Statisitcs
2- Course Code:
AFC19220
3- Semester / Year:
Spring season 2023-2024
4- Description Preparation Date:
04-04-2024
5- Available Attendance Forms:
- Electronic Classes and - Classrooms
6- Number of Credit Hours (Total) / Number of Units (Total)
30
7- Course administrator's name (mention all, if more than one name)
Name: Dr Mohammed Hamdan Al-Issawi Email: ag.mohammed.hamdan@uoanbar.edu.iq
8- Course Objectives

Course Objectives	**Introducing** students to the importance and functions statistics. **Training** students to apply statistics in their field specialization. **Enable** the student to follow the scientific method collecting, classifying, summarizing, and displaying data a clear way, and finding statistical measures for the data. **Enable** the student to formulate hypotheses, test them make comparisons **Enable** the student to make plans and follow the cor steps in order to reach appropriate conclusions decisions

9- Teaching and Learning Strategies	
Strategy	• Providing students with theoretical and practical scientific knowledge on the subject of statistics • The ability to collect and classify data • The ability to measure the degree of relationship between variables.

10- Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Introduction Statistics	Definition of statistics, uses of statistics, its divisio the nature and division of data, variables and their division	Lectures	Exam
2	2	Statistical symbols	Read statistical symbols and understand functio written in statistica symbols	Lectures	Exam
3	2	Data collect and tabular presentation	Data collection, Frequency distributions, Frequency distribution table, Creating a frequen table, Class length, Class center, True limits, Relative	theoretical and practi lectures	Exam
4	2	Graphic representati	Graph of Frequenc Distributions with Histogram, Polygo and Frequency Cur	theoretical and practi lectures	Exam
5	2	Measures of Central Tendency	Arithmetic mean, median, and mode	theoretical and practi lectures	Exam
6	2	Measures of Dispersion Variation	Range, mean deviation, variance standard deviation, and coefficient of variation	theoretical and practi lectures	Exam
7	2	Correlation coefficient	Simple correlation, the relationship between two independent variables, the correlation significance test	theoretical and practi lectures	Exam
8	2	Regression coefficient	Simple linear regression, finding the relationship between two variables, one	theoretical and practi lectures	Exam

			independent and th other dependent, predicting the valu of the dependent variable in terms of		
9	2	Principles o probability theory	Permutations and combinations	theoretical and practi lectures	Exam
10	2	Discrete Probability Distribution	binomial distributio	theoretical and practi lectures	Exam
11	2	Continuous Probability Distribution	Normal distributio standard normal distribution curve	theoretical and practi lectures	Exam
12	2	Continuous Probability Distribution	Areas under the normal distribution curve, applications	theoretical and practi lectures	Exam
13	2	Chi-square t	Independence, consent	theoretical and practi lectures	Exam
14	2	Hypothesis testing	Hypothesis formulation and testing, null hypothesis and alternative hypothesis, probability level, T test, Z-test	theoretical and practi lectures	Exam
15	2	Analysis Variance	Variance analysis table	theoretical and practi lectures	Exam

11- Course Evaluation

Term Tests: 15
Lab: 20
Quizzes: 10
Project: 5
Final: 50

12- Learning and Teaching Resources

Required textbooks (curricular books, if any)	Course books Other
Main references (sources)	The book (Introduction to Statistics), written by Dr. Khasha Mahmoud Al-Rawi, College of Agriculture and Forestry / University of Mosul, 1989.
Recommended books and references (scientific journals, reports…)	Medical, Ahmed Abdel Samie. 2007. Principles of Statistics, Amman. The starting house. RA: (6/17/2007) www.daralbedayah.com. David, M. Lane. Introduction to Statistics. Online Edition.
Electronic References, Websites	https://www.scribbr.com/methodology/experimental-design/

Course Description Form

1. Course Name:

Cereal crops.

2. Course Code:

AFC1938

3. Semester / Year:

Spring 2023−2024.

4. Description Preparation Date:

10.4.2024.

5. Available Attendance Forms:

The audience.

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

5 units (2 theoretical +3 practical).

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

Name:Dr. Muaiad Hadi + Dr. Omer Ismail .
Email: ag.moaead.hadei@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1-Study of the most important cereal crops in the world. 2-It includes knowing the spread of each crop in different regions of the world. 3-Knowing the economic importance of grain crops. 4- Identify the methods of growing each crop and the factors affecting the productivity of each crop.

9. Teaching and Learning Strategies

Strategy	1-Explanation and clarification. 2- The method of the lecture. 3- Student groups. 4- Practical lessons in agricultural fields. 5- Scientific trips to learn about the most important ceareal crops grown in Iraq. 6- The method of self-learning.

10. Course Structure

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

			name		
1	5	Economic importance - production centers	Cereal crops	botanical division of cereal crops,	Conducting d and monthly t through quest about the subjec determine t comprehension
2	5	Wheat - economic importance - production centers - the original home.	Cereal crops	Botanical description - germination.	=
3	5	Stages of growth of wheat - division of wheat - nutritional value - distribution in Iraq - varieties.	Cereal crops	Climatic conditions - botanical description.	=
4	5	Irrigation - lying - ripening - harvesting - threshing - productivity - storage - raising and improving wheat - stages of flour production.	Cereal crops	. Climatic conditions - botanical description	=
5	5	Barley division - distribution in Iraq - varieties.	Cereal crops	Agricultural cycle - service operations and land preparation - fertilization - irrigation.	=
6	5	Maturity - harvest - threshing - storage - productivity - cultivation methods.	Cereal crops	Barley pests - diseases - insects - bush.	=
7	5	Rice - economic importance - production centers - the original home.	Cereal crops	Climatic conditions - botanical description.	=

8	5	Growth stages of rice - totals of rice in the world - rice division - nutritional value - distribution in Iraq - varieties.	Cereal crops	The location of rice in the cultivation cycle - soil - planting date - planting methods - quantity of seeds.	=
9	5	Ripeness - harvesting - threshing - drying - productivity - flocculation and its stages - rice flour - culinary quality characteristics.	Cereal crops	Fertilization - Irrigation - Pests - Diseases - Insects - Bush.	=
10	5	corn - economic importance - chemical composition of the yellow corn kernel -.	Cereal crops	Botanical description - varieties - soil and crop service operations.	=
11	5	Corn Fur Geographical Distribution - History - Origin. The right conditions to increase the yield of maize.	Cereal crops	Climatic conditions - botanical description - varieties - soil and crop service operations - pests and their resistance	=
12	5	White corn - economic importance - origin - types of corn - distribution in Iraq - maturity - harvest and threshing.	Cereal crops	Climatic conditions - agricultural cycle - botanical description - varieties - soil and crop service operations - pests and their resistance	=
13	5	Millet - economic importance - production centers - origin - types of millet - maturity - harvest - productivity - quality	Cereal crops	Climatic conditions - agricultural cycle - botanical description - varieties - soil and crop service operations - pests and their resistance	=
14	5	Oats - economic importance - production centers - origin - types of oats - maturity - harvest - productivity - quality.	Cereal crops	Climatic conditions - agricultural cycle - botanical description - varieties - soil and crop service operations - pests and their resistance.	=
15	5	Maturity - harvest - method of breeding and improvement.	Cereal crops	Climatic conditions - botanical description.	=

11. Course Evaluation

-1Daily exams with self-solved questions.
-2Participation marks for competitive and discussion questions related to the academic subject.
3- Specific grades for homework assignments and quick and surprise exams.

12. Learning and Teaching Resources

Required Textbooks (curricular books, if any)	-Wheat cultivation and production techniques / Jamal Al-Shibiny. The first edition. The Egyptian Library 2009. -The Scientific Book on Cereal Manufacturing / Abbas Hassan Hussein. first edition. University of Baghdad 2009. -Field crop production, Dr. Salah El-Din Abdel-Razzaq Shafshak and d. Abdel Hamid Al-Sayed Al-Dababi, 2008, Dar Al-Fikr Al-Arabi, Egypt. - Production of field crops / Dr. Abdul Majeed Al-Ansari, University of Baghdad 1981 - Crops of Cereals and Pulses (Practical Part), Dr. Kamel Muhammad Al-Khafaji, Universi of Baghdad 2009. - Scientific bases for management, production and improvement of field crops. Mr. Dr. Iy Hussein Al-Muaini and Prof. Muhammad Awaid Ghadeer Al-Obaidi. College of Agriculture University of Anbar, 2018. - Producing and improving field crops (Part One). Abdul Hamid Ahmed Al-Younes, University of Baghdad - College of Agriculture, 1993. -Grain production. Mr. Dr. Abdel Hamid Mohamed Hassanein, Faculty of Agriculture - Al-Azhar University, Arab Republic of Egypt 2019. -Principles of field crop production. Dr.. Muhammad Hazal Kazem Al-Baldawi and d. Alad Abdul Majeed Al-Jubouri and d. Conciliator Abdul Razzaq Suhail Al-Naqib. College of Agriculture - University of Baghdad, 2014
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic Referen Websites	- Lectures and statistics from the cluster network.

Course Description Form

1- Course Name: Plant Physiology

2- Course Code: **AFC1942**

3- Semester / Year: Semester

4.Description Preparation Date: 8/4/2024

5.Available Attendance Forms: In person classes

6.Number of Credit Hours (Total) 5 / Number of Units (Total) 3.5

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

Name: Assist.prof. Imad Mahmood Ali
Email: ag.imad.mahmood@uoanbar.edu.iq

8.Course Objectives: This course introduces Introducing students to the types of plant cells, their components, and the function of each component, Identify the types of plant carrier vessels, their parts and functions. Learn about the biological processes that occur in the plant cell (transpiration, cellular respiration, photosynthesis). Learn about some physiological concepts and plant hormones.

9.Teaching and Learning Strategies :

1-Understand the nature of the work of agricultural vocabulary.
2 - Distinguish between each of the types of cultivation and treatment methods.
3- Distinguishing between three terms (land, marketing, and ultimate beneficiary)

10. Course Structure :

- Training the student on how to use information sources to maintain and develop his basic information.
- Develop the student's style of transferring information to the work environment.

Training the student to conduct scientific research to solve problems at work and develop its methods

11.

The week	hours	Required learning outcomes	Unit/course or topic name	education method	Evaluation method
1	5(2 +3)	Definition of physiology and its importance	Microscope: Getting to know its parts, how to deal with it, how to prepare glass slides By watching a video	An introduction to plant physiology with a historical view	Discussion, daily exams, monthly exams
2	5(2 +3)	The plant cell, its structure and functions	Recognizing the cell wall, the nucleus, the protoplasm... Recognizing the components of the cell within e-learning videos	The plant cell, its types, a study of the cell of higher plants, the cell wall, the middle lamina, the primary wall, the secondary wall, the pit, and the plasmonic bonds.	Discussion, daily exams, monthly exams
3	5(2 +3)	dentify the plastids (green, colored, colorless). And the anthocyanin pigment in the cell juice, via video	Living contents of a plant cell: cytoplasm, mitochondria, ribosomes, Golgi apparatus, plastids, spheroids, microtubules, cell membranes.	Living organelles in the cytoplasm	Discussion, daily exams, monthly exams
4	5(2 +3)	View samples of crystals (pink, stellate, suspended...)	The non-living contents of a plant cell. Vacuoles, cellular juice, crystals and their types, starchy granules, iron granules.	Non-living bodies in a cell	Discussion, daily exams, monthly exams
5	5(2 +3)	Do an experiment at home to identify the carriers with materials available at home	Carrier vessels - wood, phloem, their parts and functions	Wood texture and phloem texture	Discussion, daily exams, monthly exams
6	5(2 +3)	Do an experiment at home that shows how water rises through wood vessels to the plant organs	The process of water absorption and theories of its rise	Mechanisms of plant water absorption	Discussion, daily exams, monthly exams
	first month exam				
7	5(2 +3)	Making a pot experiment, the students were able to watch the water leaving the plant through the process of transpiration.	The process of removing excess water through the transpiration process	Transpiration and its types	Discussion, daily exams, monthly exams
8	5(2 +3)	To identify the internal structure of the leaf, the	Theories of water loss through stomata and the	Interpretation of water	Discussion, daily exams,

		upper epidermis, the mesophyll, the lower epidermis, the vessels (veins) of a dicotyledonous plant (ready slice offlex)	mechanics that determine the opening and closing process	loss theories	monthly exams
10	5(2 +3)	Through e-learning platforms, to identify the structure of the leaf of a monocotyledonous plant, Identifying wood texture, vascular cell wall clots and its types, bronchioles, fibers, wood parenchyma (with pictures via e-learning)	Theories that study the processes of absorption of salts and their path within the different plant organs	How does a plant deal with salt?	Discussion, daily exams, monthly exams
11	5(2 +3)	To identify the occurrence of the plasmolysis process of the plant cell and what are the mechanisms that the plant has to withstand salt stress (with pictures)	The importance of these salts and the effect of increasing or decreasing them.	types of salts	Discussion, daily exams, monthly exams
12	5(2 +3)	Learn about the internal structure of the mitochondria (with pictures and videos)	The process of breathing and how, stages and places it occurs inside the plant	respiration and energy production	Discussion, daily exams, monthly exams
13	5(2 +3)	Identify the chloroplasts and their components, and where the light and dark reactions occur (with pictures)	The process of photosynthesis with all its different stages, places of occurrence and its products. ?	Learn about C3 and C4 plants	Discussion, daily exams, monthly exams
14	5(2 +3)	Identification of phloem tissue, sieve tubes, companion cells, phloem fibers, phloem parenchyma (with pictures).	Phloem transport and how to transfer the mature sap to the plant parts	Short term transportation and long term transportation	Discussion, daily exams, monthly exams
15	5(2 +3)	Conducting a germination experiment for some crop seeds with dishes inside the house and teaching the student how to calculate the percentage of germination. And learn about the types of hibernation that affect seeds and how to break hibernation	The phenomenon of vegetative hibernation and its importance	What is hibernation and its types?	Discussion, daily exams, monthly exams
	second month exam				

12. Infrastructure

Required readings: • **Course Books** • **other**.	1- Basics of Plant Physiology (three parts) 1991, written by Dr. Abdel-Azim Kazem Muhammad and Dr. Muayyad Ahmed Al-Younis, Press of the Ministry of Higher Education and Scientific Research, Baghdad - Iraq. 2- Basics of plant physiology. 2001. Written by

	Dr. Bassam Taha Yassin, Qatar University Arabization Committee 3 - Introduction to Plant Physiology, 2010. Fourth Edition. William G. Hopkins and Norman P. A. Huner. The University of Western Ontario. 4- Bewley, J. D., Bradford, K., & Hilhorst, H. (2012). Seeds: physiology of development, germination and dormancy. Springer Science & Business Media.

Course Description Form

1- Course Name:
Drugs Plants
2- Course Code:
AFC1941
3- Semester / Year:
First semester
4- Description Preparation Date:
1−9−2023
5- Available Attendance Forms:
weekly
6- Number of Credit Hours (Total) / Number of Units (Total)
Five hours a week 3.5 units
7- Course administrator's name (mention all, if more than one name)
Name: Assist. Prof. Dr. Osama Hussein Mahidi Email: ag.osama.hussein@uoanbar.edu.iq
8- Course Objectives
Identifying medicinal plants, their divisions, sources, the nature of their active compounds, and method extracting them
9- Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Presentation of academic problems 4- Finding appropriate solutions 5- Brainstorming 6- Collaborative style 7- Study previous lectures

10. Course Structure

the week	hours	Required learning outcomes	Unit/course or topic name	**education method**	**Evaluation method**
the first	5(2 +3)	Students' knowledge of the importance of medicinal plants, their history and the development of their cultivation	Introduction to medicinal plants	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams

The second	5(2 +3)	Statement of the importance of developing the cultivation of medicinal plants within the global trend of growing medicinal plants	Classifications of morphological, medicinal, chemical, botanical and seasonal medicinal plants	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
the third	5(2 +3)	Learn how to study these plants and their classifications	Study the most important scientific interests that are a start in the development of the study of medicinal plants	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
the fourth	5(2 +3)	Students' knowledge of the importance of agricultural processes in the production of medicinal plants	Agricultural operations and plant service operations aimed at increasing production	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
Fifth	5(2 +3)	Students' knowledge of the importance of environmental factors and their impact on plants	Environmental factors, including heat, water, light, etc	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
	5(2 +3)	Students' knowledge of the importance of the impact of environmental factors on plants	Environmental factors, including soil and its microorganisms	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
	first month exam				
	5(2 +3)	Students' knowledge of secondary metabolites	Alkaloids: their composition, composition, effects and chemical extraction methods	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
ninth	5(2 +3)	Students' knowledge of secondary metabolites	Glycosides: their structure, composition, effects and chemical extraction methods	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
The tenth	5(2 +3)	Students' knowledge of secondary metabolites	Volatile oils: their composition, composition, effects and chemical extraction methods	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
eleventh	5(2 +3)	Students' knowledge of secondary metabolites	Tannins: their composition, composition, effects, and methods of chemical extraction	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams

twelveth	5(2 +3)	Students' knowledge of secondary metabolites	Phenols: their composition, composition, effects and chemical extraction methods	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
Thirteenth	5(2 +3)	Botanical description of some medicinal plants and their economic importance	Plants of the family Oral and Solanaceous family	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
fourteenth	5(2 +3)	Botanical description of some medicinal plants and their economic importance	The labial family, the sappy family, the legume family, and the grassy family	2-hour theoretical lectures and 3-hour laboratory per week	Discussion, daily exams, monthly exams
Fifteenth	second month 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	Herbs is a medicine for every disease, 2015, Dr. Faisal Muhammad Iraqi Medicinal and aromatic plants and their medicinal uses, Dr. A Omran
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Cereal crops.

2. Course Code:

AFC1938

3. Semester / Year:

Spring 2023−2024.

4. Description Preparation Date:

10.4.2024.

5. Available Attendance Forms:

The audience.

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

5 units (2 theoretical +3 practical).

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

Name:Dr. Muaiad Hadi + Dr. Omer Ismail .
Email: ag.moaead.hadei@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1-Study of the most important cereal crops in the world. 2-It includes knowing the spread of each crop in different regions of the world. 3-Knowing the economic importance of grain crops. 4- Identify the methods of growing each crop and the factors affecting the productivity of each crop.

9. Teaching and Learning Strategies

Strategy	1-Explanation and clarification. 2- The method of the lecture. 3- Student groups. 4- Practical lessons in agricultural fields. 5- Scientific trips to learn about the most important ceareal crops grown in Iraq. 6- The method of self-learning.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Economic importance - production centers	Cereal crops	botanical division of cereal crops,	Conducting d and monthly t through quest about the subjec determine t comprehension

2	5	Wheat - economic importance - production centers - the original home.	Cereal crops	Botanical description - germination.	=
3	5	Stages of growth of wheat - division of wheat - nutritional value - distribution in Iraq - varieties.	Cereal crops	Climatic conditions - botanical description.	=
4	5	Irrigation - lying - ripening - harvesting - threshing - productivity - storage - raising and improving wheat - stages of flour production.	Cereal crops	. Climatic conditions - botanical description	=
5	5	Barley division - distribution in Iraq - varieties.	Cereal crops	Agricultural cycle - service operations and land preparation - fertilization - irrigation.	=
6	5	Maturity - harvest - threshing - storage - productivity - cultivation methods.	Cereal crops	Barley pests - diseases - insects - bush.	=
7	5	Rice - economic importance - production centers - the original home.	Cereal crops	Climatic conditions - botanical description.	=
8	5	Growth stages of rice - totals of rice in the world - rice division - nutritional value - distribution in Iraq - varieties.	Cereal crops	The location of rice in the cultivation cycle - soil - planting date - planting methods - quantity of seeds.	=

9	5	Ripeness - harvesting - threshing - drying - productivity - flocculation and its stages - rice flour - culinary quality characteristics.	Cereal crops	Fertilization - Irrigation - Pests - Diseases - Insects - Bush.	=
10	5	corn - economic importance - chemical composition of the yellow corn kernel -.	Cereal crops	Botanical description - varieties - soil and crop service operations.	=
11	5	Corn Fur Geographical Distribution - History - Origin. The right conditions to increase the yield of maize.	Cereal crops	Climatic conditions - botanical description - varieties - soil and crop service operations - pests and their resistance	=
12	5	White corn - economic importance - origin - types of corn - distribution in Iraq - maturity - harvest and threshing.	Cereal crops	Climatic conditions - agricultural cycle - botanical description - varieties - soil and crop service operations - pests and their resistance	=
13	5	Millet - economic importance - production centers - origin - types of millet - maturity - harvest - productivity - quality	Cereal crops	Climatic conditions - agricultural cycle - botanical description - varieties - soil and crop service operations - pests and their resistance	=
14	5	Oats - economic importance - production centers - origin - types of oats - maturity - harvest - productivity - quality.	Cereal crops	Climatic conditions - agricultural cycle - botanical description - varieties - soil and crop service operations - pests and their resistance.	=
15	5	Maturity - harvest - method of breeding and improvement.	Cereal crops	Climatic conditions - botanical description.	=

11. Course Evaluation

-1Daily exams with self-solved questions.
-2Participation marks for competitive and discussion questions related to the academic subject.
3- Specific grades for homework assignments and quick and surprise exams.

12. Learning and Teaching Resources

Required Textbooks (curricular books, if any)	-Wheat cultivation and production techniques / Jamal Al-Shibiny. The first edition. The Egyptian Library 2009. -The Scientific Book on Cereal Manufacturing / Abbas Hassan Hussein. first edition. University of Baghdad 2009. -Field crop production, Dr. Salah El-Din Abdel-Razzaq Shafshak and d. Abdel Hamid Al-Sayed Al-Dababi, 2008, Dar Al-Fikr Al-Arabi, Egypt. - Production of field crops / Dr. Abdul Majeed Al-Ansari, University of Baghdad 1981 - Crops of Cereals and Pulses (Practical Part), Dr. Kamel Muhammad Al-Khafaji, Universi of Baghdad 2009. - Scientific bases for management, production and improvement of field crops. Mr. Dr. Iy Hussein Al-Muaini and Prof. Muhammad Awaid Ghadeer Al-Obaidi. College of Agriculture University of Anbar, 2018. - Producing and improving field crops (Part One). Abdul Hamid Ahmed Al-Younes, University of Baghdad - College of Agriculture, 1993. -Grain production. Mr. Dr. Abdel Hamid Mohamed Hassanein, Faculty of Agriculture - Al-Azhar University, Arab Republic of Egypt 2019. -Principles of field crop production. Dr.. Muhammad Hazal Kazem Al-Baldawi and d. Alad Abdul Majeed Al-Jubouri and d. Conciliator Abdul Razzaq Suhail Al-Naqib. College of Agriculture - University of Baghdad, 2014
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic Referen Websites	- Lectures and statistics from the cluster network.