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

Academic Program and Course Description Guide

2024-2025

Introduction:

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

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

This guide, in its second version, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the developments 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 description of the academic program circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna track as the basis for their work.

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Ministry of Higher Education and Scientific Research

Scientific Supervision and Evaluation Authority

Quality Assurance and Academic Accreditation Department

Academic Program Description Form for Colleges and Institutes For the Academic Year 2024-2025

University: Al-Muthanna University

College/Institute: College of Agriculture

Scientific Department: Field Crops

Date of Filling Out the File: 9/1/2024

Signature:

Head of the Field Crops Department

Assistant Professor Dr. Ali Halil Naima

Date: Date:

Signature:

the Scientific Assistant

Prof. Dr. Hanoun Nahi Kazim

File Verified by:

Quality Assurance and University Performance Division:

Name of Director of the Quality Assurance and University Performance Division: Dr. Saad K

Date / /

Signature

Approval of the Dean

Achieving the mission of Al-Muthanna University towards excellence and creativity in teaching, scientific research and community service in the agricultural fields within the framework of scientific, cultural, ethical and social principles and values, and that the college has the ways and tools of leadership in the development and development of agricultural areas within the geographical reality of the university.

2. Program Mission

Providing an applied academic climate that pushes the student to learn and develop his abilities and culture through the self-learning curriculum, which involves the student's acquisition of educational and research skills within the modern knowledge system in various agricultural disciplines, the ability to innovate, self-education and competition in the labor market, and provide opportunities to enhance the participation of faculty members, researchers and experts with their abilities to provide society with scientific cadres capable of meeting the needs of the labor market and agricultural and environmental development while providing opportunities to provide consultations and implement studies in a way that contributes to Economic and social development of the country.

3. Program Objectives

- Developing students' knowledge by mixing theoretical and applied studies and training to graduate effective specialists to advance the national agricultural sector while qualifying graduate students.
- Developing the scientific programs of the college in the light of contemporary scientific trends, as well as paying attention to self-education and continuing education.
- Preparing qualified graduates who are able to contribute to public projects and their own projects, agricultural project management, extension and agricultural education through the experiences and cognitive and mental

skills they acquire in the college and the ability to implement agricultural research .

- Establishing and implementing research plans to solve current agricultural problems in line with scientific developments, environmental protection and community service.
- Developing current and future courses periodically and taking into account the progress made in the field of research and academia and international quality requirements.
- Developing an education and scientific research strategy to meet the needs of the surrounding environment, labor market and society.
- Strengthening and developing the infrastructure and institutional by providing it with everything new in the fields of specialization to achieve the objectives of the college .
- Emphasizing quality programs to raise and improve performance rates and skills in education, research, community service and environmental development .
- Seeking to reach the college's programs to academic accreditation .

4. Program Accreditation

Does the program have program accreditation? And from which side?

No

5. Other external influences

Is there a sponsor for the program?

Al , Muthanna University

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	19	%13.01	%15-10	
College Requirements	28	19.17%	%22-16	
Department Requirements	99	%67.8	%74-63	
Summer Training				
Other	146			

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

Program Description

(First stage (Bologna system

Spring semester			Autumn semester		
	Name of the material	Course code		Name of the material	Course code
	Animal Production Basics	DFC5123		Basics Field Crops	FCD3112
	plants anatomy	DFC5122		General plant	FCD4112
	leveling Soil techniques	DFC6123		Basics Soil	FCD6113
	Computer	UOA007		and Mathematics statistics	FCD2112
	Arabic language the	UOA001		Human rights	U0A005
	Plant Chemistry	DFC2123		English 1	U0A003
				Basics Field Crops	FCD3112
				plant General	FCD4112
				Basics Soil	FCD6113

Second stage

Autumn semester				Autumn semester			
Practical	Theoretical	symbol Rapporteur	Material Name	Practical	Theoretical	Course Code	Material Name
3	2	0C24201	Farms Management		2	0C14021	Agricultural extension
3	2	0024202	Oil and sugar crops	3	2	0C14202	Plant ecology
3	2	0C24203	Principles of Statistics	3	2	0C14203	Microbiology
3	2	0C24204	Machinery & Equipment	3	2	0C14204	Soil fertility and fertilizers
3	2	0C24205	Irrigation and Drainage	3	2	0C14205	Principles of Food Industries
3	2	0C24206	Plant classification				
	1	U024027	English Language 2	3	2	0C14206	Gardening principles
	1	U024028	Computer2		1	U014027	Computer1
	1	U024029	Baath crimes		1	U014028	English Language 1

Third stage

Spring semester				Autumn semester			
Practical	Theoretical	symbol Rapporteur	Material Name	Practical	Theoretical	Course Code	Material Name
3	2	0024301	Beekeeping	3	2	0014301	General

							inheritance
3	2	0024302	Mechanization of field crops	3	2	0014302	Design and analysis of experiments
3	2	0024303	Cereal crops	3	2	0014303	Insects of field crops
3	2	0024304	Crop diseases	3	2	0014304	Land reclamation
				3	2	0014305	Legume crops
3	2	0024305	Seed technology	3	2	0014306	Fodder crops
	1	U024036	English Language 2	3	2	0014307	Fiber crops
					1	U014038	English Language 1

Fourth stage							
Spring semester				Autumn semester			
Practical	Theoretical	symbol Rapporteur	Material Name	Practical	Theoretical	Course Code	Material Name
3	2	0024401	Breeding and calculating plants	3	2	0014401	Medicinal plants
3	2	0024402	Growth Regulators	3	2	0014402	Plant physiology
3	2	0024403	Weed control	3	2	0014403	Biology of Weeds
3	2	0024404	Pasture Management	3	2	0014404	Field crop management
3	2	U024045	English Language 2	3	2	0014405	Pasture Management
3	2	0024406	Crop quality	3	2	0014406	Molecular heredity
	1	0C14047	Research Project	3	2	0014407	Land farming
					1	0C14048	Seminars
					1	0C14049	Research Project

1. Expected learning outcomes of the program	
Knowledge	
Learning Outcomes Statement 1	Learning Outcomes 1
Skills	
Learning Outcomes Statement 2	Learning Outcomes 2
Learning Outcomes Statement 3	Learning Outcomes 3
Values	
Learning Outcomes Statement 4	Learning Outcomes 4
Learning Outcomes Statement 5	Learning Outcomes 5

Teaching and Learning Strategies

Teaching and learning methods

- Teaching students how to do methods of thinking and objective analysis
- Providing students with the basics of the course and additional topics
- Asking intellectual questions
- Dividing students into groups in practical lessons

3. Evaluation methods

- **Practical training for each course**
- **Developing the creative thinking of students and the individual**
- **Knowing the developments that occur and have an impact on the course material**

1. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/ Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Prof. Shaima Ibrahim Mahmoud	Field crops	Physiology of crops			Yes	
Prof. Faisal Mahbas Madloul	Field crops	Crop production			Yes	
Prof. Mohamed Radwan Mahmoud	Field crops	Environmental stress			Yes	
Assoc. Prof. Ali Halil Naima	Field crops	Crop production technology			Yes	
Assoc. Prof. Ali Rahim Karim	Field crops	Crop production			Yes	
Assoc. Prof. Haider Razzaq Luaibi	Field crops	Crop production			Yes	
Assoc. Prof. Nasser Habib Muhaibis	Field crops	Plant nutrition			Yes	
Assoc. Prof. Mohamed Hussein Nour	Field crops	Heredity and plant breeding			Yes	
Assoc. Prof. Haider Abdul Hussain Mugheer	Field crops	Crop production			Yes	
Assoc. Prof. Ragheb Hadi Ajami	Field crops	Crop production			Yes	
Assoc. Prof. Haidar Abdel Moneim Al-Ibrahimi	Field crops	Crop production			Yes	
Dr. Esraa Rahi Sayhoud	Field crops	Crop production			Yes	
M.M. Hasan Abbas Fazil	Field crops				Yes	
M.M. Hossein Farhoud	Field crops				Yes	

Acceptance Criterion
- Central admission - for morning studies - direct application for evening studies - according to the average and competition

The most important sources of information about the program
From methodological books, help books, the Internet and scientific research

2. Program Development Plan
1- Teamwork: Work within the group effectively and actively. 2- Time management: Manage time effectively and set priorities with the ability to work organized by appointments. 3- Leadership: the ability to guide and motivate others. 4- Independence at work. 5- Negotiation and persuasion (the student is able to influence and convince others to discuss and reach an agreement). 6- Global skills (the student is able to speak and understand other languages and appreciate other cultures).

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
FIRST STAGE AUTUMN	FCD3112	Field Crops Basics	Basic	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	FCD4112	General plant	Basic	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	FCD6113	Basics Soil	Basic	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	FCD2112	Mathematics and statistics	Basic	✔	✔	✔	✔	✔	✔	✔	✔				
	U0A005	Human rights	Basic	✔	✔	✔	✔								
	U0A003	English 1	Basic	✔	✔	✔	✔								
FIRST STAGE SPRING	DFC5123	Animal Production Basics	Basic	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	DFC5122	anatomy plants	Basic	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	DFC6123	leveling Soil techniques	Basic	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	UOA007	Computer		✔	✔	✔	✔					✔	✔	✔	✔
	UOA001	language the Arabic		✔	✔	✔	✔								
	DFC2123	Plant Chemistry	Basic	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

Second stage Autumn	**0C14021**	Agricultural guidance	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C14202	Plant environment	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C14203	Microbiology	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C14204	Soil fertility and fertilizers	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C14205	Principles of food industries	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C14206	Gardening principles	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	U014027	Computer1	**Basic**	✔	✔	✔	✔						✔	✔	✔
Second stage spring	**0C24201**	Farm management	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024202	Oil and sugar crops	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C24203	Principles of statistics	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C24204	Machines and equipment	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C24205	Irrigation andDrainage	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C24206	Plant classification	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	U024027	English language 2	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	U024028	Computer2	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Third stage	**0014301**	General heredity	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

autumn	**0014302**	Design and analysis of experiments	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014303	Field crop insects	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014304	Land reclamation	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014305	Legume crops	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014306	Fodder crops	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014307	Fiber crops	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	U014038	English language 1	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Third stage **spring**	**0024301**	Beekeeping	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024302	Mechanization of field crops	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024303	Cereal crops	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024304	Crop diseases	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024305	Seed technology	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	U024036	English language 2	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024307	Beekeeping	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Fourth stage	**0014401**	Medicinal plants	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

autumn	**0014402**	Phosphorus is a plant	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014403	Jungle life	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014404	Field crop management	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014405	Pasture management	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014406	Molecular inheritance	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0014407	Land cultivation	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C14048	Seminars	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Fourth stage spring	**0024401**	Breeding and cultivation of plants	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024402	Growth regulators	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024403	Combating jungles	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024404	Pasture management	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	U024045	English language 2	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0024406	Quality of crops	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	0C14047	research project	**Basic**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

MODULE DESCRIPTION FORM

Module Information

Module Title	**Botany**	**Module Delivery**	
Module Type	**Core**		☒**Theory** ☒**Lecture** ☒**Lab** ☐**Tutorial** ☒ **Practical** ☐**Seminar**
Module Code	**FCD4112**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	1	**Semester of Delivery**	1
Administering Department		**College**	الزراعة
Module Leader	Dr. Faisal Taher	mail-e	Faisal.taher@mu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	.Ph.D
Module Tutor	Dr. Faisal Taher	mail-e	Faisal.taher@mu.edu.iq
Peer Reviewer Name	**Dr .Ali Halil Naim**	**e-mail**	ali.algayashe@mu.edu.iq
Scientific Committee Approval Date	01/10/2024	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	Here are the module objectives for plant taxonomy based on the search results:

	1. Understand the basic concepts of botany in relation to its allied core courses 2. Perceive the significance of microbes and plants for human welfare 3. Work closely with a supervisor regarding the subject matter and content of the selected seminar topic 4. Conduct a research project on a topic of their choice approved by the academic staff 5. Analyze data to determine the general tendency of a character 6. Provide a general introduction to the study of plant structures and functions 7. Emphasize the aspects of plant structures and functions as they relate to the natural survival and growth of plants
Module Learning Outcomes	Here are the module learning outcomes for plant taxonomy based on the search results: 1- Mapping learning outcomes to corresponding competencies 2- Analyzing data to determine the general tendency of a character 3- Working closely with a supervisor regarding the subject matter and content of the selected seminar topic 4- Applying the scientific method to questions in biology by formulating testable hypotheses and gathering data that address these hypotheses 5- Understanding the study of plants in the context of general science.
Indicative Contents	Indicative content includes the following. Here are the indicative contents for general botany based on the search results: 1. Research project approved by the department 2. Basic botanical nomenclature needed to describe plant morphology 3. Collection and identification of native flowering plants of Georgia 4. Study of plants in the context of general science 5. Laboratory content incorporated with lecture content during exams 6. Working closely with a supervisor regarding the subject matter and content of the selected seminar topic 7. Understanding the approach, methods, research goals, evidence, and terminology of plant systematics.

Learning and Teaching Strategies	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

Structured SWL (h/sem)	123	**Structured SWL (h/w)**	8
Unstructured SWL (h/sem)	27	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	**150**		

Module Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	• Plant overview • General characteristics of the plant • The foundations of distinguishing between the plant kingdom and the animal kingdom
Week 2	Introduction for non-flowering plants:
Week 3	Flowering plants: General characteristics of flowering plants, Division of flowering plants
Week 4	Seeds and their germination.
Week 5	Plant parts: root, stem, leaves (definition - functions)
Week 6	- Plant parts: Flower, Inflorescences, fruits, Seeds - Reproduction in flowering plants: Asexual reproduction in flowering plant
Week 7	Mid-term Exam
Week 8	Reproduction in flowering plants: Sexual reproduction in flowering plants, Pollination and fertilization in flowering plants, Life cycle of flowering plants
Week 9	Definition of plant physiology and its importance in agricultural production, Photosynthesis
Week 10	Respiration, transpiration and gastrulation in plants
Week 11	Water relations in the plant

Week 12	**The role of basic elements in plant nutrition**
Week 13	**Introduction to plant anatomy; vascular plant organization: Shoot apical meristems; root apical meristems**
Week 14	**Epidermis, Parenchyma; collenchyma; sclerenchyma**
Week 15	**Xylem, Phloem**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	**Lab 1: Germination for some seeds**
Week 2	**Lab 2: Electron microscope: parts and function**
Week 3	**Lab 3: Identify the Plant Cell**
Week 4	**Lab 4: Identify the leaf tissues**
Week 5	**Lab 5: Identify the stem tissues**
Week 6	**Lab 6: Identify the fruits tissue**
Week 7	**Lab 7: Identify the flower parts**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	**Botany Illustrated - Introduction to Plants, Major Groups**	Yes
Recommended Texts	**Anatomy of Flowering Plants - Book**	No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM
Form Course Description

Module Information
Subject information

Module Title	**and democracy Freedoms**	**Unit delivery**
Module Type	**B**	**look T ☒** • **Lecture L ☒** • **Laboratory L ☐** • **Tutorial T ☐** • **Practical ☐** • **Seminar ☐** •
Module Code	UOA005	
ECTS Credits	2	
hr) SWL (sem /	**50**	

Module Level	UGx11 1	**Semester of Delivery**	1
Administration Department	Field Crops Department	**College**	Agriculture
Module Leader		**e-mail**	
Module Leader's Acad. Title	**.Assistant Prof**	**Module Leader's Qualification**	.Ph.D
Module Tutor	Dr .Abdul Salam Khalaf Aboud Al-Huwaija	**e-mail**	
Peer Reviewer Name	**Dr .Ali Halil Naima**	**e-mail**	Ali.algayashe@mu.edu.iq
Scientific Committee Approval Date	**2024/09/01**	**Version Number**	1.0

Relation with other Modules
Relationship with other subjects

Prerequisites Unit	no one	**Half year**	
Common Requirements Unit	no one	**Half year**	

Module Aims, Learning Outcomes and Indicative Contents objectives , learning outcomes and guiding content Course	
Module Objectives objectives Subject	• Introducing the student to democracy and its features • Knowing the historical development of democracy and its features • The relationship between the rights and public freedoms of individuals • Review of the democratic system in Iraq (positives and negatives(• Knowing corruption, its causes and ways to address it • Learn some political terms
Module Learning Outcomes Learning outcomes for the subject	• Full knowledge of democracy • Knowing the general conditions for the success of the democratic system • What are the components and pillars of democracy؟ • Roots of Democracy in Iraq • Pros and cons of the democratic system • Accuracy and knowledge of some political terms
Indicative Contents Guidance Contents	Includes instructional content Defining and training students on democracy and freedom and how to express their opinions in a transparent and systematic manner so that their opinions are positive and can be interacted with by the relevant party or parties and the government and public opinion can support these opinions, as the more civilized the expression of opinions is, the more influential its echo will be in all political circles and at various levels. Therefore, the main goal of this subject is to create an aware generation capable of leading the country in a democratic manner that believes in opinion and other opinions.

Learning and Teaching Strategies Learning and teaching strategies	
Strategies	Creating a conscious generation that knows well what it has and what it owes to contribute to building a civilized state, with a sense of absolute belonging to this state, regardless of the circumstances and conditions it is going through, and preserving public property as if it were private, in addition to raising the spirit of good citizenship, in addition to strengthening .cooperation between the citizens themselves

(Student Workload (SWL .weeks 15The student's academic load is calculated for			
(sem /Structured SWL (h Regular student load during the semester	33	**(Structured SWL (h/w Regular weekly student load**	2
(sem /Unstructured SWL (h Irregular student load during the semester	17	**(Unstructured SWL (h/w load per week Irregular student**	1

(sem /Total SWL (h The student's total academic load during the semester	50

Module Evaluation
Course material evaluation

As		time/number	Weight /Signs	Due week	Education Related pwdgm
Formative assessment	Quizzes Assignments	2	(10) %10	10 ،4	LO 1.7
	.Lab / Projects Report	1	(10) %10	13	LO 1,3,7
Summative assessment	Midterm Exam	2	(20) %20	7	LO 2.5
	Final Exam	3	(60) %60	16	LO 1-7
Total assessment			(Marks 100) %100		

(Delivery Plan (Weekly Syllabus
Theoretical weekly curriculum

Week	Material Covered
Week 1	Definition of democracy, concept of democracy, features of democracy
Week 2	Historical development of democracy and freedom
Week 3	The relationship between rights and freedoms of individuals and democracy The difference between freedom
Week 4	Evaluation of the democratic system and its implementation stages in Iraq
Week 5	Types of democracy
Week 6	General conditions for the success of the democratic system and the components and pillars of democracy
Week 7	Midterm Exam
Week 8	The concept of elections and their legal adaptation
Week 9	Democracy in Iraq
Week 10	Advantages of the democratic system, disadvantages of the democratic system
Week 11	Stages of the democratic system in Iraq The most important articles of the Iraqi Constitution of 2005
Week 12	Administrative corruption, its concept and definition, types of corruption
Week 13	Causes of corruption and treatments of corruption
Week 14	Some political terms) constitution ،federal court, presidential and parliamentary system(....
Week 15	Terms (secularism, aristocracy, liberalism, bureaucracy, imperialism(

Week 16	Final Exam

Learning and Teaching Resources
and teaching resources

	Text	in the library Available
Required Texts	Human rights, democracy and public freedoms Sabry Kazem Maher Assistant Professor	Yes
Recommended Texts	History of the emergence of human rights concepts 2006 Suleiman Al-Faqir Raed	No
Websites		

Grading Scheme
Grading chart

Group	Grade	Appreciation	% Marks	Definition
Success Group (100 - 50)	Excellent - **A**	**privilege**	100 - 90	Outstanding Performance
	Very Good - **B**	**very good**	89 - 80	Above average with some errors
	Good - **C**	**good**	79 - 70	Sound works with notable errors
	Satisfactory - **D**	**middle**	69 - 60	Fair but with major shortcomings
	Sufficient - **E**	**acceptable**	59 - 50	Work meets minimum criteria
Fail Group (49 – 0)	Fail – **FX**	**Under) Failed (Processing**	(49-45)	More work required but credit awarded
	Fail – **F**	**Failed**	(44-0)	Considerable amount of work required

:Note Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass .fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above

MODULE DESCRIPTION FORM
Form Course Description

Module Information
Subject information

Module Title	Field Crops Basics	**Module Delivery**
Module Type	C	Theory ☒ • Lecture ☐ • Lab ☒ • Tutorial ☐ • ☒ • Practical Seminar ☒ •
Module Code	FCD3112	
ECTS Credits	7	
(sem / hr) SWL	175	

Module Level		**Module Level**		**Semester of Delivery**	1
Administration Department		**Field Crops Department**		**College**	Agriculture
Module Leader	*Dr. Shaima Ibrahim Mahmoud*			**e-mail**	**Shaimaaibrahim@mu.edu.iq**
Module Leader's Acad. Title		**Module Leader's Acad. Title**		**Module Leader's Qualification**	Ph. .D
Module Tutor	*Dr. Shaima Ibrahim Mahmoud*			**e- mail**	**Shaimaaibrahim@mu.edu.iq**
Peer Reviewer Name		**Dr .Ali Halil Naima**		**e-mail**	**ali.algayashe@mu.edu.iq**
Scientific Committee Approval Date		**2024/10/01**		**Version Number**	1.0

Relation with other Modules

Prerequisite module	none	**Semester**	-
Co-requisites module	none	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents
objectives , learning outcomes and guiding content Course

Module Objectives objectives Subject	-1-Study of the most important field crops in the world. -2- It includes knowledge of the spread of each crop in different regions of the world. -3- Knowing the importance Economic For field crops.

	-4- Identifying the methods of planting each crop and the factors affecting the productivity of each crop . 5- Study the environmental conditions suitable for growing each crop . 6 - Methods followed in storing and marketing important field crops in the world.
Module Learning Outcomes **Learning outcomes for the subject**	A -Cognitive objectives -1- The student should learn about the most important field crops in Iraq and the world . -2- The student classifies crops according to their environmental needs . 3- The student should differentiate between crops and their importance in human and animal nutrition . -4- To know the scientific methods used to increase crop productivity . -5- The student should evaluate the importance of each field crop and which of them is best for investment in Iraq . B - Objectives Program specific skills -1- Introducing the importance to the student Economics of crops . 2 - The student's ability to evaluate the most important field crops in Iraq and the world . -3- Teaching the student the appropriate environmental conditions for each crop .
Indicative Contents Guidance Contents	-1Explanation and clarification 2- Lecture method 3 - Student groups 4- Practical lessons in agricultural fields 5 - Scientific trips to learn about grain crops in Iraq

Learning and Teaching Strategies
Learning and teaching strategies

Strategies	Identifying the most important Developing the student's ability to field crops and their impact on environmental conditions, and .identifying and knowing their types

(Student Workload (SWL
.weeks 15is calculated as semester

(sem /Structured SWL (h Regular student load during the semester	138	**(Structured SWL (h/w Regular weekly student load**	9
(sem /Unstructured SWL (h Irregular student load during the semester	37	**(Unstructured SWL (h/w load per week Irregular student**	2
(sem /Total SWL (h The student's total academic load during the semester	**175**		

Module Evaluation
Course material evaluation

As		Time/Number	(Weight (Marks	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	(10) %10	10and 5	
	Assignments	2	(10) %10	12and 2	
	.Lab / Projects	1	(10) %10	Continuous	
Summative assessment	Report	1	(10) %10	13	
	Midterm Exam	hr1	(10) %10	7	
	Final Exam	hr3	(50) %50	16	
Total assessment			Marks 100) %100		

(Syllabus Weekly+Lab) Delivery Plan

weekly curriculum and practical

Week	Material Covered
Week 1	introduction in Crops Field ، Definition ، Its origin ، And its development
Week 2	to divide Crops Field According to Families ،season Agriculture ، Usage ..... etc) .Description (Most important Families Vegetarianism
Week 3	Factors Environment and its relationship Growing Crops) Factors climate(
Week 4	Light And its importance in Growth
Week 5	exam The month First / Heat And its relationship By distributing Crops
Week 6	Wind And its impact on Crops
Week 7	**Mid-term Exam**
Week 8	Discrimination between Family The lawn And legumes
Week 9	Factors soil) building soil
Week 10	Weave it soil ، Salinity soil ، acidity soil
Week 11	Factors of distribution and spread of field crops
Week 12	Classification of crops according to heat requirements
Week 13	Summer crops
Week 14	Winter crops
Week 15	Crops and food security
Week 16	Final Exam

Learning and Teaching Resources

and teaching resources

	Text	Available in the Library؟
Required Texts		yes
Recommended Texts	Field crop management and production Principles of field crops	and references Books scientific recommended by reports ،journals
Websites	Library Sites in Some International Universities ، Virtual Library ، websites ،Electronic references	

Grading Scheme

Grading chart

Group	Grade	Appreciation	Marks%	Definition
Success Group (100 - 50)	**A -** Excellent	**privilege**	100 - 90	Outstanding Performance
	B - Very Good	**very good**	89 - 80	Above average with some errors
	C - Good	**good**	79 - 70	Sound works with notable errors
	D - Satisfactory	**middle**	69 - 60	Fair but with major shortcomings
	E - Sufficient	**acceptable**	59 - 50	Work meets minimum criteria
Fail Group (49 – 0)	**FX –** Fail	**Failed) Under Processing(**	(49-45)	More work required but credit awarded
	F – Fail	**Failed**	(44-0)	Considerable amount of work required

Note : Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM
Form Course Description

Module Information
Subject information

Module Title	Plant Chemistry **Plant Chemistry**	**Module Delivery**	
Module Type	**S**	Theory ☒ •	
Module Code	**DFC2123**	Lecture ☐ •	
ECTS Credits	**7**	Lab ☒ •	
(sem / hr) SWL	**5 7 1**	Tutorial ☐ •	
		Practical ☒ •	
		Seminar ☒ •	

Module Level	**Module Level**	**Semester of Delivery**	1
Administration Department	**Field Crops Department**	**College**	Agriculture
Module Leader	***Qasim Ajil Shanawa .A.M.D***	**e-mail**	qasim.ajel @mu.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	.Ph.D
Module Tutor	***Qasim Ajil Shanawa .A.M.D***	**e-mail**	qasim.ajel@mu.edu.iq
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	**2024/10/01**	**Version Number**	1.0

Relation with other Modules

Prerequisite module	none	**Semester**	-
Co-requisites module	none	**Semester**	-

Module Aims, Learning Outcomes and Indicative Contents
objectives , learning outcomes and guiding content Course

Module Objectives objectives Subject	Course objectives: The curriculum aims to introduce students to the chemical compositions and biological importance of organic compounds in living cells ،such as carbohydrates of all types, fats of all types, amino acids and proteins of all types, nucleic acids) DNA .(And RNA ،(enzymes, their mechanism of action, and the factors affecting their effectiveness. In addition to introducing students to the most important qualitative and quantitative reagents for sugars, fats, and proteins .
Module Learning Outcomes **Learning outcomes for the subject**	• **Cognitive objectives:** • identification plant chemistry , review Summary For vocabulary science Plant Chemistry that will be given during the chapter Academic. • Enabling students to gain knowledge, science, and knowledge of plant cells ،cell components, and their functions. • Introducing students **to carbohydrates ، their importance and their types** in plants. • Introducing students to **fats - definition - importance - fatty acids - types - structures - reactions.** • Introducing students to **amino acids – their divisions – their structures – properties of amino acids – their reactions.** • Introducing students to **proteins – definition – types – levels of protein synthesis – Denture.** • Introducing students to **nucleic acids - their importance - nucleotides - Its functions - its composition - types of nucleic acids.** • Introducing students to enzymes - their definition - the mechanism of enzyme action - their classification - inactive and active enzymes - factors affecting the rate of enzyme reaction.
Indicative Contents Guidance Contents	• Providing students with the basics and lectures related to the subject. • Use Power Point presentation methods to convey information clearly and well to students. • Use the board to illustrate And explain Lecture for students. • Urging students to make use of Google search engines when they are asked to submit scientific reports on the topics given to them within the course material.

	• Use laboratories to illustrate and conduct practical experiments.

Learning and Teaching Strategies
Learning and teaching strategies

Strategies	• Assigning students to conduct research and reports. • Assign students to collect sources on the topic using electronic research.

(Student Workload (SWL
.weeks 15is calculated as semester

(sem /Structured SWL (h Regular student load during the semester	123	**(Structured SWL (h/w Regular weekly student load**	9
sem /Unstructured SWL (h (Irregular student load during the semester	52	**(Unstructured SWL (h/w load per week Irregular student**	2
(sem /Total SWL (h The student's total academic load during the semester	**125**		

Module Evaluation
Course material evaluation

		Time/Number	(Weight (Marks	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	(10) %10	and 10 5	2 ،1LO
	Assignments	2	(10) %10	and 12 2	4 ،3LO
	.Lab / Projects	1	(10) %10	Continuous	LO 1-7
	Report	1	(10) %10	13	LO 1-7
Summative assessment	**Midterm Exam**	hr1	(10) %10	7	All
	Final Exam	hr3	(50) %50	16	All
		Total assessment	Marks 100) %100		

(Syllabus Weekly+Lab) Delivery Plan

weekly curriculum and practical

	Material Covered
Week 1	Introduction to Plant Chemistry - Components of the Living Plant Cell and Their Functions
Week 2	Carbohydrates - definition - importance - types - (monosaccharides ،low polysaccharides ، polysaccharides(
Week 3	Monosaccharides - Analogues of monosaccharides - Monosaccharide derivatives - Ring structure of sugars.
Week 4	Low polysaccharides - reducing and non-reducing types
Week 5	Polysaccharides - homogeneous and heterogeneous types
Week 6	First month exam
Week 7	Fats - Definition - Importance - Fatty acids - Divisions - Structures - Reactions - Geometric similarities of fatty acids
Week 8	Fat types - simple fats - their types (oils, fats and waxes) - their compositions - fat constants
Week 9	Compound and derived fats - their types - their compositions
Week 10	Amino acids - their divisions - their structures - properties of amino acids - their reactions
Week 11	Peptides - Proteins - Definition - Divisions - Levels of protein synthesis - Denaturation
Week 12	Second month exam
Week 13	Nucleic acids - their importance - nucleotides - their functions - their composition - types of nucleic acids
Week 14	Enzymes - Definition - Mechanism of enzyme action - Classification - Inactive and active enzymes
Week 15	Factors affecting the rate of enzymatic reaction.
Week 16	Final Exam

Learning and Teaching Resources
and teaching resources

	Text	Available in the Library؟
Required Texts	**The textbook - Biochemistry - Part One (1) and (2). Written by Dr. Ali Hassan Al-Dawudi.**	yes
Recommended Texts	**sources:** • **Written by - Fundamentals of Biochemistry Dr. Basil Kamel Al-Dalali.** **2. Biochemistry SPSingh.2007. A Textbook of Fourth ،Delhi.Banglore -Edition, CBS Publishers Distributors New &.** **3. Practical Biochemistry Authored by: Dr. Ali Hassan Al- Dawadi.**	and references Books scientific recommended by reports ،journals
Websites	Library Sites in Some International Universities ، Virtual Library ، websites ،Electronic references	

Grading Scheme
Grading chart

Group	Grade	Appreciation	% Marks	Definition
Success Group (100 - 50)	Excellent - **A**	**privilege**	100 - 90	Outstanding Performance
	Very Good - **B**	**very good**	89 - 80	Above average with some errors
	Good - **C**	**good**	79 - 70	Sound works with notable errors
	Satisfactory - **D**	**middle**	69 - 60	Fair but with major shortcomings
	Sufficient - **E**	**acceptable**	59 - 50	Work meets minimum criteria
Fail Group (49 – 0)	Fail – **FX**	**Under) Failed (Processing**	(49-45)	More work required but credit awarded
	Fail – **F**	**Failed**	(44-0)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM
Form Course Description

Module Information
Subject information

Module Title	Production Animal principles		**Module Delivery**
Module Type		**S**	**Theory** ☒ •
Module Code	DFC5123		**Lecture** ☒ •
ECTS Credits		**5**	**Lab** ☐ •
(sem / hr) SWL		**125**	**Tutorial** ☐ •
			Practical ☒ •
			Seminar ☐ •

Module Level	U	**Semester of Delivery**	2
Administration Department	Field crops	**College**	Agriculture
Module Leader	Zayer Nakad Mr. Karim	**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Zayer Nakad Mr. Karim	**e-mail**	
Peer Reviewer Name	Dr. Ali Halil Naima	**e-mail**	ali.algayashe@mu.edu.iq
Scientific Committee Approval Date	2024/10/01	**Version Number**	1.0

Relation with other Modules
Relationship with other subjects

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
objectives , learning outcomes and guiding content Course

Module Objectives objectives Subject	-The student should recognize the importance Economics of animal products -The student should know the types of cows ، buffaloes and sheep. -The student gets to know the field operations .For animals The farm -The student should be familiar with the methods used .In animal classification The farm

	-Introducing the student to methods of caring for cows .And the buffalo And the calves -The student's ability to identify the types Different For records and operations Field
Module Learning Outcomes **Learning outcomes for the subject** **Indicative Contents Guidance Contents**	• The student should know the importance Economics of animal products • The student learns about the types of cows .Buffalo and sheep • The student learns about calf care. • The student will learn about poultry care. • -Explanation and clarification. • -How to study the lecture. • -Student groups. • -Practical lessons in the fields Animal for college. • -Scientific trips to the fields in Area • -Self -learning method

Learning and Teaching Strategies **Learning and teaching strategies**	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining

(Student Workload (SWL .weeks 15The student's academic load is calculated for			
(sem /Structured SWL (h Regular student load during the semester	108	**(Structured SWL (h/w Regular weekly student load**	7
(sem /Unstructured SWL (h Irregular student load during the semester	17	**(Unstructured SWL (h/w load per week Irregular student**	1
(sem /Total SWL (h The student's total academic load during the semester	**125**		

Module Evaluation
Course material evaluation

		Time/Number	(Weight (Marks	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	(10) %10	and 10 5	2# ،1#LO
	Assignments	2	(10) %10	and 12 2	7# ،6#LO #3, #4 and
	.Lab / Projects	1	(10) %10	Continuous	All
	Report	1	(10) %10	13	LO #5
Summative assessment	Midterm Exam	hr2	(10) %10	7	7# -LO #1
	Final Exam	hr3	(50) %50	16	All
	Total assessment		(Marks 100) %100		

(Delivery Plan (Weekly Syllabus
Theoretical weekly curriculum

	Material Covered
Week 1	Importance Economics of animal products
Week 2	Types of cows And the buffalo And sheep
Week 3	Reproduction in Cows And the buffalo
Week 4	Calf care
Week 5	Milk production In cows and buffaloes
Week 6	Field operations For animals in The farm Types of farm records
Week 7	Mid-term Exam
Week 8	Animal housing The farm
Week 9	The Ga Moose
Week 10	Importance Economic For sheep And the goats
Week 11	Classification of sheep and goats
Week 12	Methods of classifying animals Agricultural
Week 13	Reproduction in Sheep And the goats
Week 14	Field operations For sheep And the goats
Week 15	farm animal care
Week 16	General review before the final exam

(Delivery Plan (Weekly Lab. Syllabus
Weekly lab schedule

	Material Covered
Week 1	Lab 1 :Identifying Farm Animals
Week 2	Lab 2 :Sheep Care
Week 3	Lab 3 :Cow Care
Week 4	Lab 4 :Buffalo Care
Week 5	Lab 5 :Goat Care
Week 6	Lab 6 :Farm Animal Nutrition
Week 7	Lab 7 :The most important feeds

Learning and Teaching Resources
and teaching resources

	Text	Available in the Library؟
Required Texts	• .Dr Al-Jalili Zahry .Dr Basics Production Animal Talal Yousef lustful and Farid .Adel Dr Muhammad	Yes
Recommended Texts	Natiq .Dr Milk cattle production The Holy One Mohammed	No
Websites	https://www.sciencedirect.com/journal/separation-and-purification-technology/vol/292/suppl/C https://www.amazon.com/Separation-Purification-Methods-Edmond-Perry/dp/082476319X	

Grading Scheme
Grading chart

Group	Grade	Appreciation	% Marks	Definition
Success Group (100 - 50)	Excellent - A	privilege	100 - 90	Outstanding Performance
	Very Good - B	very good	89 - 80	Above average with some errors
	Good - C	good	79 - 70	Sound works with notable errors
	Satisfactory - D	middle	69 - 60	Fair but with major shortcomings
	Sufficient - E	acceptable	59 - 50	Work meets minimum criteria
Fail Group (49 – 0)	Fail – FX	Under) Failed (Processing	(49-45)	More work required but credit awarded
	Fail – F	Failed	(44-0)	Considerable amount of work required

Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass .fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above :**Note**

MODULE DESCRIPTION FORM
Form Course Description

Module Information
Subject information

Module Title	**Computer science**	**Module Delivery**
Module Type	**B**	**Theory ☒** •
Module Code	**UOA007**	**Lecture ☒** •
ECTS Credits	**3**	**Lab ☒** •
(sem / hr) SWL	**75**	**Tutorial ☐** •
		Practical ☐ •
		Seminar ☐ •

Module Level	U	**Semester of Delivery**	2
Administration Department	Field crops	**College**	Agriculture
Module Leader	Sambar Saud .A.M	e-mail	
Module Leader's Acad. Title	Assistant Prof	**Module Leader's Qualification**	PhD
Module Tutor	Sambar Saud .A.M	e-mail	
Peer Reviewer Name	Dr. Ali Halil Naima	**e-mail**	ali.algayashe@mu.edu.iq
Scientific Committee Approval Date	2024/10/01	**Version Number**	1.0

Relation with other Modules
Relationship with other subjects

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
objectives , learning outcomes and guiding content Course

Module Objectives objectives Subject	• Study the principles of computer science and information technology • Study different types of modern computers • Introducing the student to the most important components of the computer and its systems • Learn about the types of computers used in various scientific fields • Learn about the different types of operating systems used in computers
Module Learning Outcomes	• Student knowledge of the basic principles of computer science and information technology • Understand different types of computers used in different fields.

Learning outcomes for the subject	• Knowing the most important components of the computer and what its parts are • Knowing how to manage and store data inside the computer • Knowing the most important operating systems used in computers • Knowing the most important computer applications used in various magazines
Indicative Contents Guidance Contents	The student studies the following important topics: • Stages of computer development, in addition to a brief history of the most important old computers 6) hours(• General concepts in computer science in terms of data types and methods of storing them inside the computer 5) hours(• Using computers and their different types 5) hours(• Study the material components in detail and identify their most important components 8) hours(• Programming components and applications used in computers 8) hours(• Studying computer science numbers and identifying the most important ones 7)hours(• Calculate storage space for main memory and secondary memories 7) hours (

Learning and Teaching Strategies
Learning and teaching strategies

Strategies	Enhancing and refining students' skills in using computers and training them on how to use their systems and how to develop their capabilities in using computers efficiently ،through interactive lectures in the laboratory in addition to paper manuscripts, textbooks .and files PPT lectures

(Student Workload (SWL
.weeks 15The student's academic load is calculated for

(sem /Structured SWL (h Regular student load during the semester	60	**(Structured SWL (h/w Regular weekly student load**	4
(sem /Unstructured SWL (h Irregular student load during the semester	15	**(Unstructured SWL (h/w load per week Irregular student**	1
(sem /Total SWL (h The student's total academic load during the semester	**75**		

Module Evaluation
Course material evaluation

	Time/Number	**(Weight (Marks**	**Week Due**	**Relevant Learning Outcome**

Formative assessment	Quizzes	2	(10) %10	and 10 5	2# ،1#LO
	Assignments	2	(10) %10	and 12 2	7# ،6#LO #3, #4 and
	.Lab / Projects	1	(10) %10	Continuous	All
	Report	1	(10) %10	13	7# ،5#LO
Summative assessment	Midterm Exam	hr2	(10) %10	7	7# -LO #1
	Final Exam	hr3	(50) %50	16	All
		Total assessment	(Marks 100) %100		

(Delivery Plan (Weekly Syllabus

Theoretical weekly curriculum

Week	Material Covered
Week 1	Computer and Information Technology Introduction to
Week 2	Stages of computer development
Week 3	Data used in computer
Week 4	Types of computers and their uses
Week 5	Hardware components of the computer 1
Week 6	Hardware components of the computer 2 and software components
Week 7	Mid-term Exam
Week 8	Operating systems
Week 9	Application programs
Week 10	Programming languages
Week 11	Computer performance metrics
Week 12	Computer storage units
Week 13	Setting systems
Week 14	Computer protection programs
Week 15	Viruses and hacking
Week 16	Preparatory week before the final exam

(Delivery Plan (Weekly Lab. Syllabus

Weekly lab schedule

	Material Covered
Week 1	Lab :1 Learn how to install and operate a computer
Week 2	Lab :2 Identify the most important hardware components that make up a computer
Week 3	Lab :3 Applications of data storage methods and their calculations
Week 4	Lab :4 Application on one of the important operating systems for the computer
Week 5	Lab :5 Experimenting with some office applications on the computer
Week 6	Lab :6 Experiment and solve some of the counting systems used in the computer
Week 7	Lab :7 Applying some antivirus software

Learning and Teaching Resources
and teaching resources

	Text	Available in the Library؟
Required Texts	Part One (Computer Basics and Office Applications) Book	Yes
Recommended Texts		
Websites	.Browse the Internet and learn more about this field	

Grading Scheme
Grading chart

Group	Grade	Appreciation	% Marks	Definition
Success Group (100 - 50)	Excellent - **A**	**privilege**	100 - 90	Outstanding Performance
	Very Good - **B**	**very good**	89 - 80	Above average with some errors
	Good - **C**	**good**	79 - 70	Sound works with notable errors
	Satisfactory - **D**	**middle**	69 - 60	Fair but with major shortcomings
	Sufficient - **E**	**acceptable**	59 - 50	Work meets minimum criteria
Fail Group (49 – 0)	Fail – **FX**	**Under) Failed (Processing**	(49-45)	More work required but credit awarded
	Fail – **F**	**Failed**	(44-0)	Considerable amount of work required

:Note Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass .fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above

MODULE DESCRIPTION FORM
Form Course Description

Module Information
Subject information

Module Title	Arabic		**Module Delivery**
Module Type	**B**		**Theory** ☒ •
Module Code	**UOA001**		**Lecture** ☒ •
ECTS Credits	**2**		**Lab** ☐ •
(sem / hr) SWL	**50**		**Tutorial** ☐ •
			Practical ☐ •
			Seminar ☐ •
Module Level	1	**Semester of Delivery**	**2**
Administration Department	Field crops	**College**	of Agriculture Faculty
Module Leader	*Musa Al Amer millimeter Sheikh*	**e-mail**	
Module Leader's Acad. Title	Instructor	**Module Leader's Qualification**	PhD
Module Tutor	*Musa Al Amer millimeter Sheikh*	**e-mail**	
Peer Reviewer Name	Dr. Ali Halil Naima	**e-mail**	ali.algayashe@mu.edu.iq
Scientific Committee Approval Date	2024/09/01	**Version Number**	0.1

Relation with other Modules
Relationship with other subjects

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents objectives , learning outcomes and guiding content Course	
Module Objectives objectives Subject	Explaining the importance of the Arabic language and its benefits for university students in terms of: Defining the parts of speech in the Arabic language from sound to context • Definition of the sections and types of the Qur'anic sentence. • Definition of syntax and its relation to grammatical meaning in the types of Quranic sentences. • Defining the structure within the Quranic expression. • Definition of advancement and delay in Quranic expression, its types and causes • Definition of scientific miracles in the Quranic text • Definition of the method of semantic analysis of the Qur'anic text • Definition of the method of semantic analysis of the literary poetic text • Defining some grammatical topics in the language such as indefinite and definite nouns ،proper nouns, and numbers.
Module Learning Outcomes **Learning outcomes for the subject**	knowledge and understanding • Study of the types of Quranic sentences • Study of syntax and its relation to meaning within the types of Quranic sentences • Study of grammatical topics when analyzing the parsing of the Qur'anic sentence • Study of scientific miracles within the Qur'anic text. • Semantic analysis study of the Quranic context
Indicative Contents Guidance Contents	Subject- specific skills • The student should be familiar with the types of Quranic sentences. • will gain the ability to analyze the syntax of the Qur'anic sentence. • The student learns the ability to understand the topics of the Arabic language through analyzing the parsing of the Qur'anic sentence. • To acquaint the student with the scientific miracle and its types within the Qur'anic text. • The student should be aware of the characteristics of the word structure within the Qur'anic expression in terms of definition, indefiniteness, precedence, delay,

	mention, deletion, and the reason for choosing the word structure in terms of nominalism, verbalism, and the change or variation in the tenses of verbs within the Qur'anic context.

Learning and Teaching Strategies Learning and teaching strategies	
Strategies	**methods and learning Blackboard - Display Screen**

(Student Workload (SWL .weeks 15The student's academic load is calculated for			
(sem /Structured SWL (h Regular student load during the semester	33	**(Structured SWL (h/w Regular weekly student load**	2
(sem /Unstructured SWL (h Irregular student load during the semester	17	**(Unstructured SWL (h/w load per week Irregular student**	1
(sem /Total SWL (h The student's total academic load during the semester	**50**		

Module Evaluation Course material evaluation					
		Time/Number	**(Weight (Marks**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes Assignments**	2	(10) %10	10 ،4	LO 1.7
	.Lab / Projects Report	1	(10) %10	13	LO 1,3,7
Summative assessment	**Midterm Exam**	2	(20) %20	7	LO 2.5
	Final Exam	3	(60) %60	16	LO 1-7
		Total assessment			

(Delivery Plan (Weekly Syllabus

Theoretical weekly curriculum

	Material Covered
Week 1	Defining the parts of speech in the Arabic language from sound to context
Week 2	Definition of the sentence and its types with practical examples in parsing
Week 3	The verbal sentence and its components with practical examples in parsing, intransitive and transitive verbs, the subject and types of subjects, when the subject is deleted and the reasons for its deletion
Week 4	The nominal sentence and its components with practical examples in parsing, types of subject, types of predicate, deleting the predicate, presenting it, and the reasons for presenting and delaying it
Week 5	The quasi-sentence and its components, what the preposition and adverb are related to, the reasons for their relation, and the types of what is related to it, with practical examples in parsing .
Week 6	Memorizing and interpreting the first ten verses of Surat Al-Kahf and their semantic analysis
Week 7	Midterm Exam
Week 8	Memorizing and interpreting the first five verses of Surat Al-Hujurat
Week 9	Semantic analysis of the first five verses of Surat Al-Hujurat
Week 10	Indefinite and definite, types of definite nouns
Week 11	Explanation of the topic of numbers ،and the divisions of numbers, with practical examples
Week 12	Memorizing and analyzing eight verses in the poem Al-Hamas by the poet Abu Tayeb Al-Mutanabbi, along with the poet's life.
Week 13	Memorize and analyze ten lines from the poem of the Iraqi poet Badr Shakir al-Sayyab, along with the poet's life.
Week 14	The structure of the word in the Holy Quran ،the word between nominal and verbal
Week 15	**Advancement and delay, its types and causes**
Week 16	**Preparatory week before the final exam**

(Delivery Plan (Weekly Lab. Syllabus
Weekly lab schedule

	Material Covered
Week 1	:Lab 1
Week 2	:Lab 2
Week 3	:Lab 3
Week 4	:Lab 4
Week 5	:Lab 5
Week 6	:Lab 6
Week 7	:Lab 7

Learning and Teaching Resources
and teaching resources

	Text	؟Available in the Library
Required Texts	The Holy Quran, Ibn Aqil's Explanation Book, Arabic Language ،Curriculum for Non-Specialists, Book of Rhetoric and Application Quranic Interpretations	Yes

Grading Scheme
Grading chart

Group	Grade	Appreciation	% Marks	Definition
Success Group (100 - 50)	Excellent - **A**	**privilege**	100 - 90	Outstanding Performance
	Very Good - **B**	**very good**	89 - 80	Above average with some errors
	Good - **C**	**good**	79 - 70	Sound works with notable errors
	Satisfactory - **D**	**middle**	69 - 60	Fair but with major shortcomings
	Sufficient - **E**	**acceptable**	59 - 50	Work meets minimum criteria
Fail Group (49 – 0)	Fail – **FX**	**Under) Failed (Processing**	(49-45)	More work required but credit awarded
	Fail – **F**	**Failed**	(44-0)	Considerable amount of work required

:Note Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass .fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above

MODULE DESCRIPTION FORM
Form Course Description

Module Information Subject information					
Module Title	and leveling modification Soil			**Module Delivery**	
Module Type	S			**Theory** ☒ •	
Module Code	DFC6123			**Lecture** ☒ •	
ECTS Credits	6			**Lab** ☒ •	
(sem / hr) SWL	150			**Tutorial** ☐ •	
				Practical ☒ •	
				Seminar ☐ •	
Module Level	1		**Semester of Delivery**	2	
Administration Department	Field crops	**College**	of Agriculture Faculty		
Module Leader	Hawad Kazem Ziyad .Prof. Dr	**e-mail**			
Module Leader's Acad. Title		**Module Leader's Qualification**			
Module Tutor	Hawad Kazem Ziyad .Prof. Dr	**e-mail**			
Peer Reviewer Name	Dr. Ali Halil Naima	**e-mail**	ali.algayashe@mu.edu.iq		
Scientific Committee Approval Date	2024/10/01	**Version Number**	1.0		

Relation with other Modules Relationship with other subjects			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents objectives , learning outcomes and guiding content Course	
Module Objectives	Understand the basics and introduce the student to the basic

Subject objectives	concepts of engineering drawing ، including: It includes symbols ،dimensions ، and measures. Analysis and interpretation and enabling the student to analyze and interpret the drawings Engineering and planning efficiently ، and learn how survey teams work and use their tools. The ability to create maps of all types and according to drawing dimensions. Learn about different scanning devices ، their function , and measurement methods.
Module Learning Outcomes **Learning outcomes for the subject** **Indicative Contents Guidance Contents**	Preparing cadres capable of drawing vertical, horizontal, frontal and lateral sections of various geometric shapes, with the possibility of conducting field surveys of various soils, determining land boundaries, and using engineering drawing tools and flat surveying devices and equipment. **Subject- specific skills** • **The student gets to know the different geometric shapes.** • **will gain the ability to draw different maps at various drawing scales.** • **learns the ability to understand the topics of flat space and its various devices.** • **The student should review the readings of the leveling device and apply them to reality.** • **To acquaint the student with the characteristics of the structure of flat and contour lands and the adoption of surveying methods.**

Learning and Teaching Strategies
Learning and teaching strategies

Strategies	**methods and learning** **Blackboard – Display Screen**

(Student Workload (SWL
.weeks 15The student's academic load is calculated for

(sem /Structured SWL (h **Regular student load during the semester**	108	**(Structured SWL (h/w** **Regular weekly student load**	
(sem /Unstructured SWL (h **Irregular student load during the semester**	42	**(Unstructured SWL (h/w** **load per week Irregular student**	
(sem /Total SWL (h **The student's total academic load during the semester**	**150**		

Module Evaluation
Course material evaluation

		Time/Number	(Weight (Marks	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	(10) %10	8 ،4	2 ،1LO
	Assignments	2	(10) %10	5,13	4 ،3LO
	.Lab / Projects	1	(10) %10	13	LO 1-7
	Report	1	(10) %10	12	LO 1-7
Summative assessment	**Midterm Exam**	hr1	(10) %10	7	All
	Final Exam	hr3	(50) %50	16	All
	Total assessment			**Total assessment**	(Marks 100) %100

(Delivery Plan (Weekly Syllabus

Theoretical weekly curriculum

	Material Covered
Week 1	Learn about engineering drawing and its importance
Week 2	Learn about the types of lines ، drawing scale and their importance .
Week 3	Engineering operations
Week 4	The concept of flat area, its importance and role in agriculture
Week 5	Measurement systems, units of measurement and common errors in measurement
Week 6	Monthly exam
Week 7	Tape surveying, station selection methods and field notebook requirements.
Week 8	Errors in surveying work and methods of addressing them
Week 9	Regular and irregular shapes and coordinate scanning
Week 10	Leveling using a leveling device
Week 11	Methods of measuring level points
Week 12	Longitudinal sector work and definition
Week 13	Topographic maps and representation methods
Week 14	Contour lines and ways to find space
Week 15	**Curvature and refraction phenomena and methods of treating them**
Week 16	**Preparatory week before the final exam**

(Delivery Plan (Weekly Lab. Syllabus

Weekly lab schedule

	Material Covered
Week 1	Lab 1 :Engineering drawing tools and how to identify them
Week 2	Lab 2 :Multiple Drawing Scales
Week 3	Lab 3 :Understanding Scanning Tools
Week 4	Lab 4 :Level device and accessories
Week 5	Lab 5 :Field notebook and how to enter data into it
Week 6	Lab 6 :Planar Mapping
Week 7	Lab 7 :Forward readings, backward readings, and dummy readings

Learning and Teaching Resources
and teaching resources

	Text	Available in the Library؟
Required Texts	.Engineering drawing book - a methodical book .Saleh Al-Khaffaf Riyadh .Dr ،Plane Surveying Book 2000 .of Mosul University	Yes
Recommended Texts		
Websites		

Grading Scheme
Grading chart

Group	Grade	Appreciation	% Marks	Definition
Success Group (100 - 50)	Excellent **- A**	**privilege**	100 - 90	Outstanding Performance
	Very Good **- B**	**very good**	89 - 80	Above average with some errors
	Good **- C**	**good**	79 - 70	Sound works with notable errors
	Satisfactory **- D**	**middle**	69 - 60	Fair but with major shortcomings
	Sufficient **- E**	**acceptable**	59 - 50	Work meets minimum criteria
Fail Group (49 – 0)	Fail – **FX**	**Under) Failed (Processing**	(49-45)	More work required but credit awarded
	Fail – **F**	**Failed**	(44-0)	Considerable amount of work required

:Note Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass .fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above

Course Description Form

1. Course Title:
Plant ecology
2. Course Code
0C14202
3. Semester / Year
Autumn/second
4. Date of preparation of this description
2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: M.D.Ali Halil Naima Email: ali.algayashe@mu.edu.iq
7. Course Objectives

We show students the importance of understanding environmental factors from other climatic and oceanic conditions and their relationship mainly to plant organisms in a sequential scientific manner, in addition to introducing students to environmental pollution, its types, damages and future plans to avoid its risks.

Course Objectives

This course description provides brief summary of the most import characteristics of the course

The learning outcomes expected the student to achieve are proof whether he has made the most the available learning opportuniti It must be linked to the progr description.

8. Teaching and Learning Strategies

Teaching and learning methods	Strategy
1- Explanation and clarification **-2Lecture method** **3-Student groups** **4-Practical lessons in laboratory**	

. Course Structure					
Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussio Exams	**Definition of ecology and the study of physical factors:**	**The emergence and development of ecology, the importance of the environment, its modern divisions. Ocean (physical and biological).**		**2 hours theoretical 3 hours practical**	**First week**
Discussio Exams		**Temperature and thermometry, types of temperatures, study of some laboratory devices used to measure temperature, study of temperature graphs.**		**2 hours theoretical 3 hours practical**	**Second week**
Discussio Exams	**Air humidity and relative humidity, study of some laboratory devices used to measure relative humidity and study graphical curves of relative humidity.**	**Food chain and food web, ecosystem and its relationship to human ecology.**		**2 hours theoretical 3 hours practical**	**Third week**
Discussio Exams	**Going out with a scientific tour of the field and conducting a field experiment using anvils after**	**Ecosystem types that include the whole ecosystem and the incomplete ecosystem. Ecological balance, the most important**		**2 hours theor**	**Fourth week**

	dividing the students into several groups so that each group grows a specific crop and studies the effect of different temperature and humidity differences, as well as studying the effect of the light factor on these crops.	**manifestations of environmental imbalance.**		**etical 3 hours practical**	
Discussio Exams	**Study of forms of precipitation: rain, methods of measurement, the importance of rain in desert areas.**	**Environmental succession includes the introduction - the basic types of succession - succession in basic plants and includes (water succession, drought succession and forms of subtle succession).**		**2 hours theoretical 3 hours practical**	**Fifth week**
Discussio Exams		**Dew methods of measurement, the date of condensation of dew, sources of dew water, the importance of dew.**		**2 hours theoretical 3 hours practical**	**Week Six**
Discussio Exams	**Studying the wind factor, studying and watching wind speed and direction measuring devices, wind damage and benefits.**	**The concept of environmental factors and their relationship to crops, climate and weather, division of world regions according to the prevailing climate.**		**2 hours theoretical 3 hours practical**	**Week seven**
Discussio Exams		**The most important environmental**		**2 hour**	**Week eight**

		factors 1. Light / types of light rays, factors affecting the intensity of lighting, division of plants according to their response to photoenergies.		**s theor etical 3 hour s practi cal**	
Discussio Exams		**. Plant efficiency in the use of light, light effects in the plant.**		**2 hour s theor etical 3 hour s practi cal**	**Week Nine**
Discussio Exams	**Study of the atmospheric pressure factor, how to measure atmospheric pressure using scientific devices prepared for this purpose.**			**2 hour s theor etical 3 hour s practi cal**	**Week Ten**
Discussio Exams		**Study of solar radiation factor, how to measure the number of hours of sunshine using different devices, study of graphical curves of solar radiation.**		**2 hour s theor etical 3 hour s practi cal**	**Week Eleven**
Discussio Exams		**Study of evaporative devices**		**2 hour s theor**	**Twelfth week**

				etical 3 hours practical	
Discussio Exams	**Evaporation factor, study of evaporation measuring devices and identify how to use them, study the ratio between transpiration and evaporation, study of evaporation curves.**	**2. Temperature, sources and factors affecting it. Divide crops according to their thermal needs.**		2 hours theoretical 3 hours practical	**Thirteenth week**
Discussio Exams		**Conducting a field tour and teaching students how to measure the germination rate and chlorophyll content in the leaves and measure the leaf area of the crops planted in the implemented experiment.**		2 hours theoretical 3 hours practical	**Fourteenth week**
	Studying the soil factor, studying some of the devices used to study the factors related to the soil, including:	**Estimation of temperature efficiency includes the experimental method, length of growing season, accumulated heat. Temperature changes include daily and yearly changes, the effect of temperature on plants.**			**Week V ten**

10. Course Evaluation

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

11. Learning and Teaching Resources

Ecology, Dr. Hikmat Abbas Al-Ani and	Required textbooks (methodology, if an

Dr. Raad Hashem Bakr, 1984. Ecology Dr. Hikmat Abbas Al-Ani and Dr. Raad Hashem Bakr, 1986. Second edition. Plant ecology - d. Majeed Rashid Al-Hilli and d. Hikmat Abbas Al-Ani	
	Main references (sources)
Plant Ecology, Dr. Mohamed Ahmed Megahed, 2002, Egypt. Plant Ecology (Theoretical Part), Dr. Muhammad Ashan Sallo and Dr. Suhail Nader, 2007-2008, Damascus University. Ecology and Pollution Dr. Hussein Ali Al-Saadi 2002, College of Education for Girls **.Scientific journals in the main specializations**	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Name	
soil fertility	
2. Course Code	
0C14204	
3. Semester / Year	
Autumn Semester / Second	
4. The history of preparation of this description	
2024	
5. Available Attendance Forms	
Came	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 Theoretical 2 Practical Modules 3	
7. Course administrator's name (if more than one name)	
Name: Prof. Hanoun Nahi Kazem Email: reda@mu.edu.iq	
8. Course Objectives	
• To introduce the student to soil fertility science • The student should classify the types of eleme and their importance to the plant • The student should detail the factors affecting nutri readiness • To familiarize the student with soil fertility assessme • The student should evaluate the soil eleme according to their importance to the plant	Course Objectives
9. Teaching and Learning Strategies	
1- Explanation and clarification 2- Lecture method 3- Student Groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method	Strategy
0. Course Structure	

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Exam	Explanation and presentation of the model and lecture	soil fertility	To identify the student about growth and the factors affecting it	5	The first
Exam	Explanation and presentation of the model and lecture	soil fertility	The student should know the types of nutrients	5	Second
Exam	Explanation and presentation of the model and lecture	soil fertility	The student should recognize the movement and absorption of elements in the soil	5	Third
Exam	Explanation and presentation of the model and lecture	soil fertility	To familiarize the student with the types of elements in the soil	5	Fourth
Exam	Explanation and presentation of the	soil fertility	The student should recognize the necessary	5	V

	model and lecture		elements		
Exam	Explanation and presentation of the model and lecture	soil fertility	To identify the major elements	5	Sixth
Exam	Explanation and presentation of the model and lecture	soil fertility	The student should be familiar with the microelements	5	Seventh
Exam	Explanation and presentation of the model and lecture	soil fertility	The student should be familiar with the microelements	5	Eighth
Exam	Explanation and presentation of the model and lecture	soil fertility	To identify the useful and growth-encouraging elements	5	Ninth
Exam	Explanation and presentation of the model and lecture	soil fertility	The student should recognize the distinction between the elements	5	X
Exam	Explanation and presentatio	soil fertility	The student should recognize	5	Eleventh

	n of the model and lecture		Factors affecting the readiness of elements		
Exam	Explanation and presentation of the model and lecture	soil fertility	The student should know nitrogen and its factors	5	Twelfth
Exam	Explanation and presentation of the model and lecture	soil fertility	To familiarize the student with phosphorus and potassium and their factors	5	Thirteenth
Exam	Explanation and presentation of the model and lecture	soil fertility	To familiarize the student with sulfur, calcium, magnesium and trace elements	5	Fourteenth
Exam	Explanation and presentation of the model and lecture	soil fertility	To familiarize the student with the fertility assessment of soil and organic matter	5	Fifteenth
11. Course Evaluation					
1- Theory tests 25					

2- Practical tests 15 3- Reports & Studies 10 4- Final Exam 50	
12. Learning and Teaching Resources	
Soil fertility 2014 / Prof. Dr. Noureddine Shawky Ali	Required textbooks (methodology any)
Fertilizer technologies and their uses 2012 Prof. Dr. Noureddine Shawky Ali	Main references (sources)
Iraqi academic scientific journals	Recommended books and references (scientific journals, reports…)
Soil Science Society Of America Library Genesis	Electronic References, Websites

Course Description Form

1. Course Title:
Principles of the Food Industry
2. Course Code
0014205
3. Semester / First Year
Autumn / Second
4. Date of preparation of this description:
2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: M. Dr. Haidar Razzaq Laibi Email: haiderrezaq2017@mu.edu.iq
7. Course Objectives

Contribute to agricultural development a food security Developing nutritional health awareness the community	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be linl to the program description.

8. Teaching and Learning Strategies

Teaching and learning methods	Strategy
1- **Explanation and clarification** 2- **Lecture method**- 3- **Student groups**- 4- **Practical lessons in laboratories**	

. Course Structure					
Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Solutions used in food processing	Introduction to the importance of food industries and their development		2 hours theoretical 3 hours practical	First week
Discussions Exams	Birker Industry	Food Ingredients		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Molasses industry	General health requirements in food factories		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Ketchup industry	Food Groups		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Juice Industry	Vital activities in fruits after breathing		2 hours theoretical 3 hours	Fifth week

				practical	
Discussions Exams		First month exam		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	Jam industry	Grain		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Dairy Industry	Meat & Fish		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Laboratory bread industry (loofah)	Chicken, tea and coffee		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Cheese making	General methods of conservation		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	Cake making	Food Processing		2 hours theoreti	Week Eleven

				cal 3 hours practica l	
Discussions Exams		Vegetables and fruits		2 hours theoreti cal 3 hours practica l	Twelfth week
Discussions Exams		Types of preservation		2 hours theoreti cal 3 hours practica l	Thirtee nth week
Discussions Exams				2 hours theoreti cal 3 hours practica l	Fourte enth week
		Second month exam			Week V ten

10. Course Evaluation

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

11. Learning and Teaching Resources

Principles of food industry. Written by Dr. . Abd Ali Mahdi Hassan. National Library in Baghdad 1380 for the year 1979	Required textbooks (methodology, if any)

From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:					
Principles of horticulture					
2. Course Code					
0C14206					
3. Semester / Year					
SECOND / Spring					
4. The history of preparation of this description					
2024					
5. Available Attendance Forms					
Came					
6. Number of Credit Hours (Total) / Number of Units (Total)					
2 hours theoretical and 3 hours practical Number of units 3					
7. Course administrator's name (if more than one name)					
Name: Assoc. Prof. Nasser Habib Muhaibis Email: naasshb@mu.edu.iq					
8. Course Objectives					
Teaching the student in horticulture, zoning horticultural plants		Course Objectives:			
9. Teaching and Learning Strategies					
1Explanation and clarification 2Lecture method				Strategy	
0. Course Structure					
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Rapid exam	Lecture	Learn about horticulture and its branches	Theoretical lecture	2	1
Rapid	Lecture	Environmenta	Theoretical	2	2

exam		l factors	lecture		
Rapid exam	Lecture	Influence of climate factors on the growth of horticultural vegetable crops	Theoretical lecture	2	3
Rapid exam	Lecture	Effect of soil factors on the growth of horticultural vegetable crops	Theoretical lecture	2	4
First month exam	Theoretical exam	Fruit trees	examination	2	5
Rapid exam	Lecture	The effect of climate factors on the growth of fruit trees	Theoretical lecture	2	6
Rapid exam	Lecture	The effect of soil factors on the growth of fruit trees	Theoretical lecture	2	7
Rapid exam	Lecture	Sexual reproduction (seed)	Theoretical lecture	2	8
Rapid exam	Lecture	Asexual reproduction (vegetative)	Theoretical lecture	2	9
Second month exam	Theoretical exam	Types of vegetative propagation	examination	2	10

Rapid exam	Lecture	Ornamental	Theoretical lecture	2	11
Rapid exam	Lecture	Types of ornamental plants	Theoretical lecture	2	12
Rapid exam	Lecture	Medicinal and aromatic plants	Theoretical lecture	2	13
Rapid exam	Lecture	Methods of reproduction of medicinal and aromatic plants	Theoretical lecture	2	14
Rapid exam	Lecture	Examples of medicinal and aromatic plants	Theoretical lecture	2	15

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports …. etc	
12. Learning and Teaching Resources	
ticulture and Garden Engineering dran Muhammad Amin	Required textbooks (methodology, if any
	Main references (sources)
	Recommended books and references (scientific journals, reports…)
https://fliphtml5.com/learning-center/ar/10-delicate-gardening-magazines-give-you-inspiration-for-gardening-design/	Electronic References, Websites

Course Description Form

1. Course Title:	
Principles of Agricultural Extension	
2. Course Code	
0C24201	
3. Semester / Year	
Autumn / Second	
4. The history of preparation of this description	
2024	
5. Available Attendance Forms	
Came	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours theoretical number of units 2	
7. Course Teacher Name (if more than one name is mentioned)	
Name: Assoc. Prof. Haider Hamid Balau Email: haiderblaw@mu.edu.iq	
8. Course Objectives	
• Knowledge of agricultural extension, functions of administrative organization extension, methods of extension and field clarification	Course Objectives:
9. Teaching and Learning Strategies	
Audio methods (teaching explanation of the subject) Blackboard writing style The method of direct dialogue between the teacher and the stud with the evaluation of the student in the classroom participations	Strategy

0. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week

Rapid exam	Lecture	Definition of guidance with its principles	Theoretical lecture	2	1
Rapid exam	Lecture	Objectives of agricultural extension	Theoretical lecture	2	2
Rapid exam	Lecture	Administrative Organization Jobs for Agricultural Extension	Theoretical lecture	2	3
Rapid exam	Lecture	Agricultural extension organization in Iraq	Theoretical lecture	2	4
First month exam	Theoretical exam	examination	examination	2	5
Rapid exam	Lecture	Communication as a social, educational and counseling process	Theoretical lecture	2	6
Rapid exam	Lecture	Agricultural extension methods	Theoretical lecture	2	7
Rapid exam	Lecture	General rules in the use of indicative methods	Theoretical lecture	2	8
Rapid exam	Lecture	Types of individual guidance methods	Theoretical lecture	2	9

Second month exam	Theoretical exam	examination	examination	2	10
Rapid exam	Lecture	Group Guidance Methods	Theoretical lecture	2	11
Rapid exam	Lecture	Field clarification and its types	Theoretical lecture	2	12
Rapid exam	Lecture	Advantages and disadvantages of types of field clarification	Theoretical lecture	2	13
Rapid exam	Lecture	Field Day and its benefits	Theoretical lecture	2	14
Rapid exam	Lecture	Methods of mass communication	Theoretical lecture	2	15

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc	
12. Learning and Teaching Resources	
Agricultural Extension Science Abdullah Al-Samarrai and Adnan Hussein Al-Jadri	Required textbooks (methodology, if a
Scientific journals and articles	Main references (sources)
Specialized books in the field of agricultu extension science,	Recommended books and references (scientific journals, reports...)
Scientific websites specialized in the st of Extension	Electronic References, Websites

Course Description Form

1. Course Title : Oil and Sugar Crops
Oily and sugary crops
2. Course Code
0024202
3. Semester / Year
Spring/second
4. The history of preparation of this description
2024
5. Available Attendance Forms
6. Number of Credit Hours (Total) / Number of Units (Total)
30 Theoretical 45 Practical Total 75
7. Course administrator's name (if more than one name)
Name Assoc. Prof. Haider Abdul Hussain Mohsen Emai haider_amm3@mu.edu.iq
8. Course Objectives

1. Develop teaching curricula in coordination with higher departments	Course Objectives This course description provides a b summary of the most important characteris of the course The learning outcomes expected of student to achieve are proof of whether he made the most of the available learn opportunities. It must be linked to the progr description.
- Develop teaching curricula by the department similar to the work environment	
- Providing the student with the skill in identifying plants and how to grow and serve them	
- Creating a photo album showing the plants used (evidence for cultivation) and the environmental factors that suit them	
5. Study the problems that	

hinder the cultivation and expansion of each field crop	

9. Teaching and Learning Strategies	
1- Explanation and clarification **2-Lecture method-** **3-Student groups-** **4-Practical lessons in agricultural fields-** **5-Scientific trips to learn about agricultural evidence**	Strategy

10- Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours
Discussions Exams	Through the Word and PowerPoint program in addition to other methods	The importance of oil crops and their divisions	Oily and sugary	2 hours theoretical 3 hours practical
Discussions Exams		Oils are their sources and types	Oily and sugary	2 hours theoretical 3 hours practical
Discussions Exams		Oil extraction	Oily and sugary	2 hours theoretical 3 hours practical
Discussions Exams		Problems and obstacles facing the cultivation of oil crops	Oily and sugary	2 hours theoretical 3 hours practical
Discussions Exams		Sunflower crop	Oily and sugary	2 hours theoretical 3 hours practical
Discussions Exams		Sesame crop	Oily and sugary	2 hours theoretical 3 hours practical
Discussions Exams		First month exam	Oily and sugary	2 hours theoretical

11. Course Evaluation

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

Theoretical tests 25 degrees

Practical tests 15 degrees

Reports, forms and engagement 10 marks

Final Exam 50 marks

10- Learning and Teaching Resources

Oil and sugar book	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
/ **Scientific journals in the basic specializations**	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq	Electronic References, Websites

Course Description Form

1. Course Name	
Agricultural machinery and machinery	
2. Course Code	
0024204	
3. Semester / Year	
Second	
4. The history of preparation of this description	
2024	
5. Available Attendance Forms	
came	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 Hours / 3	
7. Course administrator's name (if more than one name)	
Name: Assoc. Prof. Falih Hamed Kassar Email : flaiehkassar@mu.edu.iq	
8. Course Objectives	
We show students the importance understanding the basics of agricultu machinery, such as identifying the parts the tug, which is the main unit for ene production on the farm, as well identifying the parts of the tractor engi in addition to reviewing and knowing agricultural machines that carry out preparation of the land and the service the crop.	Course Objectives
9. Teaching and Learning Strategies	
1- Explanation and clarification **2-Lecture method-** **3-Student groups-** **4-Practical lessons in agricultural fields-**	Strategy

5-Scientific trips to learn about agricultural evidence					
0. Course Structure					
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Written exa	Came	Watching agricultural tractors and getting to know their main parts and an overview of how they work	Means of transmission, general description of agricultural tractors, types and parts	2theoretical 2 Practical	Firs
	Came	The most important methods and means used in the transmission and conversion of movement and energy in agricultural machinery and machinery	Tractor engines (general description - identification of fixed and moving parts in the engine)	2theoretical 2 Practical	Second
Written exam	Came	Watching clips of the engines and how they work with the presentation of	Installation of a four-stroke internal	2theoretical 2 Practical	Third

		(3D) videos to familiarize the student with the engine in detail	combustion engine		
Written exam	Came	Practical viewing of the fuel system in the engine (gasoline – diesel)	Fuel system in the engine (gasoline – diesel)	2theoretical 2 Practical	Fourth
Written exam	Came	Practical viewing of the cooling system in the engine with the display of video clips (3D)	Engine cooling system	2theoretical 2 Practical	V
Written exam	Came	Practical viewing of the lubrication system in the engine with video clips (3D)	Engine lubrication system	2theoretical 2 Practical	Sixth
Written exam	Came	Practical viewing of the transmission devices in the tractor (separator – speed box)	Transmission devices in the agricultural tractor (separator – speed box)	2theoretical 2 Practical	Seventh
Written exam	Came	Practical viewing of the	Transmission	2theoretical 2 Practical	Eigh

		transmission devices in the agricultural tug (differential device – final transmission device)	devices in the agricultural tug (differential device – final transmission device)		th
Written exam	Came	Practical observation of soil preparation equipment (primary) through a field tour and identification of the types of equipment	Soil preparation equipment (primary)	2theoretical 2 Practical	Ninth
Written exam	Came	Practical viewing of soil preparation equipment (secondary) through a field tour and identification of the types of equipment	Soil preparation equipment (secondary)	2theoretical 2 Practical	X
Written exam	Came	Practical viewing of sowing and farming equipment	Sowing and farming equipment	2theoretical 2 Practical	Eleve nth
Written exam	Came	Practical viewing of fertilization equipment of all kinds	Fertilization equipment of all kinds	2theoretical 2 Practical	Twelf th

Written exam	Came	Practical viewing of irrigation equipment	irrigation equipment	2theoretical 2 Practical	Thirteenth
Written exam	Came	Practical view of agricultural pest control equipment	Agricultural Pest Control Equipment	2theoretical 2 Practical	Fourteenth
Written exam	Came	Practical viewing of harvesting and harvesting equipment and identifying its parts	Reaping and harvesting equipment	2theoretical 2 Practical	Fifteenth

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc Theoretical tests 25 degrees Practical tests 15 degrees Reports, forms and engagement 10 marks Final Exam 50 marks	
Learning and Teaching Resources	
Oil and sugar book	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
/ **Scientific journals in the basic specializations**	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq	Electronic References, Websites

Course Description Form

Course Title:
Principles of Statistics
Course Code
0C24203
Semester / Year
SECOND / Spring
The history of preparation of this description
2024
Available Attendance Forms
Came
Number of Credit Hours (Total) / Number of Units (Total)
2 hours theoretical and 3 hours practical Number of units 3
Course administrator's name (if more than one name)
Name: Assoc. Prof. Haider Hamid Balau Email: haiderblaw@mu.edu.iq
Course Objectives

Teaching the student in statistics and how to extract measures of concentration and dispersion	Course Objectives:

Teaching and Learning Strategies	
1Explanation and clarification 2Lecture method	Strategy

Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Rapid exam	Lecture	Statistics and its development	Theoretical lecture	2	1
Rapid exam	Lecture	Nature of statistical data and	Theoretical lecture	2	2

		symbols			
Rapid exam	Lecture	Tabular view and graph	Theoretical lecture	2	3
Rapid exam	Lecture	Metrics of concentration from uncategorized data	Theoretical lecture	2	4
First month exam	Theoretical exam	examination	examination	2	5
Rapid exam	Lecture	Metrics of concentration from tabbed data	Theoretical lecture	2	6
Rapid exam	Lecture	Measures of dispersion and variation	Theoretical lecture	2	7
Rapid exam	Lecture	Probability theory	Theoretical lecture	2	8
Rapid exam	Lecture	Know the laws of probability	Theoretical lecture	2	9
Second month exam	Theoretical exam	examination	examination	2	10
Rapid exam	Lecture	Continuous probability distributions for normal distribution	Theoretical lecture	2	11
Rapid exam	Lecture	Hypothesis testing – part one	Theoretical lecture	2	12
Rapid exam	Lecture	Hypothesis testing – part two	Theoretical lecture	2	13
Rapid exam	Lecture	Simple and multiple link	Theoretical lecture	2	14
Rapid exam	Lecture	The concept of regression and the measurement of the regression coefficient	Theoretical lecture	2	15

. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports …. etc	
. Learning and Teaching Resources	
uction to Statistics a Mahmoud Alrawi	Required textbooks (methodology, if any)
	Main references (sources)
	Recommended books and references (scientific journals, reports…)
https://books-library.net/c-Statistics-best-download	Electronic References, Websites

Course Description Form

Course Name	
Irrigation and Drainage	
Course Code	
0C24205	
Semester / Year	
Spring Semester / Second	
The history of preparation of this description	
2024	
Available Attendance Forms	
Came	
Number of Credit Hours (Total) / Number of Units (Total)	
2 Theoretical 2 Practical Modules 3	
Course administrator's name (if more than one name)	
Name: Dr. Ola Hussein Ali Email: Aula.alobeidi@mu.edu.iq	
Course Objectives	
Research in the science of irrigation, its sources, methods control, exploitation and delivery to agricultural fields Study the evaluation of the quality of irrigation water and suitability for irrigation. Know how to plan, design and implement irrigation facilities Investigates the relationship of water to soil and movement of water in the soil and the tip of water Calculation of plant water consumption, water requireme irrigation scheduling in addition to irrigation wa measurements It examinesDrainage, excess water sources, the relations ofDrainage to plant growth and productivity, soil salinity, balance and washing requirements.	Course Objectives
Teaching and Learning Strategies	
1- Explanation and clarification 2- Lecture method	Strategy

3- Student Groups 4- Practical lessons in agricultural fields 5- Scientific trips For specialized departments and research stations 6- Self-learning method	

Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	The concept of irrigation, irrigation water sources, physical soil properties associated with irrigation	4	The first
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Irrigation Water Quality	4	Second
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	The relationship of water to the soil Soil moisture, the movement of water in the soil	4	Third
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Irrigation water measurements	4	Fourth
Exam	Explanation and presentation of the model	Irrigation andDrainage	Plant Water Consumption, Water Needs and Watering	4	V

	and lecture		Scheduling		
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Transmission and distribution of irrigation water, movement of water in pipes and open channels	4	Sixth
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Adequacy and efficiency of irrigation and consistency of irrigation	4	Seventh
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Traditional irrigation methods	4	Eighth
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Modern irrigation methods	4	Ninth
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	The concept ofDrainage, sources of excess water	4	X
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	The relationship ofDrainage to plant growth and productivity	4	Eleventh
Exam	Explanation and	Irrigation andDrainage	Puncture and soil salinity, washing	4	Twelfth

	presentation of the model and lecture		and salt balance requirements		
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Types of trocars : open trocars , covered trocars	4	Thirteenth
Exam	Explanation and presentation of the model and lecture	Irrigation andDrainage	Distribution patterns of trocar network The distance between trocars and the maintenance of trocars	4	Fourteenth
				4	Fifteenth

. Course Evaluation

1- Theory tests 25

2- Practical tests 15

3- Reports & Studies 10

4- Final Exam 50

. Learning and Teaching Resources

1- Irrigation Basics and Applications Written by Dr. Nabil Ibrahim Al-Taif and Dr. Essam Khudair Hamza Al-Hadithi 1988 Ministry of Higher Education and Scientific Research - University of Baghdad. 2- Irrigation andDrainage by Dr. Laith Khalil Ismail 2000 Ministry of Higher Education and Scientific Research - University of Mosul 3-Drainage (investigations, designs, implementation and maintenance). Dr. Mohsen Muhareb Awad Al-Lami and Dr. Alaa Saleh Abdul-Jabbar Al-Janabi. Iraq. Ministry of Higher Education and Scientific Research. University of Mosul.	Required textbooks (methodolc if any)

1-1- Irrigation basics and applications written by Dr. Nabil Ibrahim Al-Taif and Dr. Essam Khudair Hamza Al-Hadithi 1988Ministry of Higher Education and Scientific Research - University of Baghdad 2- Modern irrigation technologies and other topics in the water issue Written by Dr. Essam Khudair Al-Hadithi, Dr. Ahmed Madloul Al-Kubaisi and Dr. Yas Khudair Hamza Al-Hadithi 2010 Ministry of Higher Education and Scientific Research - Anbar University 3- Irrigation andDrainage by Dr. Laith Khalil Ismail 2000 Ministry of Higher Education and Scientific Research - University of Mosul	Main references (sources)
Iraqi academic scientific journals	Recommended books and references (scientific journals, reports…)
Soil Science Society Of America Library Genesis	Electronic References, Websites

Course Description Form

Course Title:
Plant classification
Course Code
0C24206
Semester / Year
The second
Date of preparation of this description:
2023-2024
Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
Course Administrator Name:
Name: A. d. Qasim Ajel Shanawa Email: qasim.ajel@mu.edu.iq
Course Objectives

1- Plant taxonomy is one of the important sciences that introduce students to the types of field and economic crops and their description	Course Objectives This course description provides brief summary of the most import characteristics of the course
2. Knowledge of plant characteristics adopted as taxonomic indicators in plant diagnosis	The learning outcomes expected the student to achieve are proof whether he has made the most the available learning opportunities must be linked to the progr description.
3- Knowledge of scientific names and taxonomic ranks of the most important plant families, which include many types of field crops	

Teaching and Learning Strategies	
1- **Explanation and clarification** 2- **Lecture method** 3- **Student groups** 4- **Practical lessons in laboratories**	Strategy

Course Structure	

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Study of the vegetative characteristics of the plant: roots – sphenoid root system – identification of forms of wedge roots – adventitious root system – identification of forms of adventitious roots (through the presentation of models of the roots of different plants in addition to the means of illustration)	History of plant taxonomy – Introduction to taxonomy – Reliable traits as a basis for plant classification – Steps of the classification process – The relationship of plant taxonomy with other sciences		2 hours theoretical 3 hours practical	First week
Discussions Exams	Study of stems – types of stems according to the direction of growth – aerial	Classification systems – artificial classification system – natural classification		2 hours theoretical 3 hours practical	Second week

	stems (and identify different forms of them) – ground stems (identification of different shapes) and conduct field observation to identify the types of stems.	system – evolutionary classification system – scientific nomenclature – controls and laws of scientific names – classification ranks			
Discussions Exams	Identify the types of flowers by conducting field observation of the different flowers found in the wooden canopy and the greenhouse, collecting models and bringing them to the laboratory for diagnosis.	Proliferative characteristics – Flower – Flower parts – Arrangement of floral organs on the flower takht – Flower symmetry – Number of flower rings and number of parts of one ring – Union and separation of flower organs – Floral quadrature – Spur flowers		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Identify different forms of goblet leaves – identify different forms of petal leaves – by	Pink cup – Pink cup shapes – Functions of the cup – Pink corolla – Pink corolla shapes –		2 hours theoretical 3 hours practical	Fourth week

	collecting the largest possible number of different flowers as well as identify the floral symmetry practically	Classification of corolla according to floral symmetry – Separate leaf corolla (radial symmetry and symmetry sides) – Cocoilette (radial symmetry and symmetry sides)			
Discussions Exams	Papers: Study of the parts of the leaf – arrangement of the leaves on the stem – types of leaves – shapes of the leaf blade – shapes of the top of the blade – shapes of the base of the blade – shapes of the edge of the blade – and identify the types of leaves and their shapes through field observation and bring models to	Male syphilis – stamens – matk – threads – stamens lengths – fertile stamens and sterile stamens – union and separation of stamens – union of stamens with other floral organs – contact of the anther with the thread – opening of the anther – forms of pollen – pollen shape – the outer surface of the pollen		2 hours theoretical 3 hours practical	Fifth week

	the laboratory.				
Discussions Exams	Leaf sweating: reticular sweating – parallel sweating – surface covering of the leaf – atria – forms of atria – leaf mutations – forms of mutation – leaf survival – and identification by bringing samples of plants during field observation to the laboratory and studying their fine details	Syphilitic female system – Division of the feminine device according to the number and nature of the crabble – pistil – stigma – shapes of the stigma – pen – pen shapes – the relationship of the pen with the ovary – ovary – Al–Tamisham – forms of Al–Tamisham – Determining the number of compound pistil crabble – ovarian location – eggs – their composition – Classification of eggs according to the method of connection of the umbilical cord to the body of the egg		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	First month exam	First month exam		2 hours theoretical	Week seven

				3 hours practical	
Discussions Exams	Conducting a scientific trip to the agricultural research stations in the college and to the agricultural areas outside the governorate to identify wild and cultivated plants	Floral systems – classification of flower systems – limited inflorescences – unlimited inflorescences – mixed inflorescences – special inflorescences – flower equation		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Fruits: Study of the composition of the fruit – classification of fruits – types of simple fruits (soft fruits and their types – dry fruits and their types) – fruits gathered – multiplied fruits – and identify them by presenting models of different types of fruits	Gymnosperms: order of cycades – order Ginkgo – order of conicals (coniferous family – family – family of cypress) – order of Aladidae (family of Alid)		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Seeds: Study of the structure and parts of the	Angiosperms (flowering plants): I–		2 hours theoretical 3 hours	Week Ten

	seed – the signs and surface topography of the seeds – the shapes of the surface of the seed – the external shape of the seed – and identify them by watching them by light microscopy	Monocotyledonous class– Order of Bandanidae (Papyrus family)– Order of Hallubias (Shepherd's flute family)– Order of Grasses (Grass family – Saadian family)– Order of Nakhliyat (palm family)		practical	
Discussions Exams	Herbarium Herbarium : Definition of Herbarium – Tabulation system in Herbarium (arrangement of plant specimens within the herbarium) – General group (according to four different taxonomic systems) – Special groups (style group – summary group – Special	Order Lilies (Lily family – narcissistic family – Susanid family) – Orchid order (Orchid family) – Dicotyledonous class – Sawariat order (Casuaria family) – Willow order (willow family) – Order Fires (Tuitida family)		2 hours theoretical 3 hours practical	Week Eleven

	research group – historical collection) – Herbarium functions				
Discussions Exams	Identify the tools used in the collection and preparation of plant samples for preservation in the herbarium (notebook – magnifying glass – cans or trays – camera – drilling tools – sharp knife – containers for keeping samples – small field press) – addressing the important points to be taken into account when collecting plant models of the herbarium	Order of seed centers (Ramramian family) – Order of fraternities (sister family) – Order of poppies (poppy family – cruciferous family) – Order of rosaceae (pink family – legume family) – Order of neighbors Diaries (flaxen family – Stephaniaceae family – Suspian family)		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams	Conducting a scientific trip to agricultural and wild areas for	Order of Burgundies (Sidra family – Blueberry family)		2 hours theoretical 3 hours practical	Thirteenth week

	the purpose of collecting plant models by students and pressing them and applying scientific standards in preparing the plant sample and handing it over to the subject professor	– Order of marshmallows (Marshmallow family) – Order of Asiats (Henna family – Roman family – Asian family) – Order of Khaymiyat (Khaymia family)			
Discussions Exams	Second month exam	Second month exam		2 hours theoretical 3 hours practical	Fourteenth week
	Receiving plant samples prepared by students for the purpose of evaluating them and giving them the appropriate grade	Order of Curbits (olive family) – Order of tubes (oral family – Solanaceae family) – Cucurbitaceae (cucurbitaceae family) – Order of Naqsidae (compound family)			Week V ten
. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc					

. Learning and Teaching Resources	
Classification of seed plants	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

Course Name	
Field crop insects	
Course Code	
0014303	
Semester / Year	
Autumn/third	
The history of preparation of this description	
2024	
Available Attendance Forms	
In classrooms and agricultural fields	
Number of Credit Hours (Total) / Number of Units (Total)	
2+2	
Course administrator's name (if more than one name)	
Name: Dr. Lafta Awad Atshan Email: lafta.awad@mu.edu.iq	
Course Objectives	
Provide a new job opportunity for graduates To work in pest control companies or operate offices Domestic or insect control Infects agricultural crops	Course Objectives
Teaching and Learning Strategies	
1- **Explanation and clarification** 2- **Lecture method** 3- **Student groups** 4- **Practical lessons in laboratories**	Strategy

Course Structure					
Evaluation method	Learning	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	lecture	Historical view of insects Insects of cereal crops Corn bugs Aphids Sesame insects Sunflower insects Legumes Diabetic beet insects Cotton insects Earth bug Mites. locusts Insect pest control The benefits and harms insects Methods of using pesticides	Theoretical and practical	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc					
. Learning and Teaching Resources					
Field crop insects			Required textbo (methodology, if any)		
Crop insects – the theoretical and practical part Prepared by Dr. Hussein Ali Mutni Al-Anbaki College of Agriculture, Diyala University			Main references (sources)		
			Recommended books and references (scientific journals, reports...)		
YouTube sites			Electronic References, Websit		

Course Description Form

Course Name
Fodder crops
Course code theoretical
0014306
Semester / Year
Autumn / Third
The history of preparation of this description
2/2/2024
Available Attendance Forms in Presence + Electronic
Number of Credit Hours (Total) / Number of Units (Total)
75 hours
Course administrator's name (if more than one name)
Name: Mahmoud Thamer Abdel Emil : Mohmoodth999@mu.edu.iq
Course Objectives

Learn about crop science field Know principles of this botany The importance of this science and identification of the most important pl families... Study of the output of fodder crops	Course Objectives

Teaching and Learning Strategies	
1 – PowerPoint presentation via the data show screen 2– Electronic presentation through communication platforms 3 – The method of direct delivery and detailed explanation	Strategy

Course Structure

Evaluation	Learning	Unit or subject name	Required	Hours	The

method	method		Learning Outcomes		week
Oral exams	Lecture and discussion	The importance of livest and the importance of fod crops in meeting that need	Memorization, understanding, practical application	2	1
Rapid exam	Lecture and electronic discussion	Factors affecting feed production and quality	Memorization, understanding, practical application	2	2
Oral exams	Lecture and electronic discussion	Production of leguminous fodder crops (jet) importance. Production… Circumstances	Memorization, understanding, practical application	2	3
Rapid exam	Lecture and electronic discussion	Clover (same vocabulary as Jet)	Memorization, understanding, practical application	2	4
Oral exams	Lecture and electronic discussion	(Hertman, Kart, Kakuz) the same vocabulary	Memorize, understand,	2	5
Rapid exam	Lecture and electronic discussion	Production of grass crops (yellow corn) and the importance of fodder production includes the foundations of production	Memorization, understanding, practical application	2	6
Written exam	Electronic written exam	White corn and Sudanese hashish (same vocabulary)	Memorization, understanding, practical application	2	7
Rapid exam	Lecture and electronic discussion	Barley, oats, millet) importance/production/feed uses	Memorization, understanding, practical application	2	8

Oral exams	Lecture and electronic discussion	Concentrated feed materials are important in nutrition	Memorization, understanding, practical application	2	9
Rapid exam	Lecture and electronic discussion	Feed mixtures (definition – importance – types	Memorization, understanding, practical application	2	10
Oral exams	Lecture and electronic discussion	The dress is a tariff and its importance	Memorization, understanding, practical application	2	11
Rapid exam	Lecture and discussion	The torrent is a tariff and its importance	Memorization, understanding, practical application	2	12
Oral exams	Lecture and electronic discussion	Pastures are important and their types	Memorization, understanding, practical application	2	13
Rapid exam	Lecture and electronic discussion	Foundations of Quantitative Evaluation of Pasture Plants	Memorization, understanding, practical application	2	14
Written exam	Written exam	Causes of natural pasture degradation	Memorization, understanding, practical application	2	15

. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc	
. Learning and Teaching Resources	
. Fodder crops/Hamid Kharbit	Required textbooks (methodology, if any
1. Production of fodder crops / Ahmed A Najah	Main references (sources)

- Iraqi Journal of Agriculture - Journals and research concerned with this	Recommended books and references (scientific journals, reports…)
All Agricultural Journals and Plant Pathol Journals	Electronic References, Websites

Course Description Form

Course Title:
Fiber crops
Course Code
0014307
Semester / Year
Autumn / Third
Date of preparation of this description:
2023-2024
Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
Course Administrator Name:
Name: A.M.D.Haidar Razak Luaibi Email: haiderrezaq2017@mu.edu.iq
Course Objectives

Preparing researchers in the field of fi technology, Preparing specialists to work in tex companies, Preparing graduates for postgradu studies in the field of fiber production a technology.	Course Objectives This course description provides a brief summary the most important characteristics of the course The learning outcomes expected of the student achieve are proof of whether he has made the m of the available learning opportunities. It must linked to the program description.

Teaching and Learning Strategies

Teaching and learning methods	Strategy
1- Explanation and clarification **2- Lecture method** **3- Student groups** **4- Practical lessons in laboratories**	

Course Structure					
Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Botanical description of cotton	Division of fiber crops		2 hours theoretical 3 hours practical	First week
Discussions Exams	Types of fertilizers used and types of bushes spread in cotton fields and ways to combat them	Obstacles to the production and cultivation of fiber crops and ways to overcome them		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Favorable environmental conditions for cotton growth	Chemical composition of cotton fibers		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Service operations for cotton crop	Natural properties of cotton, length		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Growth regulators and reaping operations	Durability, Durability Estimation Methods		2 hours theoretical 3 hours practical	Fifth week
Discussions		First		2 hours	Week

Exams		month exam		theoretical 3 hours practical	Six
Discussions Exams	Dryers and ginning processes for cotton	Elongation, softness and maturity		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Botanical description of the linen family	Rank, twirl and influencing factors		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Service operations for flax crop	Knots and appearance, color, gloss		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Stages of preparation and processing of flax fibers	Methods for calculating the moisture content of cotton bristles		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	Cannabis, bowler and Manchurian jute	Post-weaving preparatory processes		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	Dryers and ginning processes for cotton	Elongation, softness and		2 hours theoretical	Twelfth week

		maturity		3 hours practical	
Discussions Exams	Botanical description of the linen family	Rank, twirl and influencing factors		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams				2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

. Course Evaluation

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

. Learning and Teaching Resources

Fiber crops . Written by Dr. Iyad Talaat Shaker. Ministry of Higher Education and Scientific Research	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Name
General inheritance
2. Course Code
001430
3. Semester / Year
Autumn / Third
4. The history of preparation of this description
26/02/2024
5. Available Attendance Forms
Came
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours (30 theoretical + 45 practical) / 3 units
Course administrator's name (if more than one name)
Name: Assoc. Prof. Muhammad Hussein Noor Hassan Alsalami Email mohammad.noor@mu.edu.iq
Course Objectives

• Training students on the application of the basic laws of Mendelian inheritance, and testing the conformity of results with Mendel's laws using genetic hypotheses using the chi-square test • Identify some genetic concepts such as genetic interaction, genetic transit, association, and others • Teaching students the concepts of cytoplasmic genetics and illiterate effects • Teaching students the basic principles of clan inheritance	Course Objectives

Teaching students the concepts of genetics and the applications of quantitative genetics	

Teaching and Learning Strategies	
A- Cognitive objectives * The student is introduced to the concept of genetics * The student is introduced to Mendel's laws and mutations in Mende lineage * The student can solve exercises in the field of genetics using Mend laws, and make sure that the results match Mendel's laws using the c square test. * The student should be trained to apply the most important gen concepts in the laboratory * The student should know the most important applications of genetics the field of plant breeding and improvement B - Skills objectives of the course. * Train the student to solve exercises using Mendel's laws * Enabling students to use the different techniques used in the field dependence on genetic material and genetic variation between plants * Training students on the use of genetic concepts in plant breeding a improvement	Strategy

Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Oral exams	Lecture and discussion	Plant heredity	Genetics and its development and the relationship of genetics with other sciences	5	1
Rapid exam	Lecture and discussion	Plant heredity	Introducing the student to	5	2

			Mendelt's first law, Mendel's second law, definition of genetic terms		
Oral exams	Lecture and discussion	Plant heredity	The student should know the types of genetic action	5	3
Rapid exam	Lecture and discussion	Plant heredity	Genetic hypothesis and good conformity test (chi-square) with Mendelian lineage	5	4
Oral exams	Lecture and discussion	Plant heredity	To learn about sex determination systems in living organisms, sex-related heredity	5	5
Rapid exam	Lecture and discussion	Plant heredity	Gender-specific heredity, gender-influenced heredity	5	6
Written exam	Written exam	Plant heredity	The student learns what is genetic transit, multiple genetic linkage,	5	7

			chromosomal mapping.		
Rapid exam	Lecture and discussion	Plant heredity	Inheritance of multiple alleles	5	8
Oral exams	Lecture and discussion	Plant heredity	Nonnuclear genetics and the factors affecting it	5	9
Rapid exam	Lecture and discussion	Plant heredity	recognize the cell cycle and the process of division,	5	10
Oral exams	Lecture and discussion	Plant heredity	To familiarize the student with the synthesis of DNA , protein and genetic code	5	11
Rapid exam	Lecture and discussion	Plant heredity	Identify the devices used in genetics laboratories	5	12
Oral exams	Lecture and discussion	Plant heredity	Application of genetic foundations in plant breeding and improvement	5	13
Rapid exam	Lecture and discussion	Plant heredity	The student recognizes the relationship of genes to each other	5	14
Written	Written	Plant heredity	Teaching the	5	15

exam	exam		student what mutations are, what their effect and what are their benefits		

. Course Evaluation
Theoretical tests : (daily exams – monthly exams – oral exams) Practical tests : (daily exams – monthly exams – oral exams) Theoretical and practical reports Sample screening and practical experiments

. Learning and Teaching Resources	
Adnan Hassan Mohammed (19 Fundamentals of genetics. Dar Al-Kutub Printing and Publishing. Connector	Required textbooks
Shawqi, Ahmed Shawqi, Fathi Muhamn Abd al-Tawab and Ali Zain al-Ab counting peace. 1993 . Principles Genetics Translated Book. Arab House Publishing and Distribution. Cairo	Main references (sources)
– All Agricultural Journals and Plant Gene Websites	Recommended books and references (scientific journals, reports…)
Websites interested in genetic sciences	Electronic References, Websites

Course Description Form

Course Title:	
Design and analysis of agricultural experiments	
Course Code	
0014302	
Semester / Year	
Third / autumn	
The history of preparation of this description	
2024	
Available Attendance Forms	
Came	
Number of Credit Hours (Total) / Number of Units (Total)	
2 hours theoretical and 3 hours practical Number of units 3	
Course administrator's name (if more than one name)	
Name: A.M. Dr.Ragheb Hadi Ajami Email: rageb.hadi@mu.edu.iq	
Course Objectives	
* Introducing the student that there are areas that depend on conducting experiments and these experiments must be designed on scientific bases * When analyzing experiments, it is according to scientific methods and logical steps * When obtaining accurate results of the experiment leads us to make the appropriate decision * Introducing the student to many types of designs, as each experience has a specific design * Introduce the student to how to test the morale of each mathematical model * Introducing the student that there are tests conducted before the experiment and tests	Course Objectives:

proposed after the experiment * Introducing the student that there are val that can be lost during the experiment and can estimated	

Teaching and Learning Strategies	
Audio methods (teaching explanation of the subject) Blackboard writing style The method of direct dialogue between the teacher and the student with evaluation of the student in the classroom participations	Strategy

Course Structure					
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Rapid exam	Lecture	A brief history of statistics, definition of statistics, division of statistics	Theoretical lecture	2	1
Rapid exam	Lecture	Measures of central tendency, measures of concentration	Theoretical lecture	2	2
Rapid exam	Lecture	Dispersion meters	Theoretical lecture	2	3
Rapid exam	Lecture	Hypothesis testing, statistical errors, hypothesis testing-t	Theoretical lecture	2	4
First month exam	Theoretical exam	examination	examination	2	5
Rapid exam	Lecture	Chi-Square Test	Theoretical lecture	2	6
Rapid exam	Lecture	general concepts and definitions in the design and	Theoretical lecture	2	7

		analysis of experiments,			
Rapid exam	Lecture	Types of agricultural experiments, complete random design	Theoretical lecture	2	8
Rapid exam	Lecture	LSD Test	Theoretical lecture	2	9
Second month exam	Theoretical exam	examination	examination	2	10
Rapid exam	Lecture	Design of complete random sectors	Theoretical lecture	2	11
Rapid exam	Lecture	Duncan Test	Theoretical lecture	2	12
Rapid exam	Lecture	Latin Square Design	Theoretical lecture	2	13
Rapid exam	Lecture	Factor experiments	Theoretical lecture	2	14
Rapid exam	Lecture	Factor experiments with two factors	Theoretical lecture	2	15

. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc	
. Learning and Teaching Resources	
1- Design and analysis of experiments - Kha Al-Rawi and Khalaf Allah 2000	Required textbooks (methodology any)
	Main references (sources)
- Foreign books specialized in the design agricultural experiments .	Recommended books and references (scientific journals, reports...)
Arabic articles issued by academic and professio bodies	Electronic References, Websites

Course Description Form

. Course Name
Land reclamation
. Course Code
0014304
. Semester / Year
Autumn / Third Semester
. The history of preparation of this description
2024
. Available Attendance Forms
Physical presence
. Number of Credit Hours (Total) / Number of Units (Total)
2 Theoretical 2 Practical Modules 3
. Course administrator's name (if more than one name)
Name: Prof. Dr. Ghanem Bahloul Noni Email: ghanem-bahlol@mu.edu.iq
. Course Objectives

To introduce the student to ecology The student should classify climate factors and th relationship to soil The student should detail the benefits and harms of clim factors such as temperature, wind and frost The student should know the pollution and its causes The student should evaluate desertification and glo warming	Course Objectives

. Teaching and Learning Strategies	
1- Explanation and clarification 2- Lecture method 3- Student Groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method	Strategy

Course Structure					
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Exam	Explanation and presentation of the model and lecture	Land Reclamation	To introduce the student to the concept of saline soils	5	The first
Exam	Explanation and presentation of the model and lecture	Land Reclamation	To identify the sources of salts	5	Second
Exam	Explanation and presentation of the model and lecture	Land Reclamation	The student should know the means of transporting salts	5	Third
Exam	Explanation and presentation of the model and lecture	Land Reclamation	The student should know the stages of soil salinization	5	Fourth
Exam	Explanation and presentation of the model and lecture	Land Reclamation	The student should know the conditions of soil salinization	5	V
Exam	Explanation and presentation of the model and lecture	Land Reclamation	To familiarize the student with the departments of saline and soda soils	5	Sixth
Exam	Explanation	Land	The student	5	Seventh

	and presentation of the model and lecture	Reclamation	should recognize the manifestations of the effect of salinity on plant growth		
Exam	Explanation and presentation of the model and lecture	Land Reclamation	The student should know the indicators for determining the effect of salinity	5	Eighth
Exam	Explanation and presentation of the model and lecture	Land Reclamation	The student should learn about the means of raising the plant's ability to tolerate salinity	5	Ninth
Exam	Explanation and presentation of the model and lecture	Land Reclamation	The student should identify the factors determining the quality of irrigation water and the indicators used to determine the quality of irrigation water	5	X
Exam	Explanation and presentation of the model and lecture	Land Reclamation	The student should be introduced to irrigation water classification systems	5	Eleventh
Exam	Explanation	Land	The student	5	Twelfth

	and presentation of the model and lecture	Reclamation	should know how to live with salinity		
Exam	Explanation and presentation of the model and lecture	Land Reclamation	To identify the problems of limestone soils	5	Thirteenth
				5	Fourteenth
				5	Fifteenth

. Course Evaluation

1- Theory tests 25

2- Practical tests 15

3- Reports & Studies 10

4- Final Exam 50

. Learning and Teaching Resources

Land Reclamation Dr. Hadi Hassan Lectures	Required textbooks (methodolc if any)
	Main references (sources)
Iraqi academic scientific journals	Recommended books and references (scientific journals, reports…)
Soil reclamation	Electronic References, Website

Course Description Form

Course Title:
Leguminous crops
Course Code
0014305
Semester / Year
Autumn / Third
Date of preparation of this description:
2023-2024
Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
Course Administrator Name:
Name: Prof. Dr.Ali Rahim Karim Email: ali_raheem2002@mu.edu.iq
Course Objectives

- Enable the student to identify the types of leguminous crops in general - Enable the student to know the economic importance and dates of planting and agricultural operations of leguminous crops - Enable the student to know the chemical properties and harvest dates of legumes - Enable the student to know the botanical description of leguminous crops and distinguish between them	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be lin to the program description.

Teaching and Learning Strategies		
	Strategy	

1- Explanation and clarification-2Lecture method-3-Student groups-4Practical lessons in laboratories	

Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Nitrogen Fixation Genes Engineering	Seed leguminous crops – the importance of legumes in nutrition.		2 hours theoretical 3 hours practical	First week
Discussions Exams	Bacterial vaccine	Nitrogen stabilization symbiotically – node formation – cross-pollination groups –.		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Bacterial inoculation and factors affecting it	Intervened farming. Types – importance		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Causes of flower fall in leguminous crops and their treatment	Beans – origin – geographical distribution – economic importance – uses of beans.		2 hours theoretical 3 hours practical	Fourth week

Discussions Exams	Botanical description of soybeans and field pistachios	Nutritional value of beans – chemical composition of seeds – varieties – genetic sources.		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams		First month exam		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	Botanical description of beans	Bean breeding programs – ripening – harvesting – yield ingredients.		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Botanical description of chickpeas	Chickpeas – Economic importance and use – Chemical composition of chickpea seeds.		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Vegetative density of leguminous crops	Varieties – harvesting – nitrogen fixation for chickpeas.		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Botanical description of lentils	Lentils – economic importance – nutritional value – maturity – harvest.		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	Botanical description of mash	Mash – economic importance – nutritional value –		2 hours theoretical	Week Eleven

		maturity – harvest.		3 hours practical	
Discussions Exams	Botanical description of beans	Physiology – economic importance – nutritional value – maturity – harvest.		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams	Botanical description of cowpea	Cowpea – economic importance – nutritional value – maturity – harvest.		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams				2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

. Course Evaluation

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

. Learning and Teaching Resources

Book of pulses crops	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)

Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

Course Title:
Cereal crops
Course Code
0024303
Semester / Year
Spring/ Third
Date of preparation of this description:
2023-2024
Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
Course Administrator Name:
Name: A.M. Dr.Ragheb Hadi Ajami Email: rageb.hadi@mu.edu.iq
Course Objectives

- Enable the student to identify grain crops and their economic importance. - Enable the student to know the environmental factors and appropriate soil factors to manage the field planted with grain crops perfectly - Enable the student to identify and pay attention to soil and crop service operations - Enable the student good field management methods to increase the yield in quantity and quality	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be lin to the program description.

Teaching and Learning Strategies	
Teaching and learning methods	Strategy

1- Explanation and clarification-2Lecture method-3-Student groups-4Practical lessons in laboratories	

Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Tillage Soil Service Operations	First week The Economic Importance of Cereal Crops in Iraq and the World		2 hours theoretical 3 hours practical	First week
Discussions Exams	Soil Service Processes Smoothing and leveling	Second week Centers of the emergence of cereal crops in the world		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Cultivation methods types and importance	The third week Cereal crop productivity in Iraq and the reasons for its decline		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Irrigation and	Fourth week wheat crop, economic		2 hours theoretica	Fourth week

	modern irrigation methods	importance in Iraq and the world		l 3 hours practical	
Discussions Exams	Salinity and its direct and indirect effects	Fifth week wheat crop, soil and crop service operations		2 hours theoretica l 3 hours practical	Fifth week
Discussions Exams	Organic agriculture , its importanc e and benefits	Sixth week barley crop, economic importance in Iraq and the world		2 hours theoretica l 3 hours practical	Week Six
Discussions Exams	Biofertilize rs and their types	Maize crop, economic importance in Iraq and the world		2 hours theoretica l 3 hours practical	Week seven
Discussions Exams	Drought and its impact on field crops	Maize crop, soil and yield service processes		2 hours theoretica l 3 hours practical	Week eight
Discussions Exams	Jungle and ways to combat it	Rice crop, economic importance in Iraq and the world		2 hours theoretica l 3 hours practical	Week Nine
Discussions Exams		Rice yield, soil and yield service operations		2 hours theoretica l 3 hours practical	Week Ten

Discussions Exams		White corn and millet, economic importance in Iraq and the world		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	Types of feed and methods of preservation	Maize crop, economic importance in Iraq and the world		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams		Sorghum and millet, soil and crop service operations		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams	Preparing programs for field crops	Oatmeal and rye crop – economic importance in Iraq and the world		2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

. Course Evaluation

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

. Learning and Teaching Resources

Principles of field crops Abdul Majeed Al-Ansari	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific	Main references (sources)

research	
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

Course Title:	
Seed technology	
Course Code	
0024305	
Semester / Year	
Spring/ Third	
Date of preparation of this description:	
2023-2024	
Number of Credit Hours (Total) / Number of Units (Total)	
Number of credit hours (total) 75 hours	
Course Administrator Name:	
Name: M.D.Ali Halil Naima Email: ali.algayashe@mu.edu.iq	
Course Objectives	
Introducing the student to the importance seeds and means of improving physical a genetic characteristics related to the producti processing, approval, inspection, packaging a storage of seeds, and to identify the internatio instructions for the examination and circulation seeds.	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be linl to the program description.

Teaching and Learning Strategies	
Teaching and learning methods	Strategy
1- Explanation and clarification **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	

Course Structure					
Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Identify the devices and equipment for sampling and seed tests	Introduction to Seed Technology – A Brief History of Seed Inspection in Iraq and the World and ISTA Activity		2 hours theoretical 3 hours practical	First week
Discussions Exams	Seed diagnosis by physical and chemical methods	Physical and chemical properties of seeds		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Seed samples –	Flowering – pollination –		2 hours theoretica	Third week

	materials and methods of germination	fertilization		l 3 hours practical	
Discussions Exams	Conducting an experiment to understand the physiology of germination	Seed physiology		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Calendar of germinating seedlings	Seed activation		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams		First month exam		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	Testing the moisture content and health status of seeds	Seeds		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Visit to the General Authority	Production of certified seeds		2 hours theoretical	Week eight

	for Seed Inspection and Certificatio n			3 hours practical	
Discussions Exams	Seed certification system in Iraq and how to issue certificates of rejection or acceptance	Field Inspection – Isolation Distances		2 hours theoretica l 3 hours practical	Week Nine
Discussions Exams	Numerical inspection of seeds , purity and hygiene test	Seed drying and preparation		2 hours theoretica l 3 hours practical	Week Ten
Discussions Exams	Equations for calculating germination characterist ics	Basic rules in the production of seeds of the most important agricultural crops		2 hours theoretica l 3 hours practical	Week Eleven
Discussions Exams	Accelerate d Age Screening	Seed storage		2 hours theoretica l 3 hours	Twelfth week

				practical	
Discussions Exams	Electrical connection check	Seed marketing		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams	Preparation of a report on seed technology research	Seed Technology Research and Recommendations in Iraq		2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

. Course Evaluation

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

. Learning and Teaching Resources

Honorary, Abdullah Qasim and Mr. Ahmed Saleh Khalaf. 1983. Crop seeds production and quality. Ministry of Higher Education and Scientific Research. University of Mosul. Printing Press Directorate of Dar Al-Kutub for Printing and Publishing - University of Mosul. First edition. p. 409. Amin, Hashem Mohammed and Ali Hussein Abbas. 1988. Seed Inspection and Certification. Ministry of Higher Education and Scientific Research. University of Baghdad. Directorate of Dar Al-Kutub for Printing and Publishing.	Required textbooks (methodology, if any)

University of Mosul. WP: 270. Muhammad, Abdul Azim Kazem and Muayyad Ahmed Younis. 1991. Fundamentals of plant physiology. Part III. Ministry of Higher Education and Scientific Research. University of Baghdad. Faculty of Agriculture. Dar Al-Hekma for Printing and Publishing. WP: 1328. Attia, Hatem Jabbar and Khudair Abbas Jadua. 1999. Plant growth organizations – theory and practice. Ministry of Higher Education and Scientific Research. University of Baghdad. College of Agriculture. Directorate of Dar Al-Kutub for Printing and Publishing – Baghdad – Iraq. WP: 327.	
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Name
Honey beekeeping
2. Course Code
0C24301
3. Semester / Year
Spring/ Third
4. The history of preparation of this description
2023-2024
5. Available Attendance Forms
In classrooms and agricultural fields
6. Number of Credit Hours (Total) / Number of Units (Total)
2+2
7. Course administrator's name (if more than one name)
Name: Dr. Lafta Awad Atshan Email: lafta.awad@mu.edu.iq
8. Course Objectives

Provide a new job opportunity graduates	Course Objectives

9. Teaching and Learning Strategies	
1- Explanation and clarification **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	Strategy

10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week

	Print lectu and vi visuals	Honey beekeeping through history The economic importance honey beekeeping Honey bee status in the ani kingdom Classification Honey Bee Products Methods of propagation of ho beehives Types of honey beekeeping hiv Physiological structure of honey bee body Directing organs in honey bees The most important glands in body of the honey bee worker Honey bee sect Honey bee life cycle Honey bee behavior Bee diseases Brood diseases Diseases of adult bees	theoretical and practical	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1 2 3 4 5 6 7 8 9 11 12 13 14 15

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports …. etc	
12. Learning and Teaching Resources	
	Required textbooks (methodology, if a
Miracle honey bees	Main references (sources)
	Recommended books and references (scientific journals, reports…)
https://www.youtube.com/watch?v=9ePic3dtykk https://www.youtube.com/watch?v=HdBkgBSjF	Electronic References, Websites

https://www.youtube.com/watch?v=Rj6R6oNSU	

Course Description Form

1. Course Name	
Mechanization of field crops	
2. Course Code	
0024302	
3. Semester / Year	
Spring/ Third	
4. The history of preparation of this description	
2023-2024	
5. Available Attendance Forms	
Came	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 Hours / 3	
7. Course administrator's name (if more than one name)	
Name: Assoc. Prof. Falih Hamed Kassar Email : flaiehkassar@mu.edu.iq	
8. Course Objectives	
We show students the importance understanding the basics of agricultu machinery, such as identifying the ty and parts of the most import equipment used in the preparation a preparation of primary and second soils and the most important machines serving the field crop. Identify different areas of use of agricultu machinery and equipment and descr some of the different types.	Course Objectives
9. Teaching and Learning Strategies	
	Strategy

10. Course Structure					
Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Written exam	Came	Identify all the machines that are used to prepare the soil – the machine is connected to the tug	Introduction, the importance of tillage, the mechanical composition of the soil, the technological properties of the soil and its impact on the tillage process	2theoretic 2 Practical	First
	Came	Types of axial tippers – know the parts, mesh and adjustment – practical training in the field	Dump plows, types, how they work, use, parts, how to turn the soil section	2theoretic 2 Practica	Second
Written exam	Came	Calculation of forces acting on plows – choosing the right tug for the plow	Calculation of the force acting on plows, choosing the right tug for plows	2theoretic 2 Practica	Third
Written exam	Came	Identify the tipper tip, coin and connect	Disc plow Tipper, types, work, use, parts and how	2theoretic 2 Practica	Fourth

		parts – the process of netting, change and training	to turn the soil section		
Written exam	Came	Vertical disc plow and identification of parts and types and how to work in the field	Vertical disc plow, types, work, use, parts, how to turn the soil section	2theoretic 2 Practica	V
Written exam	Came	Rotary plow – identification of parts, linking process, field tillage training, maintenance and maintenance parts	The rotary plow and how to transfer the movement – types and types of weapons and a comparison between it and the dump plow	2theoretic 2 Practica	Sixth
Written exam	Came	Identify the parts of the excavator plow, the process of tying and tillage training	Plow Digger Types, work, parts, use, advantages and disadvantages, tillage methods, calibration and binding	2theoretic 2 Practica	Seventh

Written exam	Came	Identify the plow under the soil, the process of linkage, field training on tillage, maintenance and maintenance parts	Plow under the soil and its importance, areas of use, calculation of the forces acting on it, the time capacity required to pull	2theoretic 2 Practica	Eighth
Written exam	Came	Serrated combs – identification of their types, parts and network and maintenance Field work	Disc combs, types, composition, features, areas of use, factors affecting the depth of calibration	2theoretic 2 Practica	Ninth
Written exam	Came	Disc combs – mesh process with puller – parts of smoothing operations – maintenance	Serrated combs their importance, components and use, advantages, disadvantages, fastening and calibration	2theoretic 2 Practica	X
Written exam	Came	Guards – types and use – maintenance and maintenance	Insulation, types, installation, in the machines of use, advantages	2theoretic 2 Practica	Eleventh

			and disadvantages		
Written exam	Came	Leveling machines – importance – use in the field	Leveling machines, the importance of leveling, types of leveling machines, use, advantages and disadvantages	2theoretic 2 Practica	Twelfth
Written exam	Came	Planning Machines – Types – Importance – Grid – Calibration – Field Work	Planning machines, their importance, parts, types, use, advantages and disadvantages	2theoretic 2 Practica	Thirteenth
Written exam	Came	Composite machines – types – importance – mesh with puller – calibration – work in the field	Composite machinery, importance, parts, types, uses and benefits	2theoretic 2 Practica	Fourteenth
Written exam	Came	Work in the workshop for repair and maintenance	Maintenance and repair of agricultural machinery, its sustainability,	2theoretic 2 Practica	Fifteenth

			and the importance of storing agricultural machinery		
. The most important methods and means used in the transmission and conversion of movement and energy in agricultural machinery and machinery					
Watching clips of the engines and how they work with the presentation of (3D) videos to familiarize the student with the engine in detail					
. Practical viewing of the fuel system in the engine (gasoline – diesel)					
Machines or else			Required textbooks (methodology, if any)		
Field crop mechanization equipment / authoring a. M. Lotfi Hussein and Dr. Abdel Salam Mahmoud. Kepner,R.A., R.Bainer and E.L.Barger. Principles of farm machinery. 3rd edition. AVI pub company. USA. P31			Main references (sources)		
			Recommended books and references (scientific journals, reports…)		
Multiple Locations			Electronic References, Websites		

Course Description Form

Course Name
Field crop diseases
Course Code
0024304
Semester / Year
Semester / Second Semester
The history of preparation of this description
14/02/2024
Available Attendance Forms
Came
Number of Credit Hours (Total) / Number of Units (Total)
75 hours (30 theoretical + 45 practical) / 3 units
Course administrator's name (if more than one name)
Name: Dr. Ali Faraj Jubeir Email: alifj80@mu.edu.iq
Course Objectives

• Introducing the student to diseases that affect field crops of various kinds (fungal, bacterial, viral, nematode, physiology). • Determine the economic importance of these diseases • Identify different environmental factors and their impact on the spread of infectious plant diseases • Pathological symptoms caused by these diseases • Finding the best ways to combat diseases through methods (natural, applied, mechanical, agricultural, biological, legislative, chemical, genetic, integrated control programs)	Course Objectives

Teaching and Learning Strategies

A- Cognitive objectives * The student should know the diseases that affect field crops and th names. * To try to find out how pathogens are transmitted from one field to anot or the spread of the cause through the same field. * The student should master how to prevent and control the occurrence diseases. * To be able to find solutions in the case of rapidly spreading epide diseases and ways to control them. * Identify modern methods of diagnosing diseases and also control. * The student should acquire how to disseminate the information obtai in the control of diseases. B - Skills objectives of the course. * The student should master how to diagnose these diseases. * The student should be able to treat diseases that affect field crops * To master the use of disease control machines. * To master the use of modern and advanced methods of control.	Strategy

Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Oral exams	Lecture and discussion	Introduction to Field Crop Diseases	Memorization, understanding, practical application	5	1
Rapid exam	Lecture and discussion	Wheat diseases	Memorization, understanding, practical application	5	2
Oral exams	Lecture and discussion	Barley diseases	Memorization, understanding, practical application	5	3
Rapid exam	Lecture and discussion	Rice diseases	Memorization, understanding,	5	4

			practical application		
Oral exams	Lecture and discussion	Yellow corn diseases	Memorization, understanding, practical application	5	5
Rapid exam	Lecture and discussion	Sorghum diseases	Memorization, understanding, practical application	5	6
Written exam	Written exam	Written exam	Memorization, understanding, practical application	5	7
Rapid exam	Lecture and discussion	Bean diseases	Memorization, understanding, practical application	5	8
Oral exams	Lecture and discussion	Diseases of oil crops (Sunflower, Safflower)	Memorization, understanding, practical application	5	9
Rapid exam	Lecture and discussion	Diseases of oil crops (soybeans, field pistachios, sesame)	Memorization, understanding, practical application	5	10
Oral exams	Lecture and discussion	Diseases of sugary crops	Memorization, understanding, practical application	5	11
Rapid exam	Lecture and discussion	Diseases of cotton and flax	Memorization, understanding, practical application	5	12
Oral exams	Lecture and	Diseases of fodder	Memorization,	5	13

	discussion	crops	understanding, practical application		
Rapid exam	Lecture and discussion	Tobacco diseases	Memorization, understanding, practical application	5	14
Written exam	Written exam	Written exam	Memorization, understanding, practical application	5	15

. Course Evaluation
Theoretical tests : (daily exams – monthly exams – oral exams) Practical tests : (daily exams – monthly exams – oral exams) Theoretical and practical reports Sample screening and practical experiments

. Learning and Teaching Resources	
1. Basics of fungi and their diseases / Majeed Al-Shukri 2. Field crop diseases / Dr. Maysar Zarzis	Required textbooks
– Iraqi Journal of Agriculture – Magazines concerned with diseases of field crops – Bulletins issued by agricultural compar and pesticide companies	Main references (sources)
– All agricultural journals and crop dise magazines	Recommended books and references (scientific journals, reports…)
World Wide Web	Electronic References, Websites

Course Description Form

Course: Land Farming
Course Code
0014407
Semester / Year
AUTUMN / Third
Date of preparation of this description : 2023-2024
Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
Course Administrator Name:
Name: Assoc. Prof. Haider Abdul Hussain Mohsen Email :
Course Objectives

1. Develop teaching curricula in coordination with higher departments	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be lin to the program description.
- Develop teaching curricula by the department similar to the work environment	
- Providing the student with the skill in land reclamation and desert land cultivation	
- Creating a photo album showing the plants used (evidence for cultivation) and the environmental factors that suit them	
5. Study the problems related to pests and diseases of each field crop	

Teaching and Learning Strategies

Teaching and learning methods **1- Explanation and clarification** **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	Strategy

9. Course Structure

Evaluation	Learning	Unit or subject	Required	Hours	The

method	method	name	Learning Outcomes		week
Discussions Exams		Crop production factors Survey and diagnosis of aquatic environment plants in rivers and waterways	Land farming	2 hours theoretical 3 hours practical	First week
Discussions Exams		Carbon metabolism in crop production Comparison of germination, growth and development of plant stages in local soil planted with wheat and comparison with non-saline	Land farming	2 hours theoretical 3 hours practical	Second week
Discussions Exams		Productivity Factors Comparing the effect of calcareous and gypsum soils with ordinary soils planted with another crop,	Land farming	2 hours theoretical 3 hours practical	Third week
Discussions		Nitrogen	Land	2 hours	Fourth

Exams		stabilization and increased productivity Comparison of the amount of irrigation by conducting an experiment Irrigation is sufficient and another is not sufficient for the same crop	farming	theoretic al 3 hours practical	week
Discussions Exams		The relationship of energy spent to crop productivity Comparison of growth parameters in ordinary and fertile soils	Land farming	2 hours theoretic al 3 hours practical	Fifth week
Discussions Exams		First month exam	Land farming	2 hours theoretic al 3 hours practical	Week Six
Discussions Exams		Post-harvest losses Comparison of growth standards for several crops grown in good soil to determine the reasons for the	Land farming	2 hours theoretic al 3 hours practical	Week seven

		difference in productivity			
Discussions Exams		Branching in crop plants and their relationship to productivity	Land farming	2 hours theoretical 3 hours practical	Week eight
Discussions Exams		Disadvantages of sandy and clay lands	Land farming	2 hours theoretical 3 hours practical	Week Nine
Discussions Exams		Land defect remediation	Land farming	2 hours theoretical 3 hours practical	Week Ten
Discussions Exams		Farming land with topographic defects	Land farming	2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams		Disadvantages of limestone and gypsum lands	Land farming	2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams		Agriculture Guides	Land farming	2 hours theoretical 3 hours practical	Thirteenth week
Discussions		Soil biology	Land	2 hours	Fourteen

Exams			farming	theoretic al 3 hours practical	th week
		Second month exan	Land farming		Week V ten

. Course Evaluation

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

. Learning and Teaching Resources

	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

Course Title:
Biology OF WEEDS
Course Code
0014403
Semester / Year
Fourth
Date of preparation of this description:
2023-2024
Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
Course Administrator Name:
Name: A. d.Faisal Mahbas Meaning of Taher Ema **Faisal.taher@mu.edu.iq**
Course Objectives

Enable the student to understand, absorb and identify the nature of bush life, the benefits and harms of bushes, methods of combating them, including agricultural, mechanical, biological and chemical methods, in addition to an extensive study on pesticide groups and methods of adding them to combat bushes	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be lin to the program description.

Teaching and Learning Strategies	
Teaching and learning methods **1- Explanation and clarification** **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	Strategy

9. Course Structure

Evaluation	Learning	Unit or subject	Required	Hours	The

method	method	name	Learning Outcomes		week
Discussions Exams		**Introduction and some definitions and the importance of the bushes and its harms and benefits**		2 hours theoretical 3 hours practical	First week
Discussions Exams		**Acclimatization of bush plants**		2 hours theoretical 3 hours practical	Second week
Discussions Exams		**The influence of the environment on the phenotypic and anatomical structure of the bush Drought resistance of the bush**		2 hours theoretical 3 hours practical	Third week
Discussions Exams		**The nature of the bush in dry areas**		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams		**Methods of spreading bushes and their**		2 hours theoretical	Fifth week

		locations and the impact of fires and plant adaptations to fires		3 hours practical	
Discussions Exams		First month exam		2 hours theoretical 3 hours practical	Week Six
Discussions Exams		**Parasitic bush**		2 hours theoretical 3 hours practical	Week seven
Discussions Exams		**Aquatic jungles and salt jungles**		2 hours theoretical 3 hours practical	Week eight
Discussions Exams		**Germination of bush seeds and factors affecting them Dormancy in bush seeds and ways to overcome it**		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams		**Competition between bush and crops and factors affecting them**		2 hours theoretical 3 hours practical	Week Ten

Discussions Exams		**Asexual reproduction of the bush**		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams		**Sexual reproduction of the bush**		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams		**Salt jungle**		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams		**Bioantagonism**		2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

. Course Evaluation

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

. Learning and Teaching Resources

The book of bushes and ways to combat them – a practical guide to combating bushes	Required textbooks (methodology, if any)

From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

Course Title:	
Pasture Management	
Course Code	
0014405	
Semester / Year	
Fourth	
Date of preparation of this description:	
2023-2024	
Number of Credit Hours (Total) / Number of Units (Total)	
Number of credit hours (total) 75 hours	
Course Administrator Name:	
Name: M.D.Ali Halil Naima Email: ali.algayashe@mu.edu.iq	
Course Objectives	
Study the scientific aspects related to the exploitation and development of natural pastures in general and in Iraq in particular and how to develop and develop them.	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa

	learning opportunities. It must be linl to the program description.

Teaching and Learning Strategies	
Teaching and learning methods **1- Explanation and clarification** **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	Strategy

9. Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	A visit to the college's fields and pastures to learn about natural growing plants and collect samples of them	The importance of natural pastures, their spread and their relationship to other sciences		2 hours theoretical 3 hours practical	First week
Discussions Exams	Technical methods in	Types of natural pastures - qualities		2 hours theoretica	Second week

	the study of pasture vegetation	of good pasture		l 3 hours practical	
Discussions Exams	Technical methods and qualitative evaluation in the study of pastoral plants	Natural, biological, environmental and soil factors affecting pastures		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Field visit to Almarai station	Pastoral plants and their relationship to soil and water maintenance – the importance of water and soil – erosion processes		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Animal load and how to measure it	Vegetation Effects – Desertification – Causes and Treatments – Dune Stabilization		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams		5 First month exam		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	Study of the behavior of animals in pasture	Organizing grazing – Components of vegetation in pasture lands – The effect of grazing on the		2 hours theoretical 3 hours practical	Week seven

		productivity of pastoral plants – The effect of grazing on root and soil growth			
Discussions Exams	Complement the study of animal and pasture behavior	Grazing intensity – The effect of grazing on pastoral plant reproduction and survival – The effect of grazing on the vegetative composition of clothing		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	A visit to the livestock fields of the college to watch the behavior of sheep, cows and goats during grazing	Grazing systems – advantages and characteristics		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Measurement of the standard of exploitation	Exploitation of natural pastures – Exploitation criterion – Determination of feed exploitation – Animal load		2 hours theoretical 3 hours practical	Week Ten
Discussions	Care for	The state of natural		2 hours	Week

Exams	pasture animals	pastures – judging the state of the pasture		theoretical 3 hours practical	Eleven
Discussions Exams	Pasture animal care supplement	Classification of pasture conditions – direction of progress		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams	How to reseed degraded pastures	Grazing areas in Iraq – grazing in the Mesopotamian plain		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams	Use of artificial cladding for degraded pastures	Grazing in the Iraqi Valleys – Grazing in the plains and mountains of Iraqi Kurdistan		2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

. Course Evaluation

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

. Learning and Teaching Resources

Management of natural rangelands – authored by Dr. Ramadan Al-Tikriti and Mr. Abbas Mahdi Al-Hassan – 1981 – University of Mosul Fodder crops and pastures (Part One) – authored by Dr. Muhammad Al-Sayed	Required textbooks (methodology, if any)

Radwan and Dr. Abdullah Qasim Al-Fakhri - 1975 - University of Mosul	
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

Course Title:
English3
Course Code
U024036
Semester / Year
Third / autumn
The history of preparation of this description
26/2/2024
Available Attendance Forms
Came
Number of Credit Hours (Total) / Number of Units (Total)
2 hours theoretical Number of units 3
Course administrator's name (if more than one name)
Name: Dr. Dr. Ahmed Raysan Mohammed Ali Email : ahmedresan@mu.edu.iq
Course Objectives

Introduce the student to how to create a question in English and how to conduct dialogues	Course Objectives:
Teaching and Learning Strategies	
Audio methods (teaching explanation of the subject) Blackboard writing style The method of direct dialogue between the teacher and the student with evaluation of the student in the classroom participations	Strategy

Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Rapid exam	Lecture	How to create a question	Theoretical lecture	2	1
Rapid exam	Lecture	Dialogues at the	Theoretical	2	2

		meeting	lecture		
Rapid exam	Lecture	Talking about work and its types	Theoretical lecture	2	3
Rapid exam	Lecture	How to spend free time and holidays	Theoretical lecture	2	4
First month exam	Theoretical exam	examination	examination	2	5
Rapid exam	Lecture	Where to live using the phrases There is/ There are	Theoretical lecture	2	6
Rapid exam	Lecture	Cabulary and Pronunciation	Theoretical lecture	2	7
Rapid exam	Lecture	Meeting people	Theoretical lecture	2	8
Rapid exam	Lecture	The world of work	Theoretical lecture	2	9
Second month exam	Theoretical exam	examination	examination	2	10
Rapid exam	Lecture	Take it easy	Theoretical lecture	2	11
Rapid exam	Lecture	Where do you live	Theoretical lecture	2	12
Rapid exam	Lecture	Reading and Speaking	Theoretical lecture	2	13
Rapid exam	Lecture	Reading and Speaking	Theoretical lecture	2	14
Rapid exam	Lecture	Reading and Speaking	Theoretical lecture	2	15
. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such					

as daily preparation, daily, oral, monthly, written exams, reports …. etc	
. Learning and Teaching Resources	
g Academic English, Level 1 by Alice Oshima	Required textbooks (methodolo if any)
	Main references (sources)
	Recommended books and references (scientific journals, reports…)
https://www.ef.com/wwar/blog/language/dystopian-books-to-learn-english/	Electronic References, Websites

Course Description Form

Course Name	
Crop Management	
Course Code	
0024404	
Semester / Third Year	
2023-2024	
Date of preparation of this description :	
In Classroom	
Number of Credit Hours (Total) / Number of Units (Total)	
Number of credit hours (total) 75 hours	
Course Administrator Name:	
Name: Prof. Dr.Ali Rahim Karim Email: ali_raheem2002@mu.edu.iq	
Course Objectives	
- Enable the student to identify the good management of the field - Enable the student to know the environmental factors and soil factors appropriate to manage the field perfectly - Enable the student to identify and pay	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet

attention to soil and crop service operations - Enable the student good field management methods to increase the yield in quantity and quality	he has made the most of the availa learning opportunities. It must be lin to the program description.

Teaching and Learning Strategies

Teaching and learning methods	Strategy
1- Explanation and clarification **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	

Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Tillage Soil Service Operations	Introduction, Environmental factors and their relationship to the growth of field crops		2 hours theoretical 3 hours practical	First week
Discussions Exams	Soil Service Processes Smoothing and leveling	Factors Controlling Field Crop Productivity		2 hours theoretical 3 hours practical	Second week

Discussions Exams	Cultivation methods types and importanc e	Soil factors (soil construction) soil weaving, soil salinity, soil acidity		2 hours theoretica l 3 hours practical	Third week
Discussions Exams	Irrigation and modern irrigation methods	Selection of plant species suitable for the surrounding environment		2 hours theoretica l 3 hours practical	Fourth week
Discussions Exams	Salinity and its direct and indirect effects	The effect of planting dates on field crop growth, sowing quantity, plant density.		2 hours theoretica l 3 hours practical	Fifth week
Discussions Exams	Organic agriculture , its importanc e and benefits	First month exam		2 hours theoretica l 3 hours practical	Week Six
Discussions Exams	Biofertilize rs and their types	Growth and development of crops		2 hours theoretica l 3 hours practical	Week seven
Discussions Exams	Drought and its impact on field crops	Crop management means managing the root system and the vegetative system		2 hours theoretica l 3 hours practical	Week eight
Discussions Exams	Jungle and ways to combat	plant nutrition		2 hours theoretica l	Week Nine

	it			3 hours practical	
Discussions Exams		How to calculate the quantities of chemical fertilizers		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams		Water and its importance in plant life / irrigation methods		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	Types of feed and methods of preservation	Organic Agriculture ,		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams		Basic objectives of organic production		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams	Preparing programs for field crops	Collection, preparation and storage of crops		2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten
. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports .... etc					

. Learning and Teaching Resources	
Management of natural rangelands – authored by Dr. Ramadan Al-Tikriti and Mr. Abbas Mahdi Al-Hassan – 1981 – University of Mosul	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
Crop quality
2. Course Code
0014406
3. Semester / Year
Fourth
4. Date of preparation of this description : 2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: Prof. Dr.Ali Rahim Karim Email: ali_raheem2002@mu.edu.iq
Course Objectives

- Enable the student to identify the qualitative characteristics of field crops in general - Enable the student to know the economic importance and qualitative characteristics of minority crops - Enable the student to know the chemical properties of grains and seeds - Enable the student to know and conduct chemical analyzes of crop seeds	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be linl to the program description.

8. Teaching and Learning Strategies	
Teaching and learning methods **1- Explanation and clarification** **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	Strategy

9. Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week

Discussions Exams	The concept of food security Causes of the global food crisis Points to focus on to enhance food security	Introduction to Seed Production and Food Security		2 hours theoretical 3 hours practical	First week
Discussions Exams	Stages of seed production	Seed growth and formation		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Insemination and fertilization	Venus and its parts		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Seed diagnosis	Seed composition		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Carbohydrates Leopids Proteins Vitamins	Chemical composition of seeds		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams		First month exam		2 hours theoretic	Week Six

				al 3 hours practical	
Discussions Exams	Proteins Oils Carbohydrates Vitamins Nutritional problems	Spelt crop		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Proteins Oils Carbohydrates Vitamins Nutritional problems	Rice crop		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Proteins Oils Carbohydrates Vitamins Nutritional problems	Yellow corn crop		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Proteins Oils Carbohydrates Vitamins Nutritional problems	Barley crop		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	Proteins Oils Carbohydrates Vitamins Nutritional problems	Sunflower crop		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	Proteins Oils	Field pistachio crop		2 hours theoretic	Twelfth week

	Carbohydrates Vitamins Nutritional problems			al 3 hours practical	
Discussions Exams	Proteins Oils Carbohydrates Vitamins Nutritional problems	Rapeseed crop		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams				2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

10. Course Evaluation

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

11. Learning and Teaching Resources

Desai, B. B. 2004. Seeds Handbook; Bilogy, Production, Processing, and Storage. 2nd edn. Marcel Dekker, Inc. New York, USA. ISBN: 0-8247-4800-X. pp. 787. Agrawal R.L. 2010. Seed Technology. 2nd edition. Oxford and IBH publishing CO.PVT. LTD. New Delhi, India. ISBN 978-81-204-0994-1. pp. 829. Dissertation, thesis and papers.	Required textbooks (methodology, if any)

From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
Land farming
2. Course Code
0014405
3. Semester / Year
Fourth
4. Date of preparation of this description:
2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: Assoc. Prof. Haider Abdul Hussain Mohsen Email :
7. Course Objectives

1. Develop teaching curricula in coordination with higher departments - Develop teaching curricula by the department similar to the work environment - Providing the student with the skill in land reclamation and desert land cultivation - Creating a photo album showing the plants used (evidence for cultivation) and the environmental factors that suit them 5. Study the problems related to pests and diseases of each field crop	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whet he has made the most of the availa learning opportunities. It must be linl to the program description.

8. Teaching and Learning Strategies	
Teaching and learning methods **1- Explanation and clarification** **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	Strategy

9. Course Structure

Evaluation	Learning	Unit or subject name	Required	Hours	The

method	method		Learning Outcomes		week
Discussions Exams		Crop production factors Survey and diagnosis of aquatic environment plants in rivers and waterways	Land farming	2 hours theoretical 3 hours practical	First week
Discussions Exams		Carbon metabolism in crop production Comparison of germination, growth and development of plant stages in local soil planted with wheat and comparison with non-saline	Land farming	2 hours theoretical 3 hours practical	Second week
Discussions Exams		Productivity Factors Comparing the effect of calcareous and gypsum soils with ordinary soils planted with another crop,	Land farming	2 hours theoretical 3 hours practical	Third week
Discussions Exams		Nitrogen stabilization and increased productivity Comparison of the amount of irrigation by conducting an experiment Irrigation is sufficient	Land farming	2 hours theoretical 3 hours practical	Fourth week

		and another is not sufficient for the same crop			
Discussions Exams		The relationship of energy spent to crop productivity Comparison of growth parameters in ordinary and fertile soils	Land farming	2 hours theoretical 3 hours practical	Fifth week
Discussions Exams		First month exam	Land farming	2 hours theoretical 3 hours practical	Week Six
Discussions Exams		Post-harvest losses Comparison of growth standards for several crops grown in good soil to determine the reasons for the difference in productivity	Land farming	2 hours theoretical 3 hours practical	Week seven
Discussions Exams		Branching in crop plants and their relationship to productivity	Land farming	2 hours theoretical 3 hours practical	Week eight
Discussions Exams		Disadvantages of sandy and clay lands	Land farming	2 hours theoretical	Week Nine

				3 hours practical	
Discussions Exams		Land defect remediation	Land farming	2 hours theoretical 3 hours practical	Week Ten
Discussions Exams		Farming land with topographic defects	Land farming	2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams		Disadvantages of limestone and gypsum lands	Land farming	2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams		Agriculture Guides	Land farming	2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams		Soil biology	Land farming	2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam	Land farmir		Week V ten

10. Course Evaluation

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

. Learning and Teaching Resources	
	Required textbooks (methodology, if any)
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
Weed Control
2. Course Code
0024403
3. Semester / Year
Fourth
4. Date of preparation of this description :
2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: A. d.Faisal Mahbas Meaning of Taher Ema **Faisal.taher@mu.edu.iq**
Course Objectives

Enable the student to understand, understand and identify the nature of bush life, the benefits and harms of bushes, methods of combating them, including agricultural, mechanical, biological and chemical methods, in addition to an extensive study on pesticide groups and ways to add them to combat bushes	Course Objectives This course description provide brief summary of the m important characteristics of course The learning outcomes expec of the student to achieve are pr of whether he has made the m of the available learn opportunities. It must be linkec the program description.

Teaching and Learning Strategies	
Teaching and learning methods **1- Explanation and clarification** **2-Lecture method** **3-Student groups** **4-Practical lessons in laboratories**	Strategy

9. Course Structure					
Evaluation method	**Learning**	**Unit or subject name**	**Required**	**Hours**	**The week**

	method		Learning Outcomes		
Discussions Exams		**Introduction and some definitions and the importance of the bushes and its harms and benefits**		**2 hours theoretical 3 hours practical**	**First week**
Discussions Exams		**Acclimatization of bush plants**		**2 hours theoretical 3 hours practical**	**Second week**
Discussions Exams		**Competition between the bush**		**2 hours theoretical 3 hours practical**	**Third week**
Discussions Exams		**Methods of spreading bushes and their locations and the impact of fires and plant adaptations to fires**		**2 hours theoretical 3 hours practical**	**Fourth week**
Discussions Exams		**Mechanical control methods**		**2 hours theoretical 3 hours practical**	**Fifth week**
Discussions Exams		**First month exam**		**2 hours theoretical 3 hours practical**	**Week Six**
Discussions Exams		**Chemical Control**		**2 hours theoretical 3 hours practical**	**Week seven**
Discussions Exams		**Pesticide division**		**2 hours theoretical 3 hours practical**	**Week eight**
Discussions Exams		**Absorption and transmission of pesticides**		**2 hours theoretical 3 hours practical**	**Week Nine**
Discussions Exams		**Absorption and transmission of pesticides**		**2 hours theoretical 3 hours practical**	**Week Ten**
Discussions Exams		**Absorption and transmission of pesticides**		**2 hours theoretical 3 hours practical**	**Week Eleven**
Discussions Exams		**Electives**		**2 hours theoretical 3 hours practical**	**Twelfth week**
Discussions Exams		**Electives**		**2 hours theoretical 3 hours practical**	**Thirteenth week**
Discussions Exams		**Sustainability**		**2 hours theoretical 3 hours practical**	**Fourteenth week**
		Second month exam			**Week V ten**

10. Course Evaluation

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

11. Learning and Teaching Resources	
The book of bushes and ways to combat them **– a practical guide to combating bushes**	Required textbooks (methodology, if an
From methodological books, auxiliary books, the Internet and scientific research	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
English4
2. Course Code
U011405
3. Semester / Year
Fourth / autumn
4. The history of preparation of this description
26/2/2024
5. Available Attendance Forms
Came
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours theoretical Number of units 3
7. Course administrator's name (if more than one name)
Name: Dr. Dr. Ahmed Raysan Mohammed Ali Email : ahmedresan@mu.edu.iq
8. Course Objectives

Identify the importance of some dialogue using English grammar	Course Objectives:

9. Teaching and Learning Strategies	
Audio methods (teaching explanation of the subject) Blackboard writing style The method of direct dialogue between the teacher and the student v the evaluation of the student in the classroom participations	Strateg

10. Course Structure

Evaluation method	Learning method	Unit or subject name	Required Learning Outcomes	Hours	The week
Rapid exam	Lecture	Getting to know you	Theoretical lecture	2	1
Rapid exam	Lecture	The way we live	Theoretical lecture	2	2
Rapid exam	Lecture	It All Went Wrong	Theoretical	2	3

			lecture		
Rapid exam	Lecture	Let's go shopping!	Theoretical lecture	2	4
First month exam	Theoretical exam	examination	examination	2	5
Rapid exam	Lecture	Let's go shopping!	Theoretical lecture	2	6
Rapid exam	Lecture	Tell me! What's it like?	Theoretical lecture	2	7
Rapid exam	Lecture	Tell me! What's it like?	Theoretical lecture	2	8
Rapid exam	Lecture	Famous couples	Theoretical lecture	2	9
Second month exam	Theoretical exam	examination	examination	2	10
Rapid exam	Lecture	Famous couples	Theoretical lecture	2	11
Rapid exam	Lecture	Do's and don'ts	Theoretical lecture	2	12
Rapid exam	Lecture	Going places	Theoretical lecture	2	13
Rapid exam	Lecture	Going places	Theoretical lecture	2	14
Rapid exam	Lecture	Scared to death	Theoretical lecture	2	15

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports …. etc	
12. Learning and Teaching Resources	
g Academic English, Level 4 by Alice Oshima	Required textbooks (methodolc if any)
	Main references (sources)
	Recommended books and references (scientific journals, reports…)

https://www.ef.com/wwar/blog/language/dystopian-books-to-learn-english/	Electronic References, Websites

Course Description Form

Course Title:
Medicinal plants
Course Code
0024401
Semester / First Year
CAME
Date of preparation of this description :
2023-2024
Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
Course Administrator Name:
Name: A.Dr. Qasim Ajel Shanawa Email: **qasim.ajel@mu.edu.iq**
Course Objectives

1- Identify medicinal and aromatic plants . 2- Studying the impact of environmental factors on the growth and production of medicinal and aromatic plants and their content of active ingredients. 3- Identify the active compounds in medicinal plants and their physiological and medicinal effect. 4- How to diagnose and extract effective compounds in medicinal plants.	Course Objectives This course description provides brief summary of the most import characteristics of the course The learning outcomes expected the student to achieve are proof whether he has made the most the available learning opportuniti It must be linked to the progr description.

Teaching and Learning Strategies	
Teaching and learning methods	Strategy

1- **Explanation and clarification-**

2- **Lecture method-**

3- **Student groups-**

4- **Practical lessons in laboratories**

9. Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Methods of cultivation and reproduction of medicinal and aromatic plants: Field practice for growing seeds of some medicinal plants (sexual reproduction) - The practice of growing plants by vegetative propagation methods - Identifying models of seeds of a number of fold and aromatic plants	Introduction and a brief history of medicinal and aromatic plants		2 hours theoretical 3 hours practical	First week
Discussions Exams	Addressing the process of fertilizing medicinal plants and practicing them practically - as well as the practical application of plant irrigation and the effect of increasing water and its lack of active ingredients in the plant	Economic importance and medicinal uses of medicinal and aromatic plants		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Conducting a field observation to identify the medicinal and aromatic plants cultivated at the Agricultural Research Station in the college.	Division and classification of medicinal and aromatic plants: division by life cycle of medicinal plant - division of medicinal plants by part used - division of medicinal plants according to their		2 hours theoretical 3 hours practical	Third week

		meanings of secondary metabolic compounds			
Discussions Exams	Preparation of medicinal and aromatic plants for marketing: collection and harvesting – methods and date of collection of the crop and addressing the general rules for collecting medicinal plants and according to the part used – leaves – flowers – fruits – seeds – bark – roots	Addition: Division and classification of medicinal and aromatic plants: Botanical division of medicinal plants		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Addressing the cleaning and screening process that takes place on medicinal and aromatic plants after collecting and harvesting them from the field – methods of drying medicinal plants – natural drying – industrial drying – packaging of medicinal plants – storage of medicinal plants	Environmental and topographic factors affecting the production of medicinal and aromatic plants: light – temperature – soil – irrigation – height and fall above sea level – proximity and distance from the equator		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams	Conducting a scientific trip to the wild areas outside the governorate to identify wild growing plants and compare them with the cultured	Factors affecting the concentration of the active substance in the medicinal plant: the evolutionary stage of the plant – the date and time of collection – the process of drying the plant – the genetic factor – environmental stresses Optimal use of medicinal and aromatic plants: internal uses – external uses		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	First month exam	First month exam		2 hours theoretical 3 hours practical	Week seven

Discussions Exams	Methods of extracting volatile oils: First: Distillation – Water distillation – Steam distillation – Distillation with water and steam together – and conducted practically in the laboratory	Active ingredients in medicinal and aromatic plants: terpenes – volatile oils – general qualities of volatile oils – chemistry of volatile oils		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Second: Extraction of volatile oils using solvents: volatile solvents – non–volatile solvents – fatty absorption method – solvent soaking method – solvent spraying method	Glycosides: general characteristics – medical uses – Sections: Steroid glycosides – Anthraquinoin – flavonoids – sulfur – sapony – phenolic – alcoholic – aldehyde – cyanidia		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Third: Acupuncture method: SpongeDrainage method – automatic acupuncture method	Alkaloids: chemical physical qualities – benefits – amino alkaloids – tropan – pyridine – quinoline – isokineolin – indole – purine – steroid		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	Estimation of Percentage of Volatile Oil by Clevenger – Preservation and Storage of Volatile Oils	Phenols: general characteristics – their divisions – simple phenols – phenolic acids – phenyl acids – phenylbronoids – naphthaquinone – xanthonates – stelipins – anthraquinoans		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	Extraction of phenols, alkaloids and lipids by Soxhllet device	Flavonoids: chemical physical characteristics – their divisions – group of flavones – flavanones – flavanols – isofafones – calcon – uron – anthocyanins Tannins: chemical physical properties – benefits – division – hydrolyzable tannins – non–hydrolytic tannins		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams	Method of disposal of solvents used in the extraction of active	Fixed oils and fats: general characteristics – chemistry of fixed oils –		2 hours theoretical 3 hours	Thirteenth week

	compounds by Evaporator Rotary Vacuum Evaporator	classification of unsaturated fatty acids – medical benefit of fixed oils – the most important fixed oils used in the medical field		practical	
Discussions Exams	Second month exam	Second month exam		2 hours theoretical 3 hours practical	Fourteenth week
	Fixed oil extraction methods	Description of some medicinal plants and their importance: peppermint – coriander – star anise – seal – municipal vinegar – black mustard – saffron – cumin – sweet seed – licorice – black seed – caisom			Week V ten

10. Course Evaluation

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

11. Learning and Teaching Resources

There is no methodological book in this specialty, but there are auxiliary books, including: 1- Fundamentals of Medicinal Plants and Their Active Compounds (2018) Author Assistant Professor Dr. Maher Hamid Salman 2- Medicinal plants, their cultivation and components (1981) Author Prof. Dr. Fawzi Taha Qutb	Required textbooks (methodology, if any
	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
Plant physiology
2. Course Code
0014402
3. Semester / Year :
Autumn/Fourth
4. Date of preparation of this description : 2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: Assoc. Prof. Nasser Habib Muhaibis Email: naasshb@mu.edu.iq
7. Course Objectives

Enable the student to learn about plant physiology in general and its applications in various agricultural experiments - Enable the student to know how to prepare solutions, their uses and apply them in the agricultural field correctly - Providing the student with the skills of dealing with the concentrations of solutions	Course Objectives This course description provides a b summary of the most import characteristics of the course The learning outcomes expected of student to achieve are proof of whether has made the most of the available learn opportunities. It must be linked to program description.

8. Teaching and Learning Strategies	
Teaching and learning methods	St Teaching and l arnin eg
5- **Explanation and clarification**- 6- **Lecture method**- 7- **Student groups**- 8- **Practical lessons in laboratories** 9-	

9. Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams	Laboratory Guidelines and Definitional Terminology	Definition of plant physiology and the basic rules of this science		2 hours theoretical 3 hours practical	First week
Discussions Exams	How to prepare solutions	Colloidal solutions and systems		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Types of solutions	Water Relations		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Types of solution concentrations	Absorption and transfer of water and mineral elements		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Effect of salt concentrations on seed germination	Supplement the absorption and transfer of water and mineral elements		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams	The effect of acidity and alkalinity on the germination and growth of some plants	Photosynthesis (carbon)		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	How to measure growth qualities	Complement to the topic of photosynthesis		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Effect of macro- and micronutrients on plant growth	respiration		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	The relationship between light interception and plant growth	Metabolism (construction)		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Measurement of chlorophyll in a plant	Plant Nutrition		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	The effect of phytohormones on the growth of some plants	Nitrogen biostabilization		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	Studying the phenomenon of imbibing and osmosis and conducting some laboratory experiments on the subject	Growth and evolution		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams	Studying the phenomenon of diffusion and plasma and conducting	Phytohormones		2 hours theoretical 3 hours practical	Thirteenth week

	some laboratory experiments on the subject				
Discussions Exams	**A field visit to the fields to get to know some physiological phenomena**	**Physiology of crops under stress**		**2 hours theoretical 3 hours practical**	**Fourteenth week**
	Review, exams and visiting experimental fields	**Types of stress - stress effects - stress tolerance mechanisms**			**Week V ten**

10. Course Evaluation

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

11. Learning and Teaching Resources

The Book of Plant Physiology – written by Dr. Abdul Azim Katem Plant Physiology Book – Written by Dr. Hussein Saeed and Dr. Ismail Nada	Required textbooks (methodology, if any)
	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
Growth Regulators
2. Course Code
0024402
3. Semester / Year :
Spring/ Fourth
4. Date of preparation of this description : 2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: Assoc. Prof. Nasser Habib Muhaibis Email: naasshb@mu.edu.iq
7. Course Objectives

Enable the student to identify plant growth regulators in general and its applications in various agricultural experiments - Enable the student to know and understand its uses and application in the agricultural field correctly - Providing the student with the skills of dealing with plant growth regulators	Course Objectives This course description provides brief summary of the most import characteristics of the course The learning outcomes expected the student to achieve are proof whether he has made the most of available learning opportunities. must be linked to the progr description.

8. Teaching and Learning Strategies

1- Teaching and learning methods 2- **Explanation and clarification**- 3- **Lecture method**- 4- **Student groups-Practical lessons in laboratories**	Strategy

9. Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning	Hours	The week

			Outcomes		
Discussions Exams	Laboratory Guidelines and Definitional Terminology	About phytohormones discoveries		2 hours theoretical 3 hours practical	First week
Discussions Exams	Identify the growth regulator / oxins IAA and its physiological effects on plants	Types of plant growth regulators		2 hours theoretical 3 hours practical	Second week
Discussions Exams	Conducting laboratory experiments on the physiological effects of oxin	Growth hormones and leg elongation		2 hours theoretical 3 hours practical	Third week
Discussions Exams	Identify the growth regulator/gibberellinin GAs and its physiological effects on the plant	Growth hormones and apical dominance		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams	Conducting laboratory experiments on the physiological effects of gibberellin	Growth hormones and photosynthesis		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams	Identify the growth regulator / cytoquinine and its physiological effects on the	Growth and flowering hormones		2 hours theoretical 3 hours practical	Week Six

	plant				
Discussions Exams	Conducting laboratory experiments on the physiological effects of cytokinin	Growth hormones, transport and distribution of nutrients in the plant		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Identify the growth regulator / ethylene and its physiological effects on the plant	The effect of growth regulators on seeds		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Conducting laboratory experiments on the physiological effects of ethylene	The effect of growth regulators on the roots		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Identify the growth regulator / abscisic acid ABA and its physiological effects on the plant	The impact of growth regulators on productivity		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	Conducting laboratory experiments on the physiological effects of abscisic acid ABA	The effect of growth regulators on physiological processes		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	Identify the growth regulator/	Applications and use of		2 hours theoretic	Twelfth week

	parasinosteroid and its physiological effects on the plant	growth regulators in the agricultural field		al 3 hours practical	
Discussions Exams	The use of growth regulators and their applications in the agricultural field	Effect of Growth Regulators on Textile Agriculture		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams	Laboratory Guidelines and Definitional Terminology	About phytohormones discoveries		2 hours theoretical 3 hours practical	Fourteenth week
	Identify the growth regulator / oxins IAA and its physiological effects on plants	Types of plant growth regulators			Week V ten

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

11. Learning and Teaching Resources	
Plant Growth Regulators: Horticultural Applications and Uses - Written by Dr. Makki Alwan Al-Khafaji - 2014	Required textbooks (methodology, if any
	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports...)

Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
Molecular heredity
2. Course Code
0024406
3. Semester / Year
/ SPRING /Fourth
4. Date of preparation of this description :
2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: Assoc. Prof. Muhammad Hussein Noor Hassan Alsalami Email mohammad.noor@mu.edu.iq
7. Course Objectives • **Explanation and clarification**- • **Lecture method**- • **Student groups**- • **Practical lessons in laboratories**
8. Course Structure

Evaluation method	Practical	Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams		Identify cells and their types		2 hours theoretical 3 hours practical	First week
Discussions		Familiarity with the		2 hours theoretical	Second

Exams		methods of cell division		3 hours practical	week
Discussions Exams		What is genetic material?		2 hours theoretical 3 hours practical	Third week
Discussions Exams		How genetic material is replicated		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams		Chemical constituents of genetic material		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams		Identify cells and their types		2 hours theoretical 3 hours practical	Week Six
Discussions Exams	First month exam	First month exam		2 hours theoretical 3 hours practical	Week seven
Discussions Exams	Chromosome chemical structure	Familiarity with the chemical structure of the chromosome		2 hours theoretical 3 hours practical	Week eight
Discussions Exams	Gene expression and protein synthesis	Inference of gene expression and protein synthesis		2 hours theoretical 3 hours practical	Week Nine
Discussions Exams	Regulation of gene expression in primitive and eukaryotic	How to regulate gene expression in primitive and eukaryotic		2 hours theoretical 3 hours practical	Week Ten
Discussions Exams	Extrachromosomal genetic material	To identify the genetic material outside the chromosomes		2 hours theoretical 3 hours practical	Week Eleven
Discussions Exams	DNA in mitochondrie	Identifying DNA in Mitochondria		2 hours theoretical 3 hours practical	Twelfth week
Discussions Exams	Crylorplast and cytoplasmic inheritance	How to get chrolorplast and cytoplasmic genetics		2 hours theoretical 3 hours practical	Thirteenth week
Discussions Exams	Second month exam	Second month exam		2 hours theoretical 3 hours practical	Fourteenth week
		Second month exam			Week V ten

Course Evaluation

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

. Learning and Teaching Resources	
Fundamentals of Genetic Engineering	Required textbooks (methodology, if any)
	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports…)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites

Course Description Form

1. Course Title:
Breeding and improving a plant
2. Course Code
0024401
3. Semester / Year
SPRING/Fourth
4. Date of preparation of this description :
2023-2024
5. Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (total) 75 hours
6. Course Administrator Name:
Name: Assoc. Prof. Muhammad Hussein Noor Hassan Alsalami Email mohammad.noor@mu.edu.iq

Course Objectives	
Enable the student to understand and understand plant breeding and the relationship of this science to the possibility of developing crop plants through breeding, improvement and hybridization.	Course Objectives This course description provides a brief summary of most important characteristics of the course The learning outcomes expected of the student to achi are proof of whether he has made the most of the availa learning opportunities. It must be linked to the progr description.

Teaching and Learning Strategies	
1- **Explanation and clarification**- 2- **Lecture method**-	Strategy

3- **Student groups**- **Practical lessons in laboratories**	

9. Course Structure

Evaluation method		Unit or subject name	Required Learning Outcomes	Hours	The week
Discussions Exams		Plant breeding and the purposes of pedagogy		2 hours theoretical 3 hours practical	First week
Discussions Exams		Insemination and fertilization		2 hours theoretical 3 hours practical	Second week
Discussions Exams		Reproduction in the plant		2 hours theoretical 3 hours practical	Third week
Discussions Exams		Male infertility and self-incompatibility		2 hours theoretical 3 hours practical	Fourth week
Discussions Exams		Genetic variations and their relationship to plant breeding		2 hours theoretical 3 hours practical	Fifth week
Discussions Exams		Important factors in determining the act		2 hours theoretica	Week Six

		of election		l 3 hours practical	
Discussions Exams	**First month exam**	First month exam		2 hours theoretica l 3 hours practical	Week seven
Discussions Exams		Estimation of certain genetic parameters		2 hours theoretica l 3 hours practical	Week eight
Discussions Exams		Genetic redundancy		2 hours theoretica l 3 hours practical	Week Nine
Discussions Exams		Hybridization and hybrid varieties		2 hours theoretica l 3 hours practical	Week Ten
Discussions Exams		Breeding mutations		2 hours theoretica l 3 hours practical	Week Eleven
Discussions Exams		Chromosomal replication and its relationship to plant breeding		2 hours theoretica l 3 hours practical	Twelfth week
Discussions Exams		Self-pollinating plant breeding		2 hours theoretica	Thirteent h week

		methods		l 3 hours practical	
Discussions Exams		Methods of breeding mixed-pollinated plants		2 hours theoretica l 3 hours practical	Fourteen th week
		Second month exam			Week V ten

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

11. Learning and Teaching Resources	
Breeding and improvement of field crops	Required textbooks (methodology, if any)
	Main references (sources)
Scientific journals in the main specializations	Recommended books and references (scientific journals, reports...)
Al-Muthanna University e-learning website https://agr.mu.edu.iq/	Electronic References, Websites