Ministry of Higher Education and Scientific Research
Scientific Supervision and EvaluationDevice
Departmentof Quality Assuranceand Academic Accreditation
Accreditation Department

Guide for Academic Program and Course Description

2025- 2024

Academic Program Description Form

University Name: Tikrit
College/Institute: Agriculture
Scientific Department: Economics and Agricultural Guidance
Name of Academic or Professional Program: Courses of the Department of Economics and agricultural extension
Name of Final Degree: Bachelor of Economics and agricultural extension
Study System: Semester (Courses)
Description Preparation Date: 9/1/2024
File Filling Date: 9/1/2024

Signature:

Name of Scientific Assistant: Mohammed Saleh Mohammed

Date:

Signature:

Name of Head of Department: Mahmoud Hadis Jassim

Date: **9/2/2024**

File checked by
Quality Assurance and University Performance Division
Name of Director of Quality Assurance and University Performance Division: Dr. Aslam Alwan
Date: 9/2/2024
Signature:

Authentication by the Dean of the College

Introduction:

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

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

This guide, in its second version, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the developments and changes in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, semester) in addition to adopting the description of the academic program circulated pursuant to the letter of the Department of Studies TM3/2906 dated 5/3/2023 regarding programs .that adopt the Bologna process as a basis for their work

In this regard, we cannot but emphasize the importance of writing a description of academic programs and courses to ensure the smooth running of the educational .process

:Concepts and terms

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

Course Description: Provides a concise summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether the

student has made the most of the learning opportunities available. It is derived from .the programme description

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

Program mission: It briefly explains the objectives and activities required to achieve .them, and it also identifies the program's development paths and directions

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

Curriculum structure: All courses/subjects included in the academic program according to the approved learning system (semester, year, Bologna track) whether they are required (ministry, university, college and scientific department) with the .number of academic units

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

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

1. Program vision
The Department of Economics and Agricultural Guidance, with its human capabilities, seeks to prepare specialized scientific cadres that keep pace with the requirements of the labor market, and for these cadres to be distinguished in their specialization by providing educational, research and advisory services to the local community in the fields of economics and agricultural guidance to achieve self-sufficiency in .agricultural products and sustainable agricultural development

2. Program message
The Department of Economics and Agricultural Extension participates with other departments in .achieving the college's mission , as it supports students with information, knowledge and skills Economic and social related to the specialization and preparing highly qualified graduates capable of

contributing to the development and growth of the agricultural sector in Iraq By disseminating and .applying knowledge of economic aspects and guidance programmes within the local community

3. Program objectives

1- Preparing highly qualified graduates who can transfer their academic knowledge and experience to the .rural agricultural masses
2- .Conducting economic, financial, marketing and feasibility studies for all types of agricultural projects
3- Strengthening the link between the department and various state institutions through postgraduate .students' research that provides solutions to any agricultural problem they face
4- Serving the local community through advisory activities such as holding scientific courses and .seminars and providing advisory services
5- Developing the performance of members and increasing their scientific and practical efficiency through .seminars, conferences, training courses, study groups and other activities

4. Program accreditation

ABET accredited by the Ministry of Higher Education and Scientific Research

5. Other external influences

Infrastructure, financial and human resources

6. Program Structure / Economics Branch

Program Structure	Number of courses	Study unit	percentage	* comments
Institutional Requirements	10	10	7.35	Basic
College Requirements	13	39	28.67	Basic
Department Requirements	34	87	63.98	Basic
Summer training				
Other				

.Notes may include whether the course is basic or optional *

7. Program Structure / Guidance Branch

Program Structure	Number of courses	Study unit	percentage	* comments
Institutional Requirements	10	10	7.14	Basic

College Requirements	15	45	32.14	Basic
Department Requirements	31	85	60.72	Basic
Summer training				
Other				

8. Program Description				
Year/Level	Course code	Course name	Credit hours	
first stage		Agricultural economics	2 (theoretical)	(practical) 3
		mathematics	2 (theoretical)	(practical) 3
		Animal production	2 (theoretical)	(practical) 3
		Gardening Basics	2 (theoretical)	(practical) 3
		Field crops	2 (theoretical)	(practical) 3
		English language 1/	1 (theoretical)	--
		rights	) 1 (Theoretical	
		Calculators/1	---	(practical) 3
		Social Psychology	2 (theoretical)	(practical) 3
		rural community	2 (theoretical)	(practical) 3
		Soil principles	2 (theoretical)	(practical) 3
		Principles of Industries	2 (theoretical)	(practical) 3
		Agricultural mechanization	2 (theoretical)	(practical) 3
		English language /2	1 (theoretical)	--
		Calculators /2	---	(practical) 3
Stage 2		partial theory	2 (theoretical)	(practical) 3
		Principles of Statistics	2 (theoretical)	(practical) 3
		Guiding principles	2 (theoretical)	(practical) 3
		Prevention Basics	2 (theoretical)	(practical) 3
		Poultry production	2 (theoretical)	(practical) 3

		Calculators /3	---	(practical) 3
		Vegetable production	2 (theoretical)	(practical) 3
		English language /3	) 1 (Theoretical	---
		Agricultural Marketing	2 (theoretical)	(practical) 3
		Adult Education	2 (theoretical)	(practical) 3
		Calculators /4	---	(practical) 3
		freedom and democracy	) 1 (Theoretical	----
		Irrigation and drainage	2 (theoretical)	(practical) 3
		Health and diseases	2 (theoretical)	(practical) 3
Stage 3 / Economy		Partial theory /2	2 (theoretical)	(practical) 3
		Macroeconomics /1	2 (theoretical)	(practical) 3
		Agricultural statistics methods	2 (theoretical)	(practical) 3
		Agricultural accounting	2 (theoretical)	(practical) 3
		Farm management	2 (theoretical)	(practical) 3
		Sports economics	2 (theoretical)	(practical) 3
		Technology transfer	2 (theoretical)	---
		Macroeconomics /2	2 (theoretical)	(practical) 3
		Production economics	2 (theoretical)	(practical) 3
		Agricultural cost accounting	2 (theoretical)	(practical) 3
		Basics of milk	2 (theoretical)	(practical) 3
		Price Analysis	2 (theoretical)	---
		Monetary fiscal policy	2 (theoretical)	---
		English language /4	1 (theoretical)	---
		Community development	2 (theoretical)	(practical) 3
		Technology transfer	2 (theoretical)	(practical) 3

Stage 3 / Economy		Guidance methods	2 (theoretical)	(practical) 3
		Economic insects	2 (theoretical)	(practical) 3
		Jungles and ways to combat them	2 (theoretical)	(practical) 3
		Groups and leadership	2 (theoretical)	(practical) 3
		Guidance aids and tools	2 (theoretical)	(practical) 3
		Guidance communication methods	2 (theoretical)	(practical) 3
		Farm management	2 (theoretical)	(practical) 3
		Search methods	2 (theoretical)	(practical) 3
		Agricultural pest control	2 (theoretical)	(practical) 3
		Basics of milk	2 (theoretical)	(practical) 3
		English language /4	) 1 (Theoretical	----
Stage 4 / Economy		Agricultural development	2 (theoretical)	----
		Econometrics/1	2 (theoretical)	(practical) 3
		Resource Economics	2 (theoretical)	----
		Cereal crops	2 (theoretical)	(practical) 3
		Agricultural Policy	2 (theoretical)	----
		Research methods and episodes	1 (theoretical)	----
		Research project	1 (theoretical)	----
		Financing and lending	2 (theoretical)	(practical) 3
		Econometrics/2	2 (theoretical)	(practical) 3
		Project evaluation	2 (theoretical)	(practical) 3
		Agricultural planning	2 (theoretical)	----
		Foreign trade	2 (theoretical)	----
		Economic thought and systems	2 (theoretical)	----

		Research project	1 (theoretical)	----
Stage 4 / Guidance		Guiding environment	2 (theoretical)	(practical) 3
		Guidance training	2 (theoretical)	(practical) 3
		Guidance management	2 (theoretical)	(practical) 3
		Program planning	2 (theoretical)	(practical) 3
		Theories of change	2 (theoretical)	(practical) 3
		Graduation research	1 (theoretical)	-----
		Episodes	---	(practical) 2
		Guidance Programs Calendar	2 (theoretical)	(practical) 3
		Public relations advisory	2 (theoretical)	(practical) 3
		Guidance for rural women and children	2 (theoretical)	(practical) 3
		Educational Psychology	2 (theoretical)	(practical) 3
		Agricultural extension curricula	2 (theoretical)	(practical) 3
		Episodes	----	(practical) 2
		Research project	1 (theoretical)	-----

9. Expected learning outcomes of the program
Knowledge
1- Providing students with knowledge and understanding of everything related to the .specialization of economics and agricultural guidance 2- Knowledge of general principles in agricultural engineering
Skills
. Developing students' thinking and analysis skills and enabling them to apply what they have learned
Values
Enabling the student to know the ethical and professional issues and responsibilities in the field of .specialization, and to gain positive attitudes and work on improving the ability to think rationally

10. Teaching and learning strategies
1- .The language of instruction is Arabic and English 2- Teaching is done using the latest technological means, tools, and audio-visual educational .techniques 3- Field visits

11. Evaluation methods
) Surprise exams .1**quiz** .(.Monthly exams .2 .Reports .3 .Homework .4

12. Academic Staff

Faculty members

The name	Specialization		Academic title and certificate		Faculty preparation	
	general	private	Academic title	Certificate	angel	lecturer
M.M. Yasmine Hatem Hassan Juma Al- Samarrai	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	
A.M.D. Naglaa Salah Madloul Ahmed	Agricultural economics	Macroeconomics	assistant professor	PhD	angel	
M.M. Shahla Kamel Ismail Hamad Al- Abbasi	Agricultural economics	Agricultural policy	Assistant Professor	Master's	angel	
Prof. Dr. Jadou ' Shahab Ahmed Ali Al-Jumaili	Agricultural economics	Agricultural production economics	.Mr	PhD	angel	
A. Mahmoud Hadith Jassim Malouh Al-Jumaili	Agricultural guidance	Adopting agricultural innovations	.Mr	Master's	angel	
Mr. Majid Khalil Ali Mohsen Al-Zubaidi	Agricultural guidance	Transfer of agricultural technologies	.Mr	Master's	angel	
Prof. Dr. Yasra Tariq Bakr Hussein Al- Bajari	Agricultural economics	Agricultural production economics	.Mr	PhD	angel	
A. D. Firas Ibrahim Rahim Khaloufi Al-Lahibi	Agricultural economics	Agricultural Marketing	Mr	PhD	angel	
A.M.D. Mohammed Omar Sharif Hazaa Al-Tikriti	Agricultural economics	Agricultural development	assistant professor	PhD	angel	
Dr. Omar Adel Jassim Mohammed Al- Ani	Agricultural economics	Standard Economics	Teacher	PhD	angel	
Dr. Hashim Atallah Abdul Eid Al- Taie	Agricultural economics	Microeconomics	Teacher	PhD	angel	

A.M. Hassib Mahmoud Amin Dahawi Al -Ajili	Agricultural guidance	Guidance training	assistant professor	Master's	angel	
M. Mohammed Kamel Abdullah Nasser Al-Azzawi	economy	Education Economics	Teacher	Master's	angel	
A.M. Raafat Riad Abdel Wahab Samir Al -Fayyadhi	Agricultural guidance	Transfer of agricultural technologies	assistant professor	PhD	angel	
Dr. Munther Saber Mustafa Abdullah	Agricultural economics	Macroeconomics	Teacher	PhD	angel	
Mr. Eng. Abdul Karim Armid Noman	business management	Marketing Management	Assistant Professor	Master's	angel	
M.M. Hadeel Falih Hamid Mohammed Al Shamri	Agricultural economics	Production economics	Assistant Professor	Master's	angel	
M.M. Sarah Saeed Latif Hussein Al- Zubaidi	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	
Mr. Riyad Saeed Hamoud Naseef Al- Abidi	Agricultural guidance	Guidance contact	Assistant Professor	Master's	angel	
Mr. Bashar Awad Musa Khalaf Al- Dulaimi	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	
Prof. Dr. Majeed Hadi Saleh Al-Hamdani Store	Agricultural guidance	Guidance management	Mr	PhD	angel	
Dr. Ilaf Taha Hamid Jassim Al- Douri	Agricultural economics	Macroeconomics	Teacher	PhD	angel	
A.M. Ahmed Sakr Abdullah Hassan Al-Ajili	Agricultural guidance	Guidance management	assistant professor	PhD	angel	
Mr. Mohammed Jassim Abdullah Mohammed Al-Jumaili	economy	economy	Assistant Professor	Master's	angel	
M.M. Saad Khalaf Mahous Hamad Al- Jabouri	economy	economy	Assistant Professor	Master's	angel	
A.M. Maha Saeed Shida Juma Al- Nasiri	Agricultural guidance	Guidance training	assistant professor	Master's	angel	
A.M. Mazhar Abdullah Ahmed Abbas Al- Dulaimi	business management	Organizational Theory and Organizational Behavior	Assistant Professor	Master's	angel	
M.A. Ibrahim Mohammed Saleh Dhnoon Al-Jubouri	General Administration	General Administration	Teacher	Master's	angel	
Ms. Lina Tariq Ali Ne'ma Al-Kroui	business management	Financial management	Teacher	Master's	angel	
Dr. Hadeel Ghaleb Hassan Mohammed Al- Douri	Agricultural economics	Macroeconomics	Teacher	PhD	angel	
Dr. Manar Saleh Hamad Hassan Al- Obaidi	Agricultural economics	Agricultural economics	Teacher	PhD	angel	

Dr. Walid Sabbar Ayed Hassan Al Shammari	Agricultural guidance	Adopting agricultural innovations	Teacher	PhD	angel	
Dr. Maher Mustafa Shabib Ghadhban	Agricultural economics	Microeconomics	Teacher	PhD	angel	
M.M. Tasneem Saad Yassin Latif Al- Tikriti	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	
M.M. Imad Muzahim Muhammad Marmoos	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	
M.M. Nebras Rabie Shaker Mahmoud	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	
M.M. Sarah Marbad Taha Bakr Al- Abidi	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	
Mr. Mahmoud Essam Suleiman Musa	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	
M.M. Amani Abbas Fadhel Aziz Al- Dulaimi	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	
M.M. Safa Iyad Younis Mahmoud Al- Tikriti	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	
M.M. Hassan Haitham Ismail Abdel Razzaq	economy	Economic development and planning	Assistant Professor	Master's	angel	
Mr. Faisal Hussein Saud Ahmed Al - Jawaani	Agricultural economics	Agricultural policy	Assistant Professor	Master's	angel	
M.M. Samer Khalaf Hamid Al- Jubouri	economy	economy	Assistant Professor	Master's	angel	
M.M. Sima Essam Mamdouh Alwan	law	law	Assistant Professor	Master's	angel	
Dr. Omar Baban Abdullah Salman Al- Jabouri	Agricultural economics	Project evaluation	Teacher	PhD	angel	
Mr. M. Khalaf Jassim Saleh Khalaf Al-Jabouri	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	
Mr. Ali Ibrahim Ayash Mohammed Al- Jabouri	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	
M.M. Sara Lazem Mohammed	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	
Mr. Sajid Nabil Abdulaziz Abdul Karim Al-Badri	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	
Mr. Adnan Ali Ati	Agricultural guidance	Agricultural guidance	Assistant Professor	Master's	angel	

Dr. Arwa Osama Ibrahim Mohammed	Agricultural economics	Agricultural economics	Teacher	PhD	angel	
Dr. Hamad Mahdi Saleh Hussein Al-Jumaili	Agricultural economics	Agricultural economics	Teacher	PhD	angel	
M.M. Amna Hamid Mayouf	Agricultural economics	Agricultural economics	Assistant Professor	Master's	angel	

Professional development
Orientation of new faculty members
– Adherence to the instructions of the Iraqi Ministry of Higher Education and Scientific Research (in all its details)
Professional development for faculty members
– ,Urging and encouraging lecturers to publish research and participate in conferences, seminars workshops and training courses held in the field of general specialization, auditing or the field of academic work in general, and scientific cooperation with various institutions inside or .outside the country

13. Acceptance Criteria
According to the instructions of the Iraqi Ministry of Higher Education and Scientific Research

14. The most important sources of information about the program
- Textbooks - Lectures by teachers - Internet

15. Program development plan

1- .Attracting the largest possible number of students
2- .Increase field visits to government and private projects
3- .Encourage students to continue visiting the college or university library
4- .Urging students to benefit from summer training in government institutions
5- Improving research projects, whether at the level of doctoral theses and dissertations or . graduation research
6- Increase cooperation with various scientific institutions inside and outside Iraq

Program Skills Chart															
				Required learning outcomes of the program											
Year/Level	Course code	Course name	Essential or ?optional	Knowledge				Skills				Values			
				A1	A2	A3	A4	B1	B2	B3	B4	A1	A2	A3	A4
The first stage 2024-2025		Agricultural economics	essential	√	√	√	√	√	√	√	√	√	√	√	√
		mathematics	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Animal production	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Gardening Basics	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Field crops	essential	√	√	√	√	√	√	√	√	√	√	√	√
		English language /1	essential	√	√	√	√	√	√	√	√	√	√	√	√
		rights	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Calculators/1	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Social Psychology	essential	√	√	√	√	√	√	√	√	√	√	√	√
		rural community	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Soil principles	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Principles of Industries	essential	√	√	√	√	√	√	√	√	√	√	√	√

		Agricultural mechanization	essential	√	√	√	√	√	√	√	√	√	√	√	√
		English language /2	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Calculators /2	essential	√	√	√	√	√	√	√	√	√	√	√	√
Phase II 2024-2025		partial theory	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Principles of Statistics	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Guiding principles	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Prevention Basics	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Poultry production	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Calculators /3	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Vegetable production	essential	√	√	√	√	√	√	√	√	√	√	√	√
		English language /3	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural Marketing	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Adult Education	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Calculators /4	essential	√	√	√	√	√	√	√	√	√	√	√	√
		freedom and democracy	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Irrigation and drainage	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Health and diseases	essential	√	√	√	√	√	√	√	√	√	√	√	√

/ Stage 3 Economy 2024-2025		Partial theory /2	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Macroeconomics /1	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural statistics methods	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural accounting	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Farm management	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Sports economics	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Technology transfer	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Macroeconomics /2	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Production economics	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural cost accounting	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Basics of milk	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Price Analysis	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Monetary fiscal policy	essential	√	√	√	√	√	√	√	√	√	√	√	√
		English language /4	essential	√	√	√	√	√	√	√	√	√	√	√	√
/ Stage 3 Guidance 2024-2025		Community development	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Technology transfer	essential	√	√	√	√	√	√	√	√	√	√	√	√

		Guidance methods	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Economic insects	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Jungles and ways to combat them	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Groups and leadership	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Guidance aids and tools	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Guidance communication methods	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Farm management	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Search methods	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural pest control	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Basics of milk	essential	√	√	√	√	√	√	√	√	√	√	√	√
		English language /4	essential	√	√	√	√	√	√	√	√	√	√	√	√
/ Stage 4 Economy 2024-2025		Agricultural development	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Econometrics/1	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Resource Economics	essential	√	√	√	√	√	√	√	√	√	√	√	√

		Cereal crops	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural Policy	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Research methods and episodes	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Research project	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Financing and lending	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Econometrics/2	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Project evaluation	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural planning	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Foreign trade	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Economic thought and systems	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Research project	essential	√	√	√	√	√	√	√	√	√	√	√	√
Stage 4 Guidance / 2024-2025		Guiding environment	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Guidance training	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Guidance management	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Program planning	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Theories of change	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Graduation research	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Episodes	essential	√	√	√	√	√	√	√	√	√	√	√	√

		Guidance Programs Calendar	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Public relations advisory	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Guidance for rural women and children	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Educational Psychology	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Agricultural extension curricula	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Episodes	essential	√	√	√	√	√	√	√	√	√	√	√	√
		Research project	essential	√	√	√	√	√	√	√	√	√	√	√	√

- Please tick the boxes corresponding to the individual learning outcomes of the .programme being assessed

Mandatory (basic)	Stage: First		Subject Name : Rural Sociology		
Planned teaching hours	Hours of theoretical (2) lectures		Practical hours (3)		Number of units: 3
Curriculum Description	study material includes a summary of the most important characteristics of rural society, its basic concepts, methods of social control, and .obstacles to development in rural societies				
The purpose of teaching the curriculum	The course aims to introduce the student to the concept of general ,sociology, rural sociology, adaptation, interaction, socialization .settlement and its patterns, migration, its types and causes				
Learning outcomes	To enable the student to know, understand and apply procedures related .to rural communities				
The textbook	rural community , Written by Salem Khalaf Abdul , 1992				
Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final Practical Exam	Final theoretical test
	%25	%10	%5	%20	%40

Topics

The week	Theoretical material	number Watches	Practical material	Number of hours
1	The concept of sociology in general	2	Reports, discussions, and practical exercises on the .theoretical part	3
2	rural community	2	Reports, discussions, and practical exercises on the .theoretical part	3
3	Basic Concepts in the Study of Rural Sociology	2	Reports, discussions, and practical exercises on the .theoretical part	3
4	Socialization	2	Reports, discussions, and practical exercises on the .theoretical part	3
5	social control	2	Reports, discussions, and practical exercises on the .theoretical part	3
6	Social adaptation	2	Reports, discussions, and practical exercises on the .theoretical part	3
7	First month exam	2	review	3
8	Social interaction	2	Reports, discussions, and practical exercises on the .theoretical part	3
9	Elements and characteristics of rural society	2	Reports, discussions, and practical exercises on the .theoretical part	3
10	Settlement and its patterns	2	Reports, discussions, and practical exercises on the .theoretical part	3
11	Historical development of population studies	2	Reports, discussions, and practical exercises on the .theoretical part	3

12	**Migration types and causes**	**2**	**Reports, discussions, and practical exercises on the .theoretical part**	**3**
13	**Rural Social Institutions and Social Change**	**2**	**Reports, discussions, and practical exercises on the .theoretical part**	**3**
14	Second month exam	**2**	**Reports, discussions, and practical exercises on the .theoretical part**	**3**
15	**review**	**2**	**review**	**3**

Mandatory (basic)	**Stage: First / Economics and Guidance**	**name : Social Psychology**	
Planned teaching hours	**Hours of theoretical (2) lectures**	**Practical hours (3)**	**Number of units: 3**
Curriculum Description	**includes an introduction to social psychology, the historical development of social psychology, social upbringing, the role of the .family in social upbringing, and psychology among Muslims**		

The purpose of teaching the curriculum	**teach the student and get to know the individual The subject aims to and the group, teach the student and get to know the personality and .get to know psychology and family problems**				
Learning outcomes	**The student should know and understand the vocabulary and topics of .the curriculum and be able to apply what he has learned in reality**				
The textbook	**Relying on the curriculum prepared by the subject teacher based on the Internet and psychology books**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical test**
	%25	**%10**	**%5**	**%20**	**%40**

Topics

The week	**Theoretical material**	**number Watches**	**Practical material**	**Number of hours**
1	Definitions in social psychology	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
2	Behavior	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
3	Socialization	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
4	Socialization aspects	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
5	Socialization methods	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
6	Individual and group	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
7	review	**2**	**review**	**3**
8	First month exam	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
9	Character	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
10	Dynamic factors	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
11	Defensive Tricks	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
12	Leadership	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
13	Psychology and family problems	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**

14	review	**2**	**,Reports, discussions and practical exercises .on the theoretical part**	**3**
15	Second month exam	**2**	**review**	**3**

Mandatory (basic)	**Stage: First**		**: Subject name mathematics**		
Planned teaching hours	**Hours of theoretical (2) lectures**		**Practical hours (3)**		**Number of units: 1**
Curriculum Description	**study material includes a summary of the most important mathematical concepts and operations in both Arabic and English, as well as a practical .application of these various mathematical concepts**				
The purpose of teaching the curriculum	**,The course aims to introduce the student to the concept of mathematics which is considered the window to mastery. The importance of .mathematical concepts in practical life and their uses**				
Learning outcomes	**To enable the student to know, understand and apply procedures related .to mathematical concepts**				
The textbook	**Mathematics and its applications in administrative sciences, authored by Dr. Mahmoud Mohammed Al-Bayati, Dr. Dalal Al-Qadi, 2015**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical test**
	%25	**%10**	**%5**	**%20**	**%40**

Topics

The week	**Theoretical material**	**number Watches**	**Practical material**	**Number of hours**

1	Review in Algebra	2	,Reports, discussions and practical exercises .on the theoretical part	3
2	Equations with one variable	2	,Reports, discussions and practical exercises .on the theoretical part	3
3	Inequalities	2	,Reports, discussions and practical exercises .on the theoretical part	3
4	Straight lines and systems of linear equations	2	,Reports, discussions and practical exercises .on the theoretical part	3
5	Functions and drawing	2	,Reports, discussions and practical exercises .on the theoretical part	3
6	First month exam	2	review	3
7	Matrices	2	,Reports, discussions and practical exercises .on the theoretical part	3
8	Rules on matrices	2	,Reports, discussions and practical exercises .on the theoretical part	3
9	Derivatives and their applications	2	,Reports, discussions and practical exercises .on the theoretical part	3
10	Higher derivatives	2	,Reports, discussions and practical exercises .on the theoretical part	3
11	Integration and its applications	2	,Reports, discussions and practical exercises .on the theoretical part	3
12	Economic applications of integration	2	,Reports, discussions and practical exercises .on the theoretical part	3
13	Second month exam	2	review	3
14	Third month exam	2	review	3
15	review	2	review	3

Planned teaching hours	theoretical	2hours	practical		number of units	2
Description of the curriculum	**This course description provides a brief summary of the most import characteristics of the course and the learning outcomes that the studer expected to achieve, demonstrating whether he has made maximum us the available learning opportunities. It must be linked to the descript of the program.**					
Course objectives:	**1- Recognizing scientific thinking as a civilized approach** **2- Recognize the scientific method and the mental method, the features of scientific thinking** **3- Getting to know the concept of science, the objectives of science, the classification of sciences, the difference between science and culture, the concept of knowledge.** **4- Understand the concepts of the scientific research method** **5- Getting to know the data of science and experimental research, concepts, definitions, and variables**					
Vertical separation estimates	Theoretical semester tests	Practical quarterly tests	Daily theoretical tests	Final theoretical exam	Final practical test	
	%25	**%10**	**%5**	**%20**	**%40**	

		Theoretical material	**The number of hours**		
	1	Glam thinking is a civilized approach The scientific method and the mental method, features of scientific thinking		nothing	
	2	Introduction to scientific research concepts The concept of science, the objectives of the boy, the classification of science, the difference between science and culture, the concept of knowledge		nothing	
	3	Data of science and experimental research, concepts and definitions, variables		nothing	
	4	The rules of the scientific research method, the development of knowledge and the emergence of scientific research		nothing	
	5	Scientific research methodology, the pillars of organized research		nothing	

	6	Research and its method Types and patterns of research Research forms, the difference between research and report		nothing	
	7	Research preparation stages		nothing	
	8	Data collection and tools Sources of data collection - data analysis - eliciting results		nothing	
	9	user form Steps of designing the questionnaire - components of the form - conditions of a good questionnaire - methods of testing the validity of the questionnaire - advantages and disadvantages of the questionnaire		nothing	
	10	Metrics and measuring tools The concept of measurement, types of measurement, confidence and scale, validity and reliability		nothing	
	11	Statistical methods and data analysis techniques		nothing	
	12	The concept of statistics, its fields and stages of the statistical curriculum, methods of data presentation and analysis		nothing	
	13	Rules and controls of citation and texts, citation types, and its rules, footnote, fixation of sources, references and appendices, index of contents, punctuation, punctuation methods in the margin		nothing	
	14	Rules and controls of citation and texts, citation types, and its rules, footnote, fixation of sources, references and appendices, index of contents, punctuation, punctuation methods in the margin		nothing	
	15	Review		nothing	

Mandatory (basic)	Stage: First spring course	Name : Computer Applications (2)	
Planned teaching hours	**Hour of theoretical (1) lectures**	**Practical hours (2)**	**Number of units: 1**

Curriculum Description	**The study material includes a summary of the most important characteristics of the computer, its basic concepts, and its hardware .and software components**				
The purpose of teaching the curriculum	**Introducing students to the computer and providing a summary of the most important characteristics of the computer, its basic concepts, its ,hardware and software componentssoft ware and hard ware, and its .parts through the programs and applications used in this aspect**				
Learning outcomes	**To enable the student to know, understand and apply the procedures .related to computer basics**				
The textbook	**Introduction to Computer Dr. Abdul Hamid Mahjoub Hamad**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical exam**
	%25	**%10**	**%5**	**%20**	**%40**

Topics

The week	**Theoretical material**	**number Watches**	**Practical material**	**Number of hours**
1	**Definition of computer and its types**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
2	**Computer generations**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
3	**Input and output units in the computer**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
4	**- Operating Systems Operating System Basics**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
5	**- TaskbarStart Menu - Dialog Box**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
6	**Create folders, rename a file or folder, and display .properties**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
7	**Delete and restore information and folders**	**1**	**review**	**2**
8	**First month exam**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
9	**Printer management and features**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
10	**Word program, program interface and program bars**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
11	**Practical application**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**
12	**Home tab and its groups**	**1**	**,Reports, discussions and practical exercises .on the theoretical part**	**2**

13	Practical application	1	,Reports, discussions and practical exercises .on the theoretical part	2
14	Drawer tab and groups	1	,Reports, discussions and practical exercises .on the theoretical part	2
15	review	1	review	2

Mandatory (basic)	fall semester Stage: First		Name : Computer Applications		:Code
Planned teaching hours	Hour of theoretical (1) lectures		Practical hours (2)		Number of units: 1
Curriculum Description	The study material includes a summary of the most important characteristics of the computer, its basic concepts, and its hardware .and software components				
The purpose of teaching the curriculum	Introducing students to the computer and providing a summary of the most important characteristics of the computer, its basic concepts, its ,hardware and software componentssoft ware and hard ware, and its .parts through the programs and applications used in this aspect				
Learning outcomes	To enable the student to know, understand and apply the procedures .related to computer basics				
The textbook	Introduction to Computer Dr. Abdul Hamid Mahjoub Hamad				
Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final Practical Exam	Final theoretical exam
	%25	%10	%5	%20	%40

Topics

The week	Theoretical material	number Watches	Practical material	Number of hours
1	Introduction to the computer and its importance in detail	1	,Reports, discussions and practical exercises .on the theoretical part	2
2	Types of computers used	1	,Reports, discussions and practical exercises .on the theoretical part	2
3	: Computer components software components	1	,Reports, discussions and practical exercises .on the theoretical part	2
4	:Computer components Material components)Hardware (	1	,Reports, discussions and practical exercises .on the theoretical part	2
5	:Computer components Material components)Hardware (	1	,Reports, discussions and practical exercises .on the theoretical part	2
6	System unit in computer	1	,Reports, discussions and practical exercises .on the theoretical part	2
7	System unit in computer	1	review	2
8	Microsoft OfficeSuite	1	,Reports, discussions and practical exercises .on the theoretical part	2
9	Microsoft Office : Suite Microsoft word program	1	,Reports, discussions and practical exercises .on the theoretical part	2
10	Microsoft word program	1	,Reports, discussions and practical exercises .on the theoretical part	2
11	program Tables	1	,Reports, discussions and practical exercises .on the theoretical part	2
12	program Tables	1	,Reports, discussions and practical exercises .on the theoretical part	2
13	Word printing program	1	,Reports, discussions and practical exercises .on the theoretical part	2
14	Painter program	1	,Reports, discussions and practical exercises .on the theoretical part	2
15	review	1	review	2

Mandatory (Basic)	Stage: Second	Subject name: Human Rights	: Code
Teaching hours planned	2 hours of theoretical lectures		Number of units : 2
Curriculum Description	The course description provides human rights images of care and .concern in ancient civilizations We alsoconcluded that these rights and freedoms were at the heart of constitutions and international covenants.		
The purpose of teaching The curriculum	The aim of teaching human rights is to focus on or identify the degree of interest of ancient civilizations in the issue of human rights and to know these rights throughout the ages they have .passed through The human being ispresent And in the past .		
Learning outcomes	The course description aims to identify the interest of ancient .civilizations in the issue of human rights The human being.		
The textbook	- 1 Human Rights, Children and Democracy(Prof. Dr. Maher Saleh Alawi)) Chairman of the Committee Authored by(.Prof Dr. Raad Naji Al-Jaddah,) .ProfDr. Riyadh Aziz Hadi)) , .Prof. DrKamel Abdel Spider( ) 2009)		
Chapter Estimates Academic	Theoretical semester exams	Daily theoretical tests	Final theoretical exams
	% 10	% 30	% 60

The week	Theoretical material	Number of hours	Number of hours
1	Human rights in ancient civilizations	2	2
2	Human rights in Greek civilization	2	2
3	Human rights in ancient Iraqi civilizations	2	2
4	Human rights in ancient Egyptian civilization	2	2
5	Human Rights in Islam	2	2

6	**Universal Declaration of Human Rights**	**2**	**2**
8-7	**Constitution of the Republic of Iraq for the year2005**	**2**	**2**
10-9	**Guaranteeing Human Rights in Islam**	**2**	**2**
13-11	**Charter of the United Nations**	**2**	**2**
15-14	**Human Rights Council**	**2**	**2**

Mandatory (Basic)	**stage first**		**Agricultural machinery and equipment**		
Planned teaching hours per week	**Hours of theoretical (2) lectures**		**Practical (3) hours**	**Number of units: 3**	
Curriculum Description	**The curriculum covers the basics of agricultural machinery and .equipment from both theoretical and practical aspects**				
The purpose of teaching the curriculum	**Introducing the student to the types of agricultural machines and equipment, including types of tractors, types of engines, means of ,transmission in the tractor, means of exploiting the tractor's capacity types of soil preparation equipment, smoothing equipment, seeding equipment, fertilization equipment, equipment for serving the growing crop, spraying and dusting equipment, equipment for serving orchards and forests, harvesting and harvesting equipment, calculating the . productivity and costs of using agricultural machines and equipment**				
Learning outcomes	**After receiving this material, the student will be able to identify the types of machines. The studied agricultural machinery, its requirements and operating methods, in addition to determining the selection of the appropriate type of machinery and equipment for each agricultural . process**				
The textbook	**Agricultural Machinery and Equipment / Dr. Yassin Hashem Al-Tahhan and Dr. Mohammed Jassim Al-Naama (2000)**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical exam**
	25%	10%	5%	20%	40%

Weekly class schedule

The week	**Theoretical material**	**Numb er of hours**	**Practical material**	**Numb er of hours**
1	**Introduction to the types of pullers , their uses and the differences between them**	2	**Learn about the types of tractors in the workshop , their parts and how .to drive them**	3
2	**Introduction to the types of , internal combustion engines their parts and types, and measuring their capacity and efficiency**	2	**Watching engine parts in the workshop and showing some films about engine operation**	3
3	**:Means of transmission in the tug design and operation of each .means of transmission in the tug**	2	**Identify the means of transmission in the tugboat in terms of types and the .operation of each device in it**	3

4	**Means of exploiting the capacity of the tugboat, its types and ways to benefit from it**	2	**Identifying the means of exploiting the tug capacity in tugboats and applying this practically in the workshop**	3
5	**Soil preparation equipment types and uses**	2	**Learn about soil preparation equipment , its parts and methods of .connecting it to the tractor**	3
6	**Smoothing equipment types and applications**	2	**, Learn about smoothing equipment its parts and how to connect it to the tug**	3
7	**First semester theoretical exam**	2	**First practical semester exam**	3
8	**,Seeding Equipment : Types Design and Uses**	2	**Identifying the parts of the seeders in the workshop , methods of connecting them to the puller, and calibrating them in the laboratory .and field**	3
9	**Fertilization equipment types and applications**	2	**and chemical fertilizer fertilization equipment**	3
10	**,crop service equipment : types applications and methods of use**	2	**Learn about irrigation , weeding and cultivating equipment**	3
11	**Spraying and dusting equipment its applications, types, and , .methods of use**	2	**and dusting equipment, identifying its parts and methods of field calibration**	3
12	**,and forest service equipment explanation of its types and methods of use**	2	**Forest Service Equipment : Learn about manual and mechanical .orchard service machines**	3
13	**,Harvesting equipment : types uses and problems associated with it during work**	2	**Identify the parts of harvesting equipment and how to calibrate .them**	3
14	**Calculating the productivity and costs of using theoretical and actual agricultural machines and equipment**	2	**Practical applications on calculating the productivity and costs of using agricultural machines and equipment**	3
15	**Second semester theoretical exam**	2	**Second practical semester exam**	3

Mandatory (Basic)	**Stage: Second**	**Subject Name: Freedom and Democracy**	**The symbol**
Teaching hours planned	**2 hours of theoretical lectures**		**Number of units : 2**
Curriculum Description	**The concept of democracy is one of the most controversial concepts and terms, although it is not a new concept. One of the**		

	main reasons for this is not the term itself, but rather its content and meanings.
The week	Theoretical material Among different peoples. Number of hours Number of hours
The purpose of teaching	The aim of teaching the subject of freedom and democracy is to know the exercise of power by the people.
The curriculum	1 The concept of democracy How does he govern himself or delegate it to representatives in power ? 2 2
	2 Roots of Democracy 2 2
Learning outcomes	3 Definition of democracy - The course description aims to identify successive democracies through the concept of democracy. And its forms. 2 2
	4 Democracy between universality and privacy 2 2
The textbook	-1 Human Rights, Children and Democracy(Prof. Dr. Maher Saleh Alawi) - Head of the Authorship Committee(Prof.Dr. Raad Naji Al-Jeddah) Prof.Dr. Riyadh Aziz Hadi)) , Prof.Dr.Kamel Abd(2009)
	5 Forms of democracy 2 2
	6 Pillars of the representative system 2 2
	7-8 Electoral College 2 2
Chapter Estimates Academic	9-10 Women and Elections Theoretical semester exams 2 Daily theoretical tests 30% Final theoretical exam 60% 2
	11-12 Election process %10 2 2
	13-14 Electoral lists 2 2
	15

Planned teaching hours	theoretical	2hours	practical		number of units	2

Description of the curriculum	**This course description provides a brief summary of the most import characteristics of the course and the learning outcomes that the studer expected to achieve, demonstrating whether he has made maximum us the available learning opportunities. It must be linked to the descript of the program.**
Course objectives:	**6- Recognizing scientific thinking as a civilized approach** **7- Recognize the scientific method and the mental method, the features of scientific thinking** **8- Getting to know the concept of science, the objectives of science, the classification of sciences, the difference between science and culture, the concept of knowledge.** **9- Understand the concepts of the scientific research method** **10- Getting to know the data of science and experimental research, concepts, definitions, and variables**
Methodical book	

Vertical separation estimates	Theoretical semester tests	Practical quarterly tests	Daily theoretical tests	Final theoretical exam	Final practical test
	25%	10%	5%	20%	40%

	Theoretical material	**The number of hours**		
1	Glam thinking is a civilized approach The scientific method and the mental method, features of scientific thinking			
2	Introduction to scientific research concepts The concept of science, the objectives of the boy, the classification of science, the			

	difference between science and culture, the concept of knowledge			
3	Data of science and experimental research, concepts and definitions, variables			
4	The rules of the scientific research method, the development of knowledge and the emergence of scientific research			
5	Scientific research methodology, the pillars of organized research			
6	Research and its method Types and patterns of research Research forms, the difference between research and report			
7	Research preparation stages			
8	Data collection and tools Sources of data collection - data analysis - eliciting results			
9	user form Steps of designing the questionnaire - components of the form - conditions of a good questionnaire - methods of testing the validity of the questionnaire - advantages and disadvantages of the questionnaire			
10	Metrics and measuring tools The concept of measurement, types of measurement, confidence and scale, validity and reliability			
11	Statistical methods and data analysis techniques			
12	The concept of statistics, its fields and stages of the statistical curriculum, methods of data presentation and analysis			
13	Rules and controls of citation and texts, citation types, and its rules, footnote, fixation of sources, references and appendices, index of contents, punctuation, punctuation methods in the margin			
14	Rules and controls of citation and texts, citation types, and its rules, footnote, fixation of sources, references and appendices, index of contents, punctuation, punctuation methods in the margin			
15	Review			

:Code	Name : Computer Applications (3)	Stage: Second Fall Course	Mandatory (basic)
Number of units: 1	Practical hours (2)	Hour of theoretical (1) lectures	Planned teaching hours
The study material includes a summary of the most important characteristics of the computer, its basic concepts, and its hardware .and software components			Curriculum Description
Introducing students to the computer and providing a summary of the most important characteristics of the computer, its basic concepts, its ,hardware and software componentsand its parts through the programs and applications used in this aspect.			The purpose of teaching the curriculum
To enable the student to know, understand and apply the procedures .related to computer basics			Learning outcomes
Introduction to Computer Dr. Abdul Hamid Mahjoub Hamad			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
%40	%20	%5	%10	%25	

Topics

Number of hours	Practical material	number Watches	Theoretical material	The week
2	,Reports, discussions and practical exercises .on the theoretical part	1	PowerPoint program and program interface - Office button and its contents	1
2	,Reports, discussions and practical exercises .on the theoretical part	1	Practical application	2
2	,Reports, discussions and practical exercises .on the theoretical part	1	Program bars, home tab and its contents, drawers tab and its contents	3
2	,Reports, discussions and practical exercises .on the theoretical part	1	Practical application	4
2	,Reports, discussions and practical exercises .on the theoretical part	1	Some concepts used in PowerPoint	5
2	,Reports, discussions and practical exercises .on the theoretical part	1	Practical application	6
2	review	1	Slide View Tab and Details View Tab with Slides and Print Slides	7
2	,Reports, discussions and practical exercises .on the theoretical part	1	First month exam	8
2	,Reports, discussions and practical exercises .on the theoretical part	1	How to design videos using PowerPoint	9
2	,Reports, discussions and practical exercises .on the theoretical part	1	Practical application	10

2	,Reports, discussions and practical exercises .on the theoretical part	1	Introduction topaint and how to use it	11
2	,Reports, discussions and practical exercises .on the theoretical part	1	Practical application	12
2	,Reports, discussions and practical exercises .on the theoretical part	1	Tab bar , drawing tools format, insert tab and its groups, and classification tab	13
2	,Reports, discussions and practical exercises .on the theoretical part	1	Practical application	14
2	review	1	review	15

Mandatory (basic)	Stage: Second Cos II	Name : Computer Applications (4)	
Planned teaching hours	Hour of theoretical (1) lectures	Practical hours (2)	Number of units: 1
Curriculum Description	The study material includes a summary of the most important characteristics of the computer, its basic concepts, and its hardware .and software components		
The purpose of teaching the curriculum	Introducing students to the computer and providing a summary of the most important characteristics of the computer, its basic concepts, its ,hardware and software componentsand its parts through the programs and applications used in this aspect.		
Learning outcomes	To enable the student to know, understand and apply the procedures .related to computer basics		

The textbook	Introduction to Computer Dr. Abdul Hamid Mahjoub Hamad				
Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final Practical Exam	Final theoretical exam
	%25	%10	%5	%20	%40

Topics

The week	Theoretical material	number Watches	Practical material	Number of hours
1	Format tab bar drawing tools in word	1	,Reports, discussions and practical exercises .on the theoretical part	2
2	Practical application	1	,Reports, discussions and practical exercises .on the theoretical part	2
3	Page Layout Tab and its Groups	1	,Reports, discussions and practical exercises .on the theoretical part	2
4	Practical application	1	,Reports, discussions and practical exercises .on the theoretical part	2
5	References tab and groups	1	,Reports, discussions and practical exercises .on the theoretical part	2
6	Practical application	1	,Reports, discussions and practical exercises .on the theoretical part	2
7	Correspondence tab and its groups, View tab and its groups, and working with objects inserted in the document	1	review	2
8	First month exam	1	,Reports, discussions and practical exercises .on the theoretical part	2
9	Picture Tools Format Tab Bar	1	,Reports, discussions and practical exercises .on the theoretical part	2
10	Practical application	1	,Reports, discussions and practical exercises .on the theoretical part	2
11	Design tab bar of equation tools	1	,Reports, discussions and practical exercises .on the theoretical part	2
12	Practical application	1	,Reports, discussions and practical exercises .on the theoretical part	2
13	Internet	1	,Reports, discussions and practical exercises .on the theoretical part	2
14	Internet	1	,Reports, discussions and practical exercises .on the theoretical part	2
15	review	1	review	2

Planned teaching hours	theoretical	2 hours	practical	hours 3	Number of units	3
Curriculum Description	This course description provides a concise summary of the main featu ,of the course and the learning outcomes expected of the stud demonstrating whether he or she has made the most of the learn . opportunities available. It must be linked to the programme descripti					
The purpose of teaching the curriculum	the student with the theoretical foundations of Providing ,macroeconomics through his knowledge of foreign trade, financial ,economic and monetary policies, unemployment, inflation .international trade, economic development and other topics					
The textbook	Introduction to Macroeconomics, Muhammad Ahmad Al-Afandy, ,.ed., 2007. Principles of Macroeconomics, Fayez Ibrahim Al-Habib, 4th .King Saud University, 2004					
Vertical Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final theoretical exam	Final Practical Exam	
	%25	%10	%5	%20	%40	

Number of hours	material Practical	Number of hours	Theoretical material	
	function , marginal propensity to import, average propensity to import		Foreign trade and national income	1

	.Total leakage Total injection IE 1 7 1+5)		Determine the equilibrium level of national income	2
	Study of gap size and total leakage and total injection (T 14041-541141)		Government spending and the equilibrium level of income	3
	Measuring the head tax and the balanced budget multiplier		Taxes and their types	4
	Measuring the impact of taxes (proportional to income or indirect) .on consumption		Functions of Money - Motives for Demand for Money	5
	How to calculate average cash balance and how to calculate the market value of a bond		The relationship between bond prices and interest rates	6
	How to determine the interest rate by the demand for money, the supply of money, and calculating the volume of deposits		Money supply and monetary policy	7
	IS Curve Applications and Graphics		equilibrium in the goods and services market	8
	Applications and drawings of the LM curve		equilibrium in the money market	9
	The intersection of the 15 curve with the 11 7 1 curve and the determination of the interest rate and the level of real income		Total balance	10
	Examples of creeping inflation and hyperinflation		Inflation	11
	Choosing the price index that is used as a measure of inflation		Demand inflation and expenditure inflation	12
	Different stages of the business cycle		The Phillips Curve and the Dilemma of Mixed Economy Systems	13
	Applications on economic growth		Economic cycles	14
	Mathematical applications about my model Domar and Harrod		Economic growth	15

Weekly class schedule

Mandatory (Basic)	**Stage 3**		**Agricultural accounting**		
Planned teaching hours per week	**Hours of theoretical (2) lectures**		**Practical (3) hours**	**Number of units: 3**	
Curriculum Description	**The curriculum covers the basics of agricultural accounting from the concept and benefits, methods of recording and transferring entries and financial operations, the accounting cycle, record keeping and .their applications from both theoretical and practical perspectives**				
The purpose of teaching the curriculum	**Introducing the student to - the concept of agricultural financial accounting - the benefits of accounting - the development of accounting - identifying the practical procedures for recording accounting operations Budget method - Double entry theory Journal record - Posting to the general ledger - Monitoring Preparing the trial balance with totals . and balances - preparing the financial statements - final accounts**				
Learning outcomes	**After receiving this course, the student will be able to process cash transactions from an accounting perspective , record financial transactions and transfer them to the records, address errors, and .prepare trial balances and final accounts**				
The textbook	**Agricultural Accounting Book - Written by Dr. Marwan Nassib Al-Barouki 2017**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical exam**
	25%	10%	5%	20%	40%

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Learn about the types of records used in accounting	2	- Accounting in agricultural activity - the concept of agricultural accounting Accounting principles	1
3	Exercises on single entry theory and balance sheet	2	Accounting Terms - The Difference Between Agricultural Accounting and -Cost Accounting	2
3	Practical exercises on the budget equation according to the single entry theory	2	Accounting Theories - Single Entry Theory	3
3	Application of double entry rules	2	Double-entry theory - budget theory or financial position	4
3	First practical semester exam	2	- Proof of accounting transactions recording in the journal	5
3	How to register in the journal	2	Transfer to the general ledger and balance	6
3	How to transfer to the general ledger	2	First semester theoretical exam	7
3	Applications on balancing	2	Preparing the trial balance with totals and balances	8
3	Preparing the trial balance . with the balances	2	Agricultural purchases and sales and . their accounting treatment	9

3	Preparing the trial balance in totals	2	Returns and their types - and methods of accounting treatment - cash discount - trade discount - allowances	10
3	Preparing financial statements	2	-Cash discount-trade discount allowances	11
3	Inventory adjustments	2	Inventory and inventory adjustments	12
3	Final accounts	2	Preparing final accounts	13
3	review	2	review	14
3	Second practical semester exam	2	Second semester theoretical exam	15

Planned teaching hours	theoretical	hours 2	Number of units	2
Curriculum Description	**Teaching undergraduate students foreign trade concepts and theories and its indicators, balance of payments and exchange rate**			
The purpose of teaching the curriculum	Teaching and training students on the scientific method of foreign trade .and its concepts			
Learning outcomes	After receiving the curriculum, it becomes possible to: administration : Practical poultry nutrition and optimal application of the studied topics for the purpose of reaching Manufacturing and forming successful .relationships in this direction			
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	
	25%	10%	5%	20%

	Theoretical material	Number of hours
1	concept commerce Foreign	
2	Shapes policy commerce Foreign	
3	Theories explaining foreign trade	
4	Neoclassical Theories of International Trade	
5	First semester exam	
6	Modern theories in foreign trade	
7	Foreign trade indicators	
8	Balance of payments	
9	Second semester exam	
10	foreign exchange rate	
11	Dumping policy	
12	organized commerce Global	
13	review	
14	Third semester exam	
15	review	

Mandatory (Basic)	**fourth stage**	**Groups and leadership**	
Planned teaching hours per week	**Hours of theoretical (2) lectures**	**Practical (3) hours**	**Number of units: 3**
Curriculum Description	**and related group and leadership approach explains the concept of concepts such as the organizational structures related to them in rural agricultural communities . The approach also reviews Studies The formative trends of each social category and the way in which the agricultural rural community is managed**		
The purpose of teaching the curriculum	**The curriculum aims to teach and familiarize students with group dynamics, its types and theories. Enabling students to acquire .knowledge and science related to the topic of group dynamics And students gain knowledge And information in area ?What is it Leadership Its importance and development Capabilities Students from during Gain them Knowledge Private In theories Leadership And its types and supply Students With information on Leadership Rural And its importance And its types..**		
Learning outcomes	**After completing the lectures, the student will acquire knowledge ,related to the field of group dynamics, methods of social interaction and group problems, and provide students with knowledge related to ,the field of types of rural leaders and methods of discovering them and provide students with knowledge in the field of the group in terms of its concept, importance, and types, and provide Students Knowledge And information Related In concept Leadership And its importance And its types** **In addition to developing students' abilities on how to apply leadership theories in agricultural extension work, and also developing students' abilities on how to identify rural leadership and .ways to discover it** **As well as training students to use the sociometric method to measure .social relations**		
The textbook	**,cream slave The patient Abbas** (1981). **. Groups ,And leadership institution house Books For printing And publishing , Mosul Iraq Rural groups and leadership , Written by : Professor Dr. Sahab Ayed Yousef - Tikrit University (2016)**		

Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical exam**
	25%	10%	5%	20%	40%

Topics

Number of	**Practical material**	**Number**	**Theoretical material**	**The w**

hours		r o f h o u r s		eek
3	**Reports, discussions, and practical .exercises on the theoretical part**	**1**	**Defining the concept of group, and analyzing the comprehensive definition of group**	1
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**And components Group problems**	2
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**Categories Divide on Its basis Groups**	3
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**concept Interaction Social Levels Interaction Social**	4
3	**First practical semester exam**	2	**framework To study community dynamism community**	5
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**Methods Search in dynamism community**	6
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**Goals community**	7
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**First semester theoretical exam**	8
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**concept Leadership and importance Leadership in Guidance Agricultural**	9
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**Theories Leadership** Theories	10
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**Ways to identify and discover local rural leaders**	11
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**Patterns Leadership** **Types Leadership According to For style Follower in Leadership**	12
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**Types Leadership Rural** **Types Leaders The countryside Local**	13
3	**Reports, discussions, and practical .exercises on the theoretical part**	2	**features Recipes The leader Rural Local**	14
3	**Second practical semester exam**	2	**Second semester theoretical exam**	15

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Reports, discussions, and practical .exercises on the theoretical part	1	The concept of public relations and its history	1
3	Reports, discussions, and practical .exercises on the theoretical part	2	The difference between public relations and media, the difference between advertising and propaganda, the duality of public relations	2
3	Reports, discussions, and practical .exercises on the theoretical part	2	relations Motives for interest in public	3
3	Reports, discussions, and practical .exercises on the theoretical part	2	The concept of public relations and its importance	4
3	First practical semester exam	2	The concept of social interaction Levels of social interaction	5
3	Reports, discussions, and practical .exercises on the theoretical part	2	Public relations jobs and audience	6
3	Reports, discussions, and practical .exercises on the theoretical part	2	Public relations process planning	7
3	Reports, discussions, and practical .exercises on the theoretical part	2	First semester theoretical exam	8
3	Reports, discussions, and practical .exercises on the theoretical part	2	Organizational issues of public relations	9
3	Reports, discussions, and practical .exercises on the theoretical part	2	Public Relations Specialists	10
3	Reports, discussions, and practical .exercises on the theoretical part	2	The role of senior management in the field of public relations	11
3	Reports, discussions, and practical .exercises on the theoretical part	2	Public relations programs design	12
3	Reports, discussions, and practical .exercises on the theoretical part	2	Implementing, monitoring and evaluating the public relations program	13
3	Reports, discussions, and practical .exercises on the theoretical part	2	Stages of the public relations process in agricultural extension organizations	14
3	Second practical semester exam	2	Second semester theoretical exam	15

Mandatory (Basic) fourth stage

Planned teaching hours per week Hours of theoretical (2) Practical hours (3) Number of units: 3

Curriculum Description

curriculum explains the concept of public relations and the administrative concepts associated with it, such as the organizational structures of public relations departments in agricultural institutions and organizations . The curriculum also reviews Studies And the worthy trends in shaping the mental image and crisis management and the way in which customer relations are managed

The purpose of teaching the curriculum

curriculum aims to teach students administrative methods for organizing the work of public relations departments in institutions . And agricultural organizations , and the distribution of activities and tasks to the management departments.

Learning outcomes

After completing the lectures, the student will acquire knowledge and information related to the concept and nature of public relations . Knowledge of the field of motivations for interest in public relations , information related to the organizational forms of public relations , knowledge related to the public relations process in agricultural extension organizations , in addition to developing students' abilities on how to apply the concept and nature of public relations in extension work

The textbook

Agricultural How to care for public relations and apply appropriate organizational forms in organizing agricultural guidance

Raouf Hussein ,Al-Zaidi principles Relationships ,General The source ,Kuwait ,2014

Public Relations , Authored by : Professor Sahab Ayed Yousef Tikrit University (2016)

Semester Estimates

Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final Practical Exam	Final theoretical exam
25%	10%	5%	20%	40%

Mandatory (Basic)	Stage 3		Agricultural cost accounting		
Planned teaching hours per week	**Hours of theoretical (2) lectures**		**Practical (3) hours**	**Number of units: 3**	
Curriculum Description	**The curriculum covers the basics of agricultural cost accounting in terms of concept, benefits, types of costs, methods of charging costs according to production stations, and identifying methods of processing field accounts, livestock accounts, garden and orchard .accounts, and poultry and bee accounts**				
The purpose of teaching the curriculum	**Introducing the student to the concept of agricultural cost accounting, its benefits, types of costs, how to process field and crop accounts, automated and human work, orchard accounts, and .livestock accounts from a practical and theoretical perspective**				
Learning outcomes	**,After receiving this material, the student will be able to process field orchard, crop and livestock accounts, types of costs, methods of charging costs to production units, and how to calculate wages for .and automated labor human**				
The textbook	**Agricultural Cost Accounting Book - Written by Dr. Hassan Zaki 2018**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical exam**
	25%	10%	5%	20%	40%

Topics

The week	Theoretical material	Number of hours	Practical material	Number of hours
1	- Agricultural cost accounting definition - benefits - advantages of agricultural activity - the difference between financial accounting and agricultural cost accounting	2	Types of costs and methods of calculating them	3
2	The nature of agricultural work and its accounting implications - Accounting - for small agricultural establishments Records and documents - Preparing - final accounts and the balance sheet The legal form of the farm - Branches of agricultural activity - Keeping . various simple final accounts	2	Exercises on the cost element of humanitarian work	3
3	Direct and indirect agricultural cost – elements – Labor cost element Material cost element – Expense cost element	2	Practical exercises on the cost element of automated work	3
4	- Agricultural land exploitation methods of leasing agricultural land	2	Field Crop Cost Calculation Exercise	3
5	Total cost theory - Actual cost theories Variable cost - Direct cost theory - theory	2	Field Crop Cost Calculation Exercises	3
6	Plant Products Accounting – Field Products Accounting – Field Accounting – Crop Accounting	2	Garden and orchard crop costing exercises	3

7	First semester theoretical exam	2	First practical semester exam	3
8	Garden and orchard products - accounting - fruit nursery accounts the stages that fruit orchards go through	2	Orchard Costing Exercises	3
9	Animal Products Accounting - The Importance of Animal Production in the Farm Economy	2	.Livestock costing exercises	3
10	Methods of processing livestock in - accounts - breeding livestock - working livestock - dairy livestock wool livestock	2	Livestock Cost Calculation Exercise	3
11	Poultry Accounts	2	Dairy cattle account	3
12	Bee accounts	2	poultry account	3
13	Depreciation calculation methods	2	bee account	3
14	review	2	review	3
15	Second semester theoretical exam	2	Second practical semester exam	3

Mandatory (Basic)	**Stage 3**	**Agricultural cost accounting**	
Planned teaching hours per week	**Hours of theoretical (2) lectures**	**Practical (3) hours**	**Number of units: 3**
Curriculum Description	**The course covers the basics of long-run total , average and marginal cost curves , short-run monopolist equilibrium analysis and long-run .monopolist equilibrium**		
The purpose of teaching the curriculum	**Teaching the student about prices under oligopoly and duopoly - the Cornet model , teaching the student about the refracted demand model - prices under monopolistic organizations (cartels). Teaching -the student about prices under monopolistic competition in the short .term and long-term**		
Learning outcomes	**After receiving this material, the student will be able to estimate the optimal sizes and cost levels for agricultural projects in the short and**		

	long term, as well as estimate the efficiency levels of productive farms .of various types				
The textbook	**Microeconomic Theory and Microeconomics Books by Debertin Fadhila, Al-Afandy and Al-Saadani ,2012**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical exam**
	25%	10%	5%	20%	40%

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Giving the student examples of the cost schedule borne by the facility and mathematical examples of cost derivatives from .the total cost function	2	Facility costs and revenues - Production costs (fixed and variable) - Average costs and marginal costs - Short-run cost curves - Average and marginal cost curves - Relationship between output curves and cost curves	1
3	Giving mathematical examples on deriving the supply function and the supply curve from the cost function - Examples on deriving marginal revenue and average revenue from the total revenue function - Mathematical examples on maximizing profit in the resource market and the output market	2	Long-run cost functions - Long-run total - average and marginal cost curves , Supply curves of goods - Derivation of the supply curve of goods in the short ,and long run - Firm revenues - Total average and marginal revenues - Profit maximization in the supplier market and in the output market	2
3	Give examples of deriving the demand function for a resource from the marginal product value curve and applications of changes in the price of the resource and the .price of the product	2	Maximizing return option - Resource demand function - Effects of a change in the price of the resource and a change in the price of output on the demand for the resource	3
3	and supply curves and the state of equilibrium between them	2	Price theory - The nature of market equilibrium in industry and production - unit - Prices under perfect competition - Assumptions of perfect competition Demand curve under perfect competition (production unit and market) - Supply curve (goods per production unit and industry supply) under perfect competition - Market equilibrium product equilibrium and industry) equilibrium) under perfect competition	4
3	Solving examples and explaining the graphs about the market equilibrium in the short and long term and the influencing factors On it	2	Market equilibrium (production unit and industry) in the short term in a perfectly competitive market - Market equilibrium in the long term - Optimal orientation of the supplier - Changes affecting the equilibrium under perfect competition change in demand for the produced) goods - change in the costs of producing the goods - imposing taxes on the	5

			produced goods) Change in demand for the goods in the case of (Industry with (fixed, increasing and decreasing costs	
3	Mathematical applications on the - impact of imposing total taxes on Each unit - on profits) on equilibrium in a perfectly competitive market	2	Change in production costs (increase in (fixed costs - Increase in variable costs Imposing taxes on produced goods (total taxes - tax on each produced unit - taxes (on profits	6
3	First practical semester exam	2	First semester theoretical exam	7
3	Solving examples about , monopoly , its effects , causes and its difference from the perfectly competitive market	2	Prices under perfect monopoly - Nature and factors of monopoly - Market equilibrium under perfect monopoly	8
3	Explain the graphs related to the monopolist's equilibrium in the short and long run and clarify the derivations that show the relationship between marginal revenue, the price of the commodity, and the elasticity of .demand	2	Monopolist Equilibrium in the Short Run Monopolist Equilibrium in the Long — Run	9
3	Explaining the fees related to the change in demand for the commodity , the change in production costs, and the imposition of taxes on the monopolist’s equilibrium	2	The impact of changes in demand for produced goods, changes in production costs (variable and fixed), and imposing taxes on produced goods on the monopolist’s equilibrium	10
3	Give mathematical examples about a product with multiple production units and maximizing its profits. Give mathematical examples about monopolistic .discrimination	2	Monopolistic product with multiple production units and conditions for maximizing profit - Monopoly discrimination - Determinants of the monopoly power of the product	11
3	Mathematical examples of the courant model	2	- Prices under oligopoly and duopoly Model Cornet	12
3	Give examples About the order model for the broken	2	The Demand-Refraction Model - Prices Under Monopolistic Regulations (the (cartel	13
3	review	2	review	14
3	Second practical semester exam	2	Second semester theoretical exam	15

Planned teaching hours	theoretical	hours 2	practical	hours 3	Number of units	3
Curriculum Description	This course description provides a concise summary of the main features of the course .the learning outcomes expected of the student					
The purpose of teaching the curriculum	1- Understanding the concept of agricultural statistics - the relationship of .agricultural statistics to other sciences 2- Understand the concept and importance of agricultural census - Agricultural - census methods 3- Understanding the agricultural census - Sources of errors in the agricultural .census - Steps for implementing the agricultural census 4- Index analysis using aggregate formulas, simple aggregate method - weighted aggregate method 5- Identifying agricultural production indicators - commodity balances for food .products 6- Teaching the student about labor statistics, number of workers - composition of the labor force					
The textbook	.Agricultural Statistics, Al-Hayali , Ali Darb Kassar, 1st ed., University of Baghdad. 2(					
Vertical Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final theoretical exam	Final Practical Exam	
	25%	10%	5%	20%	40%	

	Theoretical material	**Number of hours**	**Practical material**	**Number of hours**
1	The concept of agricultural statistics - the relationship of agricultural statistics to other sciences			
2	The concept and importance of the agricultural census - Agricultural census methods - Conditions that must be met in the agricultural census - Sources of errors in the agricultural census - Steps for implementing the agricultural census			
3	- Time Series, Introduction and Definitions Time Series Analysis - Time Series Analysis Models (Aggregate Model - Coordinate			

	(Model			
4	Methods of determining the general direction method Hand drawing - Quasi-average) method - Moving average method - Least - squares method) - Changing trend equations Changing base year - Changing equations - from annual to monthly or quarterly Exercises			
5	,Methods of calculating seasonal changes average method - method of ratio to moving - averages - excluding the seasonal effect - using the seasonal index in forecasting exercises			
6	Periodic and irregular changes, measuring - periodic changes, irregular changes exercises			
7	- Standard numbers, definition and use - Methods of constructing standard numbers Features of standard numbers			
8	Calculating index numbers, index number - using levels - simple level method arithmetic mean of levels - geometric mean - of levels - harmonic mean of levels exercises			
9	Index using aggregate formulas, simple aggregate method - weighted aggregate method - Laspeyres number - Paasche number - Marshall number - Fisher 's optimal number - Index numbers using chain or moving base method - changing the base year Exercises			
10	total land size and composition — Land — balance — Cultivated and cultivated land Economic valuation of land — Land productivity indices — Exercises			
11	Agricultural production statistics, the concept - of agricultural production and its statistics - Agricultural production indicators - Commodity balances for food products Monetary estimation of agricultural production - Analysis of change in agricultural production - Exercises			
12	- Labor statistics, number of workers composition of the labor force - labor movement - working time - labor productivity - wages - exercises			
13	- ,Agricultural statistics in Iraq			
14	The emergence and development of agricultural statistics			
15	The most important agricultural statistics in Iraq			

Planned teaching hours	theoretical	2 hours	practical	hours 3	Number of units	3
Curriculum Description	This course description provides a concise summary of the main featur ,of the course and the learning outcomes expected of the student demonstrating whether the student has made the most of the learning .opportunities available. It must be linked to the programme descriptio					
The purpose of teaching the curriculum	the student with the theoretical foundations of Providing ,macroeconomics through his knowledge of foreign trade, financial ,economic and monetary policies, unemployment, inflation .international trade, economic development and other topics					
The textbook	Introduction to Macroeconomics, Muhammad Ahmad Al-Afandy, 2nd ed., 2007. Principles of Macroeconomics, Fayez Ibrahim Al-Habib, 4th .ed., King Saud University, 2004					
Vertical Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final theoretical exam	Final Practical Exam	
	25%	10%	5%	20%	40%	

Number of hours	material Practical	Number of hours	Theoretical material	
1	function , marginal propensity to import, average propensity to import	1	Foreign trade and national income	1
2	.Total leakage Total injection IE 1 7 1+5)	2	Determine the equilibrium level of national income	2
3	Study of gap size and total leakage and total injection (T (541141-14041	3	Government spending and the equilibrium level of income	3
4	Measuring the head tax and the balanced budget multiplier	4	Taxes and their types	4
5	Measuring the impact of taxes proportional to income or) .indirect) on consumption	5	- Functions of Money Motives for Demand for Money	5
6	How to calculate average cash balance and how to calculate the market value of a bond	6	The relationship between bond prices and interest rates	6
7	How to determine the interest ,rate by the demand for money the supply of money, and calculating the volume of deposits	7	Money supply and monetary policy	7
8	IS Curve Applications and Graphics	8	equilibrium in the market for goods and services	8
9	Applications and drawings of the LM curve	9	equilibrium in the money market	9
10	The intersection of the 15 curve with the 11 7 1 curve and the determination of the interest rate and the level of real income	10	Total balance	10

11	Examples of creeping inflation and hyperinflation	**11**	Inflation	**11**
12	Choosing the price index that is used as a measure of inflation	**12**	Demand inflation and expenditure inflation	**12**
13	Different stages of the business cycle	**13**	The Phillips Curve and the Dilemma of Mixed Economy Systems	**13**
14	Applications on economic growth	**14**	Economic cycles	**14**
15	Mathematical applications about my model Domar and Harrod	**15**	Economic growth	**15**

3	**Number of units**	**hours 3**	**practical**	**2 hours**	**theoretical**	**Planned teaching hours**
Teaching undergraduate students the basics of agricultural planning Initial criteria for investment planning and						**Curriculum Description**
Teaching and training students on the scientific method of **agricultural . planning**						**The purpose of teaching the curriculum**
Prof. Dr. Salem Tawfiq Al-Najmi and Prof. Dr. Ismail Obaid Hammadi						**The textbook**
Final Practical Exam	**Final theoretical exam**	**Daily theoretical tests**	**Practical semester tests**	**Theoretical semester exams**		**Vertical Semester Estimates**
%40	%20	%5	%10	%25		

Number of hours	**Lecture title**	**The week**	
2	**Planning and types of agricultural plans**	**First week**	**1**
2	**General framework of the agricultural plan and the main components of planning**	**The second week**	**2**
2	**Basic conditions for the agricultural plan**	**The third week**	**3**
2	**Stages of developing an agricultural plan Growth rate in agricultural plans**	**Week 4**	**4**
2	**Steps and methods for developing an agricultural production plan**	**Week 5**	**5**
2	**First month exam**	**Week 6**	**6**
2	**Agricultural investment planning**	**The seventh week**	**7**
2	**Initial criteria for investment planning**	**Week 8**	**8**
2	**Farm production planning**	**Week 9**	**9**
2	**Difficulties in agricultural technology transfer**	**The tenth week**	**10**
2	**Pricing and Marketing Policy**	**Week eleven**	**11**
2	**Second month exam**	**twelfth week**	**12**
2	**Loan patterns required in advanced agricultural conditions**	**thirteenth week**	**13**
2	**General review**	**Fourteenth week**	**14**

Planned teaching hours	**theoretical**	**hours 2**			
Curriculum Description	**Teaching undergraduate students the basics of agricultural economic and Arab agricultural economic integration development**				
The purpose of teaching the curriculum	**Teaching and training students on the scientific method of agricultural economic .development**				
The textbook	**Dr. Salem Tawfiq Al-Najfi, University of Mosul, Dar Al-Kutub for Printing and .Publishing, 2nd ed., 1994**				
Vertical Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final theoretical exam**	**Final Practical Exam**
	%10	**%40**	**%25**	**%5**	**%20**

Learning outcomes : After receiving the curriculum, it becomes possible to: administration Economic development in a practical way and applying the studied topics in the best way for the purpose of reaching .Manufacturing and forming successful relationships in this direction

Number of hours	Lecture title	The week	
2	Agricultural economic development	First week	1
2	Agricultural economic development	The second week	2
2	Agricultural economic development	The third week	3
2	Agricultural economic development	Week 4	4
2	First month exam	Week 5	5
2	Economic development theory	Week 6	6
2	Economic development theory	The seventh week	7
2	Economic development theory	Week 8	8
2	Foundations of agricultural economic development	Week 9	9
2	Foundations of agricultural economic development	The tenth week	10
2	Second month exam	Week eleven	11
2	Arab agricultural economic development and integration	twelfth week	12
2	Arab agricultural economic development and integration	thirteenth week	13
2	Iraqi agricultural economic development	Fourteenth week	14
2	Iraqi agricultural economic development	Week 15	15

Planned teaching hours	**theoretical**	**2 hours**	**practical**	**hours 3**	**Number of units**	**3**	
Curriculum Description	**Teaching fourth-year agricultural extension students the concept of the extension evaluation process, areas of evaluation and its objectives**						
The purpose of teaching the curriculum	**Teaching and training students on the scientific method of how to .postpone the evaluation process**						

The textbook	Preparing lectures from scientific sources and previous studies				
Vertical Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final theoretical exam	Final Practical Exam
	%10	%40	%25	%5	%20

Learning outcomes : After receiving the curriculum, it becomes possible to: Conducting the evaluation process in a practical manner and applying the studied topics in the best possible way in order to reach Successful
. evaluation results

Number of hours	material Practical	Number of hours	Theoretical material	
3	**Comparison between the old and modern concept**	**2**	**The concept and definition of the evaluation process**	**1**
3	**Applications on the importance of the calendar**	**2**	**The importance of evaluation and the principles of evaluation**	**2**
3	**Applications at the levels of the calendar**	**2**	**Evaluation levels**	**3**
3	**Applications on calendar fields**	**2**	**Evaluation areas**	**4**
3	**Applications on the evaluation of guidance programs**	**2**	**Guidance Programs Evaluation**	**5**
	First semester exam		**First semester exam**	**6**
3	**Applications on types of calendars**	**2**	**Follow-up and its relationship to evaluation and the difference between them**	**7**
3	**Applications on structural calendar**	**2**	**Types of evaluation (structural)**	**8**
3	**Applications on the cumulative calendar**	**2**	**Cumulative assessment**	**9**
	Second semester exam		**Second semester exam**	**10**
3	**Applications to behavioral changes**	**2**	**Behavioral changes**	**11**
3	**Applications on the adoption process and its models**	**2**	**Measuring Technology Adoption and Diffusion**	**12**
3	**Applications on the relationship between measurement and evaluation**	**2**	**The relationship between measurement and evaluation**	**13**
3	**Applications on the steps of the evaluation process**	**2**	**Steps of the evaluation process**	**14**
3	**Applications on data collection tools**	**2**	**Data collection tools**	**15**

Planned teaching hours	**theoretical**	**hours 2**	**practical**	**hours 3**	**Number of units**	**3**

Curriculum Description	**Teaching fourth-year agricultural extension students the concept of theories of social change, its causes and factors**				
The purpose of teaching the curriculum	**Teaching and training students on the scientific method of social change and its .theories**				
The textbook	**Preparing lectures from scientific sources and previous studies**				
Vertical Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final theoretical exam**	**Final Practical Exam**
	%25	**%10**	**%5**	**%20**	**%40**

,outcomes : After receiving the curriculum, students will be able to understand social change, its forms .and the theories that explain change

Number of hours	material Practical	Number of hours	Theoretical material	
3	Comparison between old and modern change	2	The concept of the process of social change , some definitions of social change, old and modern	**1**
3	,Applications on the forms sources and mechanisms of change	2	Forms, mechanisms and sources of social change	**2**
3	Applications on the difference between them	2	,The difference between change progress and development	**3**
3	Applications on trends in social progress	2	Trends in social development and progress	**4**
3	Applications on social and cultural change	2	Definition of social change and civilizational change	**5**
	First semester exam		First semester exam	**6**
3	Applications on types of change	2	What is meant by social and cultural ?change	**7**
3	Applications of the comparative concept	2	Social change in a comparative sense	**8**

3	Applications on the causes and factors of change	2	Causes and factors of social change	**9**
	Second semester exam		Second semester exam	**10**
3	Applications to social change processes	2	The processes involved in social change	**11**
3	Applications of Social Change Theories	2	Theories of social change	**12**
3	Applications of circular theory	2	Partial Circular Theory	**13**
3	Applications on direct and indirect methods	2	Social Change Communication Methods	**14**
3	General review	2	General review	**15**

Planned teaching hours	theoretical	hours 2	practical	hours 3	Number of units	3
Curriculum Description	This course description provides a concise summary of the main characteristics of the course and the learning outcomes expected of the student, demonstrating whether he has made the most of the learning opportunities available, and must be linked to the programme description.					
The purpose of teaching the curriculum	Introducing the student to logical thinking and the ability to reason, deliberate and take time in the rulings of generalization, to general concepts of scientific research and its methods, to become familiar with the cognitive aspect as well as science and its specifications and characteristics, and social research methods, their types and uses, as well as to become familiar with the rules of the scientific method, the development of knowledge, and the emergence of scientific research, analysis of quotations and texts, types of quotations and their rules, footnotes, establishing sources and references, as well as the skill of thinking according to the student's ability and that the goal of this skill is that the goal of this skill is for the student to believe in what is tangible, when, what and how he should think and work to improve the ability to think reasonably.					
The textbook	The book of Social Research Methods, authored by Dr. Jabr Majeed (1992), The book of Scientific Research Methods, authored by Dr. Muhammad Sarhan Ali Al-.Mahmoudi (2019)					
Vertical Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final theoretical exam	Final Practical Exam	
	%25	**%10**	**%5**	**%20**	**%40**	

	Theoretical material	**Number of hours**	**Practical material**	**Number of hours**
1	**The concept of science and the scientific method in research**	**2**		**3**
2	**Steps to implement scientific research**	**2**		**3**
3	**Types of social research**	**2**		**3**
4	**Choosing a research title, how to formulate a problem, how to write a research ,question, how to formulate the objective ,how to formulate a research hypothesis writing the importance of the research, and setting operational definitions.**	**2**		**3**
5	**Writing a bibliography, how to select .previous studies**	**2**		**3**
6	**,Samples, their types and testing methods ,methods of collecting information and data and examining validity and reliability**	**2**		**3**

7	**First month exam**	**2**	**First month exam**	**3**
8	**Research methodology and research method, research community, research area, data collection tools and .questionnaire design**	**2**		**3**
9	**Use of margins How to write sources Action research**	**2**		**3**
10	**?What is action research Action research steps**	**2**		**3**
11	**Action research steps**	**2**		**3**
12	**Results and discussion Creating and using tables**	**2**		**3**
13	**Writing a research report**	**2**		**3**
14	**Second month exam**	**2**	**Second month exam**	**3**
15	**Comprehensive review , optional third exam**	**2**	**Comprehensive review , optional third exam**	**3**

Mandatory (basic)	Stage: Fourth Agricultural Economics	Name : Natural Resources and Environmental Economics	
Planned teaching hours	Hours of theoretical (2) lectures	Practical hours (0)	Number of units: 2

Curriculum Description	This course description provides a concise summary of the main features ,of the course and the learning outcomes expected of the student demonstrating whether the student has made the most of the learning .opportunities available. It must be linked to the program description				
The purpose of teaching the curriculum	The course aims to introduce the student to: Definition of natural resources science - Importance of natural resources - Classification of natural resources - Economic controls for the independence of natural resources				
Learning outcomes	To enable the student to know, understand and apply the procedures related to understanding the presentation of land resources - the concept of presentation of land resources Water resources analysis - Water resources supply - Water resources .demand Identifying Water Resources in Iraq - Presentation of Water Resources in .Iraq , Understand human resources - population size				
The textbook					
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical exam**
	%25	**%10**	**%5**	**%20**	**%40**

Topics

The week	**Theoretical material**	number Watches	Practical material	Number of hours
1	**- Definition of natural resources science Importance of natural resources Classification of natural resources - Unilateral controls for the independence of natural resources**	**2**	**nothing**	**2**
2	**— Land Resource Economics — Land Concepts Land Functions — Interaction between Land Resources and Civilization and Major Problems of Land Economy and Related Policies**	**2**		**2**
3	**Demand for land - Factors affecting demand for land - Land uses - Capacity and independence of land - Best and most efficient use of land**	**2**		**2**
4	**- Land density and factors affecting land density - Intensive agriculture - Light agriculture Intensive and light limits in agricultural land use**	**2**		**2**
5	**Land materials display The concept of land resources display The applied display - The economic display - The possibility of increasing the economic display of land resources**	**2**		**2**
6	**- Rent - Concept of rent - Theories of rent Classical theory of rent (Ricardo's theory) Criticisms - Which was directed to Ricardo's theory of rent The modern theory of rent - The factors leading to the rise in agricultural land rent - The economic importance of rent - The social importance of rent Quasi-rent and opportunity costs -**	**2**		**2**
7	**First month exam**	**2**		**2**
8	**- Agricultural land resources evaluation Evaluation requirements - Land evaluation methods - Choosing the appropriate evaluation**	**2**		**2**

	method - Factors affecting agricultural land values - Land evaluation purposes			
9	**Agricultural tenure - The concept of agricultural tenure - Types of tenure - Characteristics of tenure - Some agricultural tenure systems - Tenure**	**2**		**2**
10	**- The reality of land resources in Iraq Agricultural land resources in Iraq - Problems facing Iraqi soils**	**2**		**2**
11	**- Water Resources - Water Resources Supply Water Resources Demand - Water Resources in Iraq - Water Resources Supply in Iraq - Water Resources Demand in Iraq**	**2**		**2**
12	**Human resources - Population size - Labor force - size - Economic structure of the population Population density and growth - Relationship - between human resources and land resources Optimal population size - Methods of achieving optimal population size - Human resources in Iraq**	**2**		**2**
13	**Natural Resources Conservation - The Concept of Natural Resources Conservation - Factors Affecting the Conservation and Maintenance of Natural Resources Conservation and Maintenance of Natural Resources in Iraq Conservation and Maintenance of Soil Resources - Conservation and Maintenance of Water Resources - Conservation and Maintenance of Human Resources**	**2**		**2**
14	**Second month exam**	**2**		**2**
15	**review**	**2**		**2**

Mandatory (basic)	Stage: Fourth / Guidance		Subject name : Guidance environment		
Planned teaching hours	Hours of theoretical (2) lectures		Practical hours (3)		Number of units: 3
Curriculum Description	study material includes a summary of the most important characteristics of the environment, its types and classifications, and ways to address the .problems of the environment of guidance organizations				
The purpose of teaching the curriculum	The course aims to introduce the student to the concept of the environment, its definition , the elements of the environment, the types of environments, the importance of studying the environment, and learning .about the classification of the environment				
Learning outcomes	The student should know and understand the vocabulary and topics of the .curriculum and be able to apply what he has learned in reality				
The textbook	Relying on the curriculum prepared by the subject teacher based on websites, environmental books and organizations				
Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final Practical Exam	Final theoretical test
	%25	%10	%5	%20	%40

Topics

Number of hours	Practical material	number Watches	Theoretical material	The week
3	Reports, discussions, and practical exercises on the .theoretical part	2	Environment concept and definition	1
3	Reports, discussions, and practical exercises on the .theoretical part	2	Environmental elements	2
3	Reports, discussions, and practical exercises on the .theoretical part	2	The importance of studying the external environment	3
3	Reports, discussions, and practical exercises on the .theoretical part	2	The internal environment of the organization and its factors	4
3	Reports, discussions, and practical exercises on the .theoretical part	2	External environment and its factors	5
3	Reports, discussions, and practical exercises on the .theoretical part	2	External environment classification	6
3	review	2	First month exam	7
3	Reports, discussions, and practical exercises on the .theoretical part	2	daft classification	8
3	Reports, discussions, and practical exercises on the .theoretical part	2	Amri and Trust Rating	9
3	Reports, discussions, and practical exercises on the .theoretical part	2	Katz and Kahn classification	10
3	Reports, discussions, and practical exercises on the .theoretical part	2	and Stolker Studies	11
3	Reports, discussions, and practical exercises on the .theoretical part	2	Facing environmental odds	12
3	Reports, discussions, and practical exercises on the .theoretical part	2	Thompson's Maneuvering Letters	13
3	Reports, discussions, and practical exercises on the .theoretical part	2	Environmental strategies	14
3	review	2	Second month exam	15

Mandatory (basic)	Stage: Fourth Agricultural Economics		Subject Name : Economic Thought and Systems		
Planned teaching hours	Hours of theoretical (2) lectures		Practical hours (0)		Number of units: 2
Curriculum Description	This course description provides a concise summary of the main features of the course and the learning outcomes expected of the student, demonstrating whether the student has made the most of the learning opportunities .available. It must be linked to the program description				
The purpose of teaching the curriculum	The course aims to introduce the student to the definition of classical thought, to the classical schools, to the modern thinkers , and to the new .thinkers				
Learning outcomes	To enable the student to know, understand and apply the procedures related to students understanding how to do the methods of thinking and objective analysis. Providing students with the basics of the course and additional .topics and asking intellectual questions				
The textbook					
Semester Estimates	Theoretical semester exams	Practical semester tests	Daily theoretical tests	Final Practical Exam	Final theoretical exam
	%35	%	%5	%	%60

Topics

The week	Theoretical material	number Watches	Practical material	Number of hours
1	Classical thought	2	nothing	2
2	Classical schools	2		2
3	Characteristics of classical thought	2		2
4	Disadvantages of classical thought	2		2
5	The modernists	2		2
6	Marxist socialist thought	2		2
7	Second month exam	2		2
8	Characteristics of Marxist socialist thought	2		2
9	Disadvantages of Marxist Socialist Thought	2		2

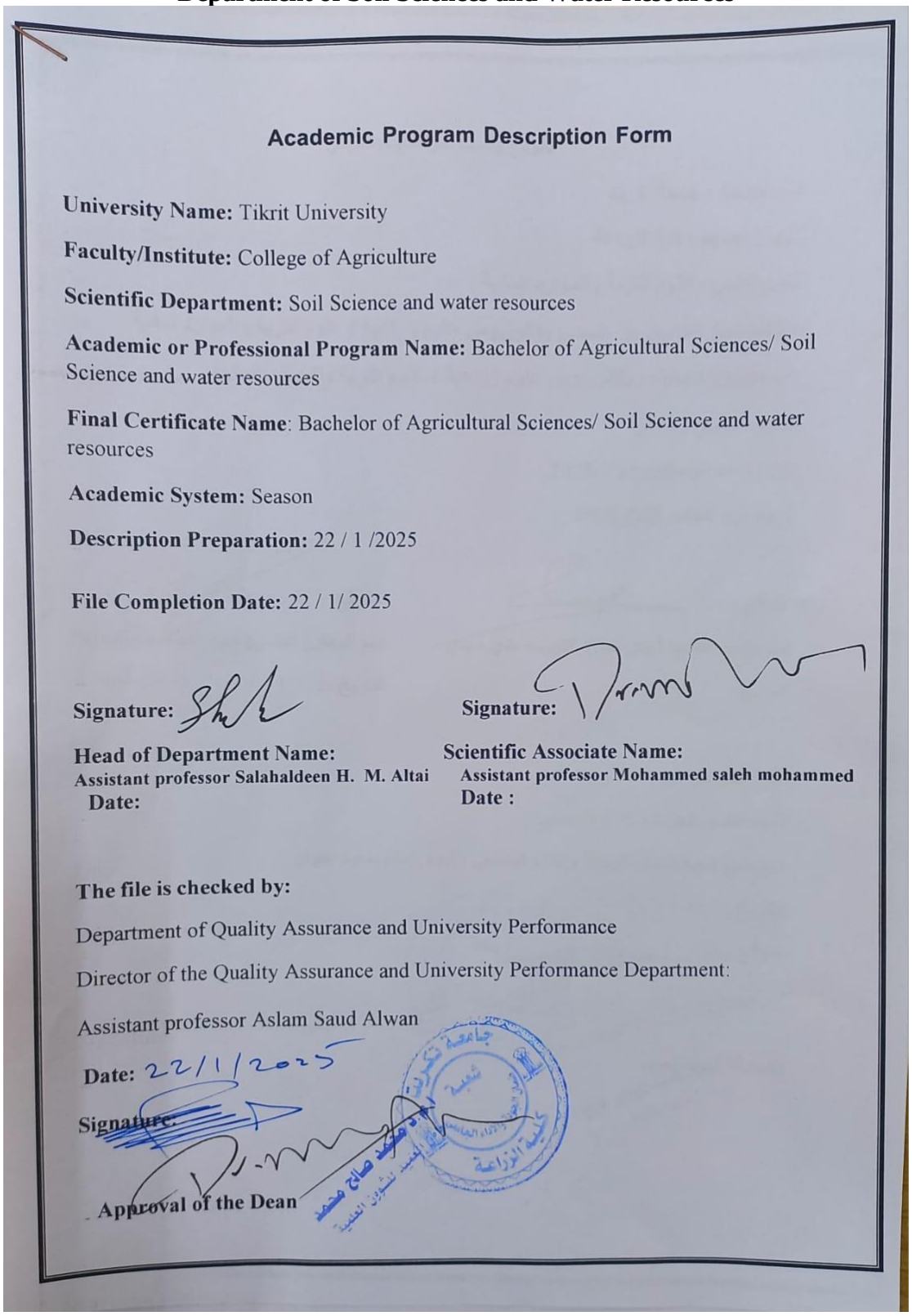
10	Capitalist thought	2		2
11	Characteristics and defects of capitalist thought	2		2
12	Islamic thought	2		2
13	Modern capitalist thought economic globalization	2		2
14	Second month exam	2		2
15	review	2		2

Mandatory (basic)	**Stage: Third**		**Name : Dairy Principles**		**Code:001220**
Planned teaching hours	**Hours of theoretical (2) lectures**		**Practical hours (3)**		**Number of units: 3**
Curriculum Description	**General Dairy Basics**				
The purpose of teaching the curriculum	**.and biological composition included in the curriculum**				
Learning outcomes	Teaching the student how to conduct sensory evaluation of milk, the effect of heat treatments on the chemical composition of milk, methods of examining milk adulteration, and how to make yogurt and cheese and their .types				
The textbook	**General dairy principles**				
Semester Estimates	**Theoretical semester exams**	**Practical semester tests**	**Daily theoretical tests**	**Final Practical Exam**	**Final theoretical test**
	%25	**%10**	**%5**	**%20**	**%40**

Topics

Number of hours	Practical material	number Watches	Theoretical material	The week
3	**Milk general composition**	**2**	**A brief history of milk**	**1**
3	**Measure fat percentage**	**2**	**Factors affecting milk production**	**2**
3	**Protein measurement**	**2**	**General composition of milk**	**3**
3	**Ash content measurement**	**2**	**Chemical properties of milk**	**4**
3	**humidity measurement**	**2**	**Physical properties of milk**	**5**
3	**Identifying milk fraud**	**2**	**Microorganisms in milk**	**6**
3	**milk pasteurization**	**2**	**milk pasteurization**	**7**
3	**pasteurization**	**2**	**pasteurization**	**8**
3	**Lactose measurement**	**2**	**Milk proteins**	**9**
3	**Pearson square**	**2**	**Milk fat**	**10**
3	**Milk density measurement**	**2**	**Physiology of milk production**	**11**
3	**Measurement of milk acidity**	**2**	**Physiology of animal udder**	**12**
3	**Acidity of milk**	**2**	**Hormones responsible for milk production**	**13**
3	**General review**	**2**	**General review**	**15-14**

Academic Program Description
Department of Soil Sciences and Water Resources



Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: College of Agriculture

Scientific Department: Soil Science and water resources

Academic or Professional Program Name: Bachelor of Agricultural Sciences/ Soil Science and water resources

Final Certificate Name: Bachelor of Agricultural Sciences/ Soil Science and water resources

Academic System: Season

Description Preparation: 22 / 1 /2025

File Completion Date: 22 / 1/ 2025

Signature: **Signature:**

Head of Department Name:
Assistant professor Salahaldeen H. M. Altai
Date:

Scientific Associate Name:
Assistant professor Mohammed saleh mohammed
Date :

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Assistant professor Aslam Saud Alwan

Date: 22/1/2025

Signature:

Approval of the Dean

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First class

The manager name	English specialty 1	Class	First class

The manager code	**T.M.Z. 127**	**Planned teaching hours:**	**14**
Unites :	**1**	**Exhortationand availability:**	**Required**
Chapeter	**Autumnal**	**TareeKh preparing the description:**	**22 /1 / 2025**

Description of the curriculum:

Sections of speech, sentence and phrase in English, absorbing

The purpose of teaching the curriculum is:

The article aims to develop students' English language skills in terms of speaking, writing and understanding the importance of this language in the field of soil science and water resources.

Learning results:

The student is able to learn the vocabulary and rules of the English language and employ them within the competence of soil sciences and water resources and review foreign sources in this discipline.

Teaching and learning methods:

- **Exams**
- **The opinions of students and the opinions of faculty members and the opinions of graduates**
- **Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.**
- **Textbooks.**
- **Scientific journals and websites in general.**

Topics: (theoretical part):

Weeks	Topics	Hours
1	Sections of speech, sentence and phrase in English, absorbing	1 hour
2- 3	Names of science, names of nobility, names of material, names of plural, moral names, numbered and non-existent names, tools of identification and denial	2 hours
4- 5	Pronouns, types: personality, monument and traction, property, reflexive, signal, connectivity and question consciences	2 hours
6	Auxiliary actions and their types	1 hour

7- 8	Times in the state of the building for the knowledge: simple time: the present, the past, the future	2 hours
9	Continuous Time: The Present, The Past, the Future	1 hour
10	Full time: present, past, continuous	1 hour
11	Continuous full time: the present, the past, the future	1 hour
12- 13	Qualities: qualities of science, ownership, descriptive, long qualities, short qualities, comparison and analogy	2 hours
14	Sounds in English: Correct, Illness	1 hour

Systematic book:

A Practical English Grammar

A. J. Thomson, A. V. Martinet

Oxford University Press Walton Street, Oxford 0X2 6DP

Auditions:

Only a theoretical part **(lectures)**

A. Continuous evaluation during the school year (40%) and distributed to:

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (60%) is distributed to:

Part A: Questions with short, comprehensive answers to curriculum 2×15 = 30 degrees (50%)

Part B: Questions for absorption and analysis 1×15 = 15 degrees (25%)

Part C: Objective questions 1×15 = 15 degrees (25%)

The name	**English specialty 2**	**Class:**	**First**
Decision code:	**A.G. 004**	**Planned teaching hours :**	**14**
Units:	**1**	**Available attendance:**	**Required**

Chapter:	Spring	The date of the description :	22 /1 / 2025

Description of the curriculum:

Sections of speech, sentence and phrase in English, absorbing

The purpose of teaching the curriculum is:

The article aims to develop students' English language skills in terms of speaking, writing and understanding the importance of this language in the field of soil science and water resources.

Learning results:

The student is able to learn the vocabulary and rules of the English language and employ them within the competence of soil sciences and water resources and review foreign sources in this discipline.

Teaching and learning methods:

- **Exams**
- **The opinions of students and the opinions of faculty members and the opinions of graduates**
- **Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.**
- **Textbooks.**
- **Scientific journals and websites in general.**

Topics: (theoretical part):

Weeks	Topics	Hours
1	Theyperformed kindness, prepositions, absorption	1 hour
2	Exile, question composition, absorption	1 hour
3	Standard acts, anomalies.	1 hour
4	Times in the case of the building for the unknown: simple: the present, the past, the future	1 hour
5	Times in the case of the building for the unknown: continuous: the present, the past, the future	1 hour
6	Times in the case of the building for the unknown: the complete: the present, the past, the future	1 hour

7	Times in the case of the building for the unknown: the continuous completeness: the present, the past, the future	1 hour
8	Police sentences, their uses and types, absorption	1 hour
9- 10-11	Additional rules : used to, every, else, also, any, some, all, yet	3 hours
12	،Since and for	1 hour
13	Common words, translation, how to translate from Arabic to English and from English to Arabic	1 hour
14	General review	1 hour

Systematic book:

A Practical English Grammar

A. J. Thomson, A. V. Martinet

Oxford University Press Walton Street, Oxford 0X2 6DP

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the school year (40%) and distributed to:

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (60%) is distributed to:

Part A: Questions with short, comprehensive answers to curriculum 2×15 = 30 degrees (50%)

Part B: Questions for absorption and analysis 1×15 = 15 degrees (25%)

Part C: Objective questions 1×15 = 15 degrees (25%)

The name	**Geological Principles**	**Class:**	**First**
Decision code:	**TMZ 113**	**Planned teaching hours :**	**70**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Introduction to geology - the concept of its origins and branches, minerals and its classification methods, the rock cycle in nature, the water cycle in nature, the geological relationship to soil and agriculture.

The purpose of teaching the curriculum is:

The article aims to introduce students of the first stage of the Department of Soil Sciences and Water Resources to geological phenomena, types of minerals and rocks and their relationship to soil formation

Learning results:

At the end of the course, the student is able to distinguish between the types of rocks and minerals that make up them, which are the original material of the different soils.

Teaching and learning methods:

- **Exams**
- **The opinions of students and the opinions of faculty members and the opinions of graduates**
- **Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.**
- **Textbooks.**
- **Agricultural scientific journals and websites in general.**
- **View electronic syds to focus knowledge and science in the mind.**

Topics: (theoretical part):

Weeks	Topics	Hours
1	Introduction to geology - the concept of its origins and branches	2 hours
2	Geological phenomena and how they arise	2 hours
3	Minerals and their classification methods	2 hours
4	Minerals and their classification methods	2 hours
5	Weathering: its types and its relationship to soil formation	2 hours
6	Weathering: its types and its relationship to soil formation	2 hours
7	Nature's Rock Cycle, Fiery Rocks	2 hours
8	Sedimentary rocks	2 hours
9	Sedimentary rocks	2 hours
10	Mutant rocks	2 hours

11	Toilet: Surface water	2 hours
12	Groundwater	2 hours
13	Surveying natural resources	2 hours
14	Geological relationship to soil and agriculture	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	The relationship of geology to soil	3 hours
2	Types of minerals: their qualities and methods of classification	3 hours
3	Types of minerals: their qualities and methods of classification	3 hours
4	Types of minerals: their qualities and methods of classification	3 hours
5	Types of minerals: their qualities and methods of classification	3 hours
6	Rocks: their qualities and methods of classification	3 hours
7	Rocks: their qualities and methods of classification	3 hours
8	Rocks: their qualities and methods of classification	3 hours
9	Rocks: their qualities and methods of classification	3 hours
10	Natural minerals and rocks in Iraq	3 hours
11	Natural minerals and rocks in Iraq	3 hours
12	Natural minerals and rocks in Iraq	3 hours
13	Field scenes on geological formation and natural phenomena in Iraq	3 hours
14	Collecting rock models from Iraq	3 hours

Systematic book:

Principles of Geology by Dr. Abdulhadi Al-Sayegh

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to : *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to : *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Geometric drawing**	**Class:**	**First**
Decision code:	**T.M.G. 111**	**Planned teaching hours:**	**45**
Units:	**1**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The concept of engineering drawing is to learn and introduce the student to the rules and methods of modern and followed engineering drawing and employ them in the correct scientific use in agricultural production (plant and animal) especially with regard to drawing engineering processes in the design of agricultural equipment and machinery and the design and engineering of gardens for graduates of agricultural colleges.

The purpose of teaching the curriculum is:

1. Preparing students specialized in engineering drawing in some scientific departments in the faculties of agriculture
2. Employing engineering expertise through engineering applications for engineering drawing in the agricultural field
3. Preparing students specialized in the engineering and design of gardens through the practical application of the foundations of engineering drawing

Learning results:

1. Covering the lack of technical expertise
2. Increased technical development in agricultural work
3. Increased scientific expertise in the engineering design of some agricultural machinery based on engineering drawing

Teaching and learning methods:

- **Exams**
- **The opinions of students and the opinions of faculty members and the opinions of graduates**
- **Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.**
- **Textbooks.**
- **Agricultural scientific journals and websites in general.**
- **View electronic syds to focus knowledge and science in the mind.**

Topics: (Practical Part):

Weeks	Topics	Hours
1	Introduction to geometric painting	**3 hours**
2	Drawing font types	**3 hours**
3	Drawing the initial geometric shapes in the drawing	**3 hours**
4	How to place dimensions for geometric shapes	**3 hours**
5	Drawing the oval section using engineering processes	**3 hours**
6	Drawing the engineering processes of the diamond arches	**3 hours**
7	Drawing engineering applications for engineering processes	**3 hours**
8	Computing applications on engineering sections	**3 hours**
9	Drawing the three catches of the body	**3 hours**
10	Drawing the catches for slanted geometric shapes	**3 hours**
11	Drawing triangular clamps of circular cut shapes	**3 hours**
12	Drawing and finding the third missing project	**3 hours**
13	Stereoscopic drawing in the manner of the measured drawing	**3 hours**

14	Stereoscopic drawing in slanted drawing	**3 hours**
15	Computing applications to draw holograms	**3 hours**

Systematic book:

- Engineering drawing for students of agricultural colleges. Dr. Naqash Sabri Hassan. 1999

Auditions:

Only practical part (studio)

A. Continuous evaluation during the school year (40%) and distributed to:

70% two practical practical tests.

20% daily practical performance (student activity).

10% commitment and discipline.

B. The final exam (60%) is distributed to:

70% practical practical application test.

30% applied or editorial examination in scientific subject.

The name	**area**	**Class:**	**First**
Decision code:	**TMZ 122**	**Planned teaching hours :**	**57**
Units:	**2**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

1. Space ... Defined.. Types... Importance.
2. Measurement systems and united measurement.
3. Scale.
4. Scan with string or tape.
5. Lifting with flat panel
6. Settlement and contour maps

The purpose of teaching the curriculum is:

1. Get the basic information and data needed to prepare and map.
2. The main means of carrying out land-related operations of settlement, division and reclamation.
3. Planning and construction of projects such as canals, dams and roads...

Learning results:

Make the student able to measure distances and direct and indirect spaces and raise areas, leveling and drawing standards of all kinds and how to use them

Teaching and learning methods:

- **Exams**
- **The opinions of students and the opinions of faculty members and the opinions of graduates**
- **Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.**
- **Textbooks.**
- **Agricultural scientific journals and websites in general.**
- **View electronic syds to focus knowledge and science in the mind.**

Topics: (theoretical part):

Weeks	Topics	Hours
1	Definition of space, types of surveys, requirements for good surveying, importance of space in agriculture.	**1 hour**
2	Measurement systems and measurement units errors and errors.	**1 hour**
3-4	Direct distance measurement and bar scanning, station selection conditions, field book, chain permitting methods	**2 hours**
5	Indirect distance measurement, indirect measurement bases, indirect measuring devices and instruments, theodolite device.	**1 hour**
6	Urban exam.	**1 hour**
7	The scale of the drawing its types and the factors of determining it	**1 hour**
8	Spaces, regular and irregular shapes, spaces in coordinates	**1 hour**

9	Lifting using tape	**1 hour**
10	Lifting using flat panel	**1 hour**
11	Leveling and calculating points levels	**1 hour**
12	Longitudinal and transverse sections	**1 hour**
13	Urban exam.	**1 hour**
14	Finding drilling and depth of filling, calculating cutting and filling areas	**1 hour**
15	Topographic maps and methods of representation	**1 hour**

Topics: (Practical Part):

Weeks	Topics	Hours
1	Tools used in space, qualities, defects and control	**3 hours**
2	Adjust steering in measurement and calculate flat and oblique distances	**3 hours**
3	Accommodation and projection methods, clear my field using tape	**3 hours**
4	Long-term scale and station stabilization	**3 hours**
5	Urban exam.	**3 hours**
6	Drawing a linear map by measuring an appropriate drawing	**3 hours**
7	Applications in the scale	**3 hours**
8	Apps in space calculation, app examples, boxes and deletion	**3 hours**
9	Applications in calculating irregular form spaces	**3 hours**
10	Identify the level of its parts and accessories.	**3 hours**
11	Find the placements in the way of height and decrease and the way the device rises	**3 hours**
12	Urban exam.	**3 hours**
13	Drawing on graph paper and determining the size of drilling and filling and the economics of the project	**3 hours**
14	Theodolite device, device tuning, horizontal and anchor angles measurement	**3 hours**

Systematic book:

- Al-Khafaf, Riad Saleh. (2000). Second edition, Mosul University, Faculty of Agriculture and Forestry.

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

Decision code:	**T.M.Z. 317**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The article includes various environmental concepts (environment, ecology, ecosystem, surrounding factors, biological relationships, self-feeding organisms" products, feeding-certified organisms, "consumables", biodegradation of organic compounds and the rotation of elements by analysts, as well as the material includes factors surrounding outside the soil environment, which is related to atmospheric nuances .

The purpose of teaching the curriculum is:

This course aims to introduce the student to the concept of soil environment, which means organism "living factors" and factors surrounding "non-living factors" and recognizes the organisms found in the soil, including the roots of plants, the extent of diversity and differences between soil revival and different biological relationships, as well as recognizes the factors surrounding physic, chemical and fertility that affect and affect organisms present in the soil environment, Also through this article, the student learns how to maintain a clean environment, environmental balance and the use of bioprocessors to rid the soil of pollutants.

The student is also introduced to the factors surrounding outside the soil environment, which relates to the weather.

Learning results:

After receiving this material, the learner is able to deal with various organic wastes and use them usefully in plant production and maintain a clean environment.

Teaching and learning methods:

- Exams
- The opinions of students and the opinions of faculty members and the opinions of graduates
- Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.
- Textbooks.

- Agricultural scientific journals and websites in general.
- View electronic syds to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	The environment, its concept and its relationship with man	2 hours
2	The environment, its concept and its relationship with man	2 hours
3	Departments of Ecology, Ecosystem	2 hours
4	Climate, climate cycle, soil climate	2 hours
5	Energy, radiation, heat, wind, atmospheric pressure	2 hours
6	Water, water relationship with plant, precipitation, atmospheric humidity, clouds	2 hours
7	Snow and ice, cold, fog, evaporation	2 hours
8	Environmental qualities of soil	2 hours
9	Soil moisture content	2 hours
10	Soil air and ventilation, heat	2 hours
11	factors influencing, key characteristics, soil construction,	2 hours
12	Porosity, soil tissue	2 hours
13	Study of vegetation characteristics	2 hours
14	Environmental pollution, population explosion	2 hours
15	The role of man in the environment	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	Ecology and surrounding factors	3 hours
2	Temperatures and temperature gauges in the air and soil	3 hours
3	Solar radiation and measuring devices	3 hours
4	Humidity and measuring devices in the air and soil	3 hours
5	Precipitation, rain and dew measuring devices	3 hours
6	Wind, wind speed and direction measurement devices	3 hours
7	Atmospheric pressure and measuring devices	3 hours

8	**Evaporation and evaporation metering devices**	**3 hours**
9	**Soil, soil characteristics, salinity, reaction degree, soil components and minutes**	**3 hours**
10	**Natural plant environments in the world and Iraq, alpine environments, steppes, savannahs, grasses, tundra**	**3 hours**
11	**Desert cover in the world and Iraq**	**3 hours**
12	**The aquatic ecosystem on earth, aquatic and salt plants**	**3 hours**
13	**Forest vegetation in the world and Iraq**	**3 hours**
14	**Climate charts and vocabulary, field experience**	**3 hours**
15	**Visit to Anwa Air Station**	**3 hours**

Systematic book:

Plant Ecology. Dr. Majid Rashid Al-Hilli and Dr. Hikmat Abbas Al-Ani. Mosul University

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Analysis of soil, water and plant**	**Class:**	**Second**
Decision code:	**TMZ 215**	**Planned teaching hours :**	**64**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Introduction to soil, water and plant analysis, obtaining samples, reviewing some basic concepts in quantitative and qualitative analysis of the most important compounds and elements in soil, water and plant.

The purpose of teaching the curriculum is:

The purpose of the article is to introduce the students of the second stage in the Department of Soil Sciences and Water Resources to the methods of analysing soil, water and plant samples as an entry point for the study of different disciplines and soil sciences in advanced stages, which include practical lessons and laboratories requiring scientific background in different methods of analysis.

Learning results:

The student learned about the methods, chemicals and devices used to estimate different elements and ions in the soil, water and plant.

Teaching and learning methods:

- Exams
- The opinions of students and the opinions of faculty members and the opinions of graduates
- Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.
- Textbooks.
- Agricultural scientific journals and websites in general.

- View electronic syds to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	Introduction to soil, water and plant analysis	2 hours
2	Get samples	2 hours
3	Review some key concepts in quantitative analysis	2 hours
4	Processing results and verifying the accuracy of analyses	2 hours
5	Methods of weight analysis	2 hours
6	Volumetric analysis methods	2 hours
7-8	Electrical analysis methods	4 hours
9	Spectrometer-based analysis methods	2 hours
10	Analysis methods based on atomic absorption spectrum measurement	2 hours
11	Analysis methods based on atomic emission spectrum measurement	2 hours
12	Use of X-rays in metal and quantitative analysis	2 hours
13-14	Use of radioactive and stable isotopes in the field of quantitative analysis of elements	4 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	Take soil samples and prepare them for analysis	3 hours
2	Plant sampling and water samples	3 hours
3	Calculate and configure standard solutions	3 hours
4	Preparation of extracts and measurement of pH and EC	3 hours
5	Estimate of mutual images and the interoperability of CEC positive ions	3 hours
6	Estimate the level of organic carbon	3 hours
7	Estimate ready nitrogen and ready-made potassium	3 hours
8	Estimate ready-made phosphorus	3 hours

9	**Estimate the total soil content of the elements**	**3 hours**
10	**X-Ray** metal analysis	**3 hours**
11	**Set oxidation and reduction effort for soil**	**3 hours**
12	**Digest plant samples and set their content of elements**	**3 hours**

Systematic book:

Chemical Analysis of Soil by Dr. Hamdallah Suleiman Rahi, Dr. Ismail Ibrahim Khudhair, Mohammed Ali Jamal Al Obaidi

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Land settlement and modification**	**Row:**	**Second**
Decision code:	**---**	**Planned teaching hours :**	**70**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

A settlement, settlement devices, settlement methods, contours, contouring, spaces and stones, calculation of volumes

The purpose of teaching the curriculum is:

The settlement is a branch of the area that specializes in measuring the vertical dimension between two or more points on the earth's surface directly or indirectly based on a fixed level called the comparison level (average sea level) and therefore vertical dimensions are positive if they are above the comparison level and negative if they are below the comparison level and use vertical dimensions in tracking equal-height lines (contour lines), drawing terrain sections and identifying points at certain altitudes for construction purposes, so the settlement process is important. Very for data and use for applied purposes.

Learning results:

After receiving this article, the learner will be able to learn and apply to the settlement, use the settlement devices, know and apply the methods of settlement, prepare the contours, and calculate the spaces and stones.

Teaching and learning methods:

- **Exams**
- **The opinions of students and the opinions of faculty members and the opinions of graduates**
- **Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.**
- **Textbooks.**
- **Agricultural scientific journals and websites in general.**
- **View electronic syds to focus knowledge and science in the mind.**

Topics: (theoretical part):

Weeks	Topics	Hours
1	Definition and objectives of settlement and land adjustment	2 hours
2	Methods of calculating placements (direct methods)	2 hours
3	Placement calculation methods (indirect methods)	2 hours
4	Definitions and terms of settlement and adjustment processes	2 hours
5	Calculating longitudinal sections	2 hours
6	Cross-section account	2 hours
7	Urban exam.	2 hours
8	Sources of errors in the settlement work	2 hours
9	Identify the contours, their purposes and specifications	2 hours
10	Contour maps	2 hours
11	Al-Hijum's account	2 hours
12	Account data sources	2 hours
13	Account of volumes from contour maps	2 hours
14	Urban exam.	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	Different ways to find the relationship between different heights	3 hours
2	Identification and use of land modification settlement devices	3 hours
3	How to verify the accuracy of settlement devices	3 hours
4	Planning and mathematical applications in calculating placements in indirect ways	3 hours
5	Planning and mathematical applications in calculating placements in indirect ways	3 hours
6	Sources of errors in the settlement work	3 hours
7	Urban exam.	3 hours

8	**Drilling and filling calculations of longitudinal and transverse sections**	**3 hours**
9	**Planning and mathematical applications in contour mapping**	**3 hours**
10	**Contour mapping and inking**	**3 hours**
11	**Applications in regular volume account**	**3 hours**
12	**Applications in irregular volume account**	**3 hours**
13	**Applications in the calculation of volumes of contour maps**	**3 hours**
14	**Urban exam.**	**3 hours**

Systematic book:

1. In1975, Riad Saleh al-Khafaf was wiped out in the public area.
2. The foundations of the flat and topographic area / Riad Saleh Al-Khaf / 2000.

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Principles of microscopic revival**	**Class**	**Second**
Decision code:	**T.M.G. 211**	**Planned teaching hours :**	**70**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Definition of microbiology, the development of microbiology, microbiology aggregates, morphological and anatomical bacteria properties and bacteria growth, fundamentals of fungi, algae, protozoa and viruses, the relationship of microbiology to diseases and agricultural production, the study of families and bacterial races.

The purpose of teaching the curriculum is:

Introducing the student to living organisms that are not seen with the naked eye (bacteria, aryanism, fungi, algae, protozoa and viruses) in terms of their spread in different environments and their reproduction, reproduction, grading, metabolism and inheritance.

The student is also introduced to the relationship between these organisms and other organisms - human, animal, plant - and their beneficial and harmful effects.

Learning results:

After receiving this course, the student learned how to deal with microbiology in terms of development, diagnosis, purification, examination, prevention and exploitation of beneficial events.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	Definition and evolution of microbiology	2 hours
2	The classification site of microbiology in the world of biology	2 hours
3	Microbiology Designation - Biology Classification	2 hours
4	Bacteria - their presence - their forms	2 hours
5	Bacterial cell wall and its components - sitoblasmi membrane and its components	2 hours
6	Permeability and selectivity through cytoblasmic membranes	2 hours
7	Bacterial levels - capillaries - organelles outside the sito plasm	2 hours
8	Cytopslasm - Nucleic Acids - Nuclear Acid Synthesis	2 hours
9	Medial bodies - plasmids spurs – follicles	2 hours

10	**Fungi - description of the body of mushrooms - their importance - economic importance and damage**	**2 hours**
11	**Fungal cell structure - cytoplasm and its contents**	**2 hours**
12	**Algae- their species, their presence, their location among organisms, their growth and their reproduction.**	**2 hours**
13	**Microbiology Nutrition - Microbiology Reproduction**	**2 hours**
14	**Virus**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Learn about microbiology laboratory - safety guidelines and methods**	**3 hours**
2	**Equipment, tools used and chemicals for study**	**3 hours**
3	**Sterilization methods - components and use of a microscope - how to prepare a glass slide**	**3 hours**
4	**Microbiology sampling methods - microbiology isolation**	**3 hours**
5	**Microbiology Purification Methods - Biology Counting Methods**	**3 hours**
6	**Diagnosis of bacteria - forms of bacteria - bacterial groupings**	**3 hours**
7	**Fungi - Diagnosis of fungi - form of their populations - methods of measuring the colony**	**3 hours**
8	**Simple bacteria.**	**3 hours**
9	**Differential bacteria**	**3 hours**
10	**The bacteria's whips are poured.**	**3 hours**
11	**The spurs and capsules are in bacteria.**	**3 hours**
12	**Inhibition of bacteria**	**3 hours**
13	**Antibiotics and methods of measuring them**	**3 hours**
14	**Impact of environmental factors on the growth of organisms**	**3 hours**

Systematic book:

- Al-Ani, Faez Aziz and Badawi, Amin Suleiman. (1990), Principles of Microbiology. Dar al-Hikma Printing and Publishing. Mosul. Iraq

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Principles of soil science**	**Class:**	**Second**
Decision code:	**TMZ 115**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The curriculum tries to cover the general foundations and concepts of major soil disciplines (soil surveying and classification and soil classification, soil physics, soil chemistry, soil fertility and soil revival) and linking them to field and laboratory applications.

The purpose of teaching the curriculum is:

The vocabulary of the curriculum aims to introduce the student to the basics of soil science in the disciplines of surveying and classifying soils and classification of soils, soil physics, soil chemistry, soil fertility and soil revival. and to understand it more comprehensively in the later stages theoretically and practically

Learning results:

Understanding and applying some ideas and methods of work to study the properties of physiochemical, fertility and vital soils as well as general knowledge of the factors and processes of soil formation and soil and water management and sustainability with an explanation of the most important problems and their treatment.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1-2	Soil development and composition	4 hours
3-4	Physical properties	4 hours
5	Soil water	2 hours
6	Urban exam.	2 hours
7-8	Colloids and chemical soil properties	4 hours
9-10	Salinity and alkali in the soil and reclamation of salt-affected soils	4 hours
11	The biological and chemical properties of the soil	2 hours
12	Soil fertility and plant nutrition	2 hours
13	Urban exam.	2 hours

14	**Organic soil material**	**2 hours**
15	**Classification and management of soils in Iraq**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Collect soil samples**	**3 hours**
2	**Measuring moisture** content	**3 hours**
3-4	**Measuring the virtual and real density of soil and porous**	**6 hours**
5-6	**Estimate the percentages of sand, mud and greenery and determine soil tissue**	**6 hours**
7	**PH** measurement **of soil and soil salinity**	**3 hours**
8	**Urban exam.**	**3 hours**
9	**Estimate some positive dissolved ions in soil solution (Ca2+, Mg2+, Na+ andk+)**	**3 hours**
10	**Estimate some negative dissolved ions in soil solution (Cl-,CO32-and HCO3-)**	**3 hours**
11	**Estimate soil content of carbonate minerals**	**3 hours**
12	**Assessment of organic soil material**	**3 hours**
13	**Estimate ready nitrogen in soil**	**3 hours**
14	**Estimate some vital characteristics of the soil, such as estimating the total numbers of fungi and bacteria in the soil**	**3 hours**
15	**Digging and describing soil**	**3 hours**

Systematic book:

1. Sumner, M. E. 2000. Handbook of soil science. CRC press
2. Abdullah al-Ani, 1981. Principles of soil science
3. Daniel Hall. The entrance to soil physics. Translated by Dr. Mehdi Ibrahim Odeh
4. Ahmed Zubeidi. Soil salinity.
5. Walid Al-Akidi and Shaker al-Issawi.1989.

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**agricultural machinery**	**Class :**	**Second**
Decision code:	**TMZ 223**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The concept of machinery is to introduce the student to all agricultural machinery and machinery of all kinds, from agricultural tugs and engines to tillage and softening equipment and developing crop service equipment to end with harvest and post-harvest equipment and how to optimize them to increase productivity and reduce physical effort and known time for agricultural operations by selecting and testing agricultural machinery suitable for each crop and increasing plant and animal production.

The purpose of teaching the curriculum is:

1. Preparing graduate students of the Faculty of Agriculture trained to use and manage tugs and agricultural equipment
2. Reducing the costs of agriculture, production and distribution
3. Introducing modern technologies for the optimal use of agricultural women and equipment

Learning results:

1. Increase sufficient expertise to use and manage agricultural machinery and machinery
2. Increase crop service to increase the area of cultivated fields
3. Meeting food needs with increased population associated with increased demand for agricultural production

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	Types of tugs and engines and their functions	2 hours

2	Methods used to transport and convert movement in agricultural engines and machinery	2 hours
3	Types of internal combustion engines and their parts	2 hours
4	Engine action theory and types of thermal cycles	2 hours
5	Calculating engine capabilities and competencies	2 hours
6	Internal combustion engine assistive devices	2 hours
7	Transmissions in the agricultural tug	2 hours
8	Tug-of-war devices	2 hours
9	Earth contact devices	2 hours
10	Soil preparation equipment (types, functions and work)	2 hours
11	Fertilization equipment (types, functions and work)	2 hours
12	Control equipment and sticks (types, functions and work)	2 hours
13	Seeding and agriculture equipment (types, functions and work)	2 hours
14	Harvest equipment	2 hours
15	Post-harvest equipment	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	See the types of tugs and engines	3 hours
2	Identify engine parts	3 hours
3	Watch movies about the work of tugs and engines	3 hours
4	Identify the transmissions in the tug	3 hours
5	Identify tug-of-war devices	3 hours
6	Tug driving exercises and networking methods with agricultural machinery	3 hours
7	Identify the types of contact devices with the ground	3 hours
8	Identification of soil preparation equipment (work and maintenance)	3 hours
9	Identification and maintenance of fertilization equipment	3 hours
10	Identification and maintenance of control and ad dilemma equipment	3 hours
11	Watch and calibrate the atoms	3 hours
12	Learn about the types of harvesting equipment and its work	3 hours

13	Watch movies on how harvest and post-harvest equipment works	3 hours
14	Field exercises on the application of the work of some agricultural machinery	3 hours
15	Watch movies about the work, operation and maintenance of agricultural machinery	3 hours

Systematic book:

- Agricultural machinery and machinery. Dr. Yasin Hashim Al-Tahan and Dr. Mohammed Jassim Al-Nema.2000

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

The practical part (field, laboratory and workshop)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily performance in the field, laboratory and workshop (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% practical test.

30% oral or editorial examination in scientific subject.

The name	**Soil environment**	**Class :**	**Second**
Decision code:	**T.M.Z. 317**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The article includes various environmental concepts (environment, ecology, ecosystem, surrounding factors, biological relationships, self-feeding organisms" products, feeding-certified organisms, "consumables", biodegradation of organic compounds and the rotation of elements by analysts, as well as the material includes factors surrounding outside the soil environment, which is related to atmospheric nuances .

The purpose of teaching the curriculum is:

This course aims to introduce the student to the concept of soil environment, which means organism "living factors" and factors surrounding "non-living factors" and recognizes the organisms found in the soil, including the roots of plants, the extent of diversity and differences between soil revival and different biological relationships, as well as recognizes the factors surrounding physic, chemical and fertility that affect and affect organisms present in the soil environment, Also through this article, the

student learns how to maintain a clean environment, environmental balance and the use of bioprocessors to rid the soil of pollutants.

The student is also introduced to the factors surrounding outside the soil environment, which relates to the weather.

Learning results:

After receiving this material, the learner is able to deal with various organic wastes and use them usefully in plant production and maintain a clean environment.

Teaching and learning methods:

- Exams
- The opinions of students and the opinions of faculty members and the opinions of graduates
- Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.
- Textbooks.
- Agricultural scientific journals and websites in general.
- View electronic syds to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	**The environment, its concept and its relationship with man**	**2 hours**
2	**The environment, its concept and its relationship with man**	**2 hours**
3	**Departments of Ecology, Ecosystem**	**2 hours**
4	**Climate, climate cycle, soil climate**	**2 hours**
5	**Energy, radiation, heat, wind, atmospheric pressure**	**2 hours**
6	**Water, water relationship with plant, precipitation, atmospheric humidity, clouds**	**2 hours**
7	**Snow and ice, cold, fog, evaporation**	**2 hours**
8	**Environmental qualities of soil**	**2 hours**
9	**Soil moisture content**	**2 hours**
10	**Soil air and ventilation, heat**	**2 hours**

11	**factors influencing, key characteristics, soil construction,**	**2 hours**
12	**Porosity, soil tissue**	**2 hours**
13	**Study of vegetation characteristics**	**2 hours**
14	**Environmental pollution, population explosion**	**2 hours**
15	**The role of man in the environment**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Ecology and surrounding factors**	**3 hours**
2	**Temperatures and temperature gauges in the air and soil**	**3 hours**
3	**Solar radiation and measuring devices**	**3 hours**
4	**Humidity and measuring devices in the air and soil**	**3 hours**
5	**Precipitation, rain and dew measuring devices**	**3 hours**
6	**Wind, wind speed and direction measurement devices**	**3 hours**
7	**Atmospheric pressure and measuring devices**	**3 hours**
8	**Evaporation and evaporation metering devices**	**3 hours**
9	**Soil, soil characteristics, salinity, reaction degree, soil components and minutes**	**3 hours**
10	**Natural plant environments in the world and Iraq, alpine environments, steppes, savannahs, grasses, tundra**	**3 hours**
11	**Desert cover in the world and Iraq**	**3 hours**
12	**The aquatic ecosystem on earth, aquatic and salt plants**	**3 hours**
13	**Forest vegetation in the world and Iraq**	**3 hours**
14	**Climate charts and vocabulary, field experience**	**3 hours**
15	**Visit to Anwa Air Station**	**3 hours**

Systematic book:

Plant Ecology. Dr. Majid Rashid Al-Hilli and Dr. Hikmat Abbas Al-Ani. Mosul University

Auditions:

Theoretical part (lectures)

E. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

F. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

G. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

H. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Analysis of soil, water and plant**	**Class:**	**Second**
Decision code:	**TMZ 215**	**Planned teaching hours :**	**64**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Introduction to soil, water and plant analysis, obtaining samples, reviewing some basic concepts in quantitative and qualitative analysis of the most important compounds and elements in soil, water and plant.

The purpose of teaching the curriculum is:

The purpose of the article is to introduce the students of the second stage in the Department of Soil Sciences and Water Resources to the methods of analysing soil, water and plant samples as an entry point for the study of different disciplines

and soil sciences in advanced stages, which include practical lessons and laboratories requiring scientific background in different methods of analysis.

Learning results:

The student learned about the methods, chemicals and devices used to estimate different elements and ions in the soil, water and plant.

Teaching and learning methods:

- Exams
- The opinions of students and the opinions of faculty members and the opinions of graduates
- Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.
- Textbooks.
- Agricultural scientific journals and websites in general.
- View electronic syds to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	Introduction to soil, water and plant analysis	2 hours
2	Get samples	2 hours
3	Review some key concepts in quantitative analysis	2 hours
4	Processing results and verifying the accuracy of analyses	2 hours
5	Methods of weight analysis	2 hours
6	Volumetric analysis methods	2 hours
7-8	Electrical analysis methods	4 hours
9	Spectrometer-based analysis methods	2 hours
10	Analysis methods based on atomic absorption spectrum measurement	2 hours
11	Analysis methods based on atomic emission spectrum measurement	2 hours
12	Use of X-rays in metal and quantitative analysis	2 hours

13-14	**Use of radioactive and stable isotopes in the field of quantitative analysis of elements**	**4 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Take soil samples and prepare them for analysis**	**3 hours**
2	**Plant sampling and water samples**	**3 hours**
3	**Calculate and configure standard solutions**	**3 hours**
4	**Preparation of extracts and measurement of pH and EC**	**3 hours**
5	**Estimate of mutual images and the interoperability of CEC positive ions**	**3 hours**
6	**Estimate the level of organic carbon**	**3 hours**
7	**Estimate ready nitrogen and ready-made potassium**	**3 hours**
8	**Estimate ready-made phosphorus**	**3 hours**
9	**Estimate the total soil content of the elements**	**3 hours**
10	**X-Ray** metal analysis	**3 hours**
11	**Set oxidation and reduction effort for soil**	**3 hours**
12	**Digest plant samples and set their content of elements**	**3 hours**

Systematic book:

Chemical Analysis of Soil by Dr. Hamdallah Suleiman Rahi, Dr. Ismail Ibrahim Khudhair, Mohammed Ali Jamal Al Obaidi

Auditions:

Theoretical part (lectures)

E. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

F. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

G. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

H. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Land settlement and modification**	**Row:**	**Second**
Decision code:	**---**	**Planned teaching hours :**	**70**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

A settlement, settlement devices, settlement methods, contours, contouring, spaces and stones, calculation of volumes

The purpose of teaching the curriculum is:

The settlement is a branch of the area that specializes in measuring the vertical dimension between two or more points on the earth's surface directly or indirectly based on a fixed level called the comparison level (average sea level) and therefore vertical dimensions are positive if they are above the comparison level and negative if they are below the comparison level and use vertical dimensions in tracking equal-height lines (contour lines), drawing terrain sections and identifying points at certain altitudes for construction purposes, so the settlement process is important. Very for data and use for applied purposes.

Learning results:

After receiving this article, the learner will be able to learn and apply to the settlement, use the settlement devices, know and apply the methods of settlement, prepare the contours, and calculate the spaces and stones.

Teaching and learning methods:

- **Exams**
- **The opinions of students and the opinions of faculty members and the opinions of graduates**
- **Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.**
- **Textbooks.**
- **Agricultural scientific journals and websites in general.**
- **View electronic syds to focus knowledge and science in the mind.**

Topics: (theoretical part):

Weeks	Topics	Hours
1	Definition and objectives of settlement and land adjustment	2 hours
2	Methods of calculating placements (direct methods)	2 hours
3	Placement calculation methods (indirect methods)	2 hours
4	Definitions and terms of settlement and adjustment processes	2 hours
5	Calculating longitudinal sections	2 hours
6	Cross-section account	2 hours
7	Urban exam.	2 hours
8	Sources of errors in the settlement work	2 hours
9	Identify the contours, their purposes and specifications	2 hours
10	Contour maps	2 hours
11	Al-Hijum's account	2 hours
12	Account data sources	2 hours
13	Account of volumes from contour maps	2 hours

14	**Urban exam.**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Different ways to find the relationship between different** heights	**3 hours**
2	**Identification and use of land modification settlement devices**	**3 hours**
3	**How to verify the accuracy of settlement devices**	**3 hours**
4	**Planning and mathematical applications in calculating placements in indirect ways**	**3 hours**
5	**Planning and mathematical applications in calculating placements in indirect ways**	**3 hours**
6	**Sources of errors in the settlement work**	**3 hours**
7	**Urban exam.**	**3 hours**
8	**Drilling and filling calculations of longitudinal and transverse sections**	**3 hours**
9	**Planning and mathematical applications in contour mapping**	**3 hours**
10	**Contour mapping and inking**	**3 hours**
11	**Applications in regular volume account**	**3 hours**
12	**Applications in irregular volume account**	**3 hours**
13	**Applications in the calculation of volumes of contour maps**	**3 hours**
14	**Urban exam.**	**3 hours**

Systematic book:

3. In1975, Riad Saleh al-Khafaf was wiped out in the public area.

4. The foundations of the flat and topographic area / Riad Saleh Al-Khaf / 2000.

Auditions:

Theoretical part (lectures)

E. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

F. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

G. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

H. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Principles of microscopic revival**	**Class**	**Second**
Decision code:	**T.M.G. 211**	**Planned teaching hours :**	**70**

Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Definition of microbiology, the development of microbiology, microbiology aggregates, morphological and anatomical bacteria properties and bacteria growth, fundamentals of fungi, algae, protozoa and viruses, the relationship of microbiology to diseases and agricultural production, the study of families and bacterial races.

The purpose of teaching the curriculum is:

Introducing the student to living organisms that are not seen with the naked eye (bacteria, aryanism, fungi, algae, protozoa and viruses) in terms of their spread in different environments and their reproduction, reproduction, grading, metabolism and inheritance.

The student is also introduced to the relationship between these organisms and other organisms - human, animal, plant - and their beneficial and harmful effects.

Learning results:

After receiving this course, the student learned how to deal with microbiology in terms of development, diagnosis, purification, examination, prevention and exploitation of beneficial events.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	**Definition and evolution of microbiology**	**2 hours**

2	**The classification site of microbiology in the world of biology**	**2 hours**
3	**Microbiology Designation - Biology Classification**	**2 hours**
4	**Bacteria - their presence - their forms**	**2 hours**
5	**Bacterial cell wall and its components - sitoblasmi membrane and its components**	**2 hours**
6	**Permeability and selectivity through cytoblasmic membranes**	**2 hours**
7	**Bacterial levels - capillaries - organelles outside the sito plasm**	**2 hours**
8	**Cytopslasm - Nucleic Acids - Nuclear Acid Synthesis**	**2 hours**
9	**Medial bodies - plasmids spurs – follicles**	**2 hours**
10	**Fungi - description of the body of mushrooms - their importance - economic importance and damage**	**2 hours**
11	**Fungal cell structure - cytoplasm and its contents**	**2 hours**
12	**Algae- their species, their presence, their location among organisms, their growth and their reproduction.**	**2 hours**
13	**Microbiology Nutrition - Microbiology Reproduction**	**2 hours**
14	**Virus**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Learn about microbiology laboratory - safety guidelines and methods**	**3 hours**
2	**Equipment, tools used and chemicals for study**	**3 hours**
3	**Sterilization methods - components and use of a microscope - how to prepare a glass slide**	**3 hours**
4	**Microbiology sampling methods - microbiology isolation**	**3 hours**
5	**Microbiology Purification Methods - Biology Counting Methods**	**3 hours**
6	**Diagnosis of bacteria - forms of bacteria - bacterial groupings**	**3 hours**
7	**Fungi - Diagnosis of fungi - form of their populations - methods of measuring the colony**	**3 hours**
8	**Simple bacteria.**	**3 hours**
9	**Differential bacteria**	**3 hours**
10	**The bacteria's whips are poured.**	**3 hours**
11	**The spurs and capsules are in bacteria.**	**3 hours**
12	**Inhibition of bacteria**	**3 hours**

13	**Antibiotics and methods of measuring them**	**3 hours**
14	**Impact of environmental factors on the growth of organisms**	**3 hours**

Systematic book:

- Al-Ani, Faez Aziz and Badawi, Amin Suleiman. (1990), Principles of Microbiology. Dar al-Hikma Printing and Publishing. Mosul. Iraq

Auditions:

Theoretical part (lectures)

E. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

F. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

G. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

H. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Principles of soil science**	**Class:**	**Second**
Decision code:	**TMZ 115**	**Planned teaching hours :**	**75**

Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The curriculum tries to cover the general foundations and concepts of major soil disciplines (soil surveying and classification and soil classification, soil physics, soil chemistry, soil fertility and soil revival) and linking them to field and laboratory applications.

The purpose of teaching the curriculum is:

The vocabulary of the curriculum aims to introduce the student to the basics of soil science in the disciplines of surveying and classifying soils and classification of soils, soil physics, soil chemistry, soil fertility and soil revival. and to understand it more comprehensively in the later stages theoretically and practically

Learning results:

Understanding and applying some ideas and methods of work to study the properties of physiochemical, fertility and vital soils as well as general knowledge of the factors and processes of soil formation and soil and water management and sustainability with an explanation of the most important problems and their treatment.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1-2	Soil development and composition	4 hours

3-4	**Physical properties**	4 hours
5	**Soil water**	2 hours
6	**Urban exam.**	2 hours
7-8	**Colloids and chemical soil properties**	4 hours
9-10	**Salinity and alkali in the soil and reclamation of salt-affected soils**	4 hours
11	**The biological and chemical** properties **of the soil**	2 hours
12	**Soil fertility and plant nutrition**	2 hours
13	**Urban exam.**	2 hours
14	**Organic soil material**	2 hours
15	**Classification and management of soils in Iraq**	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Collect soil samples**	3 hours
2	**Measuring moisture** content	3 hours
3-4	**Measuring the virtual and real density of soil and porous**	6 hours
5-6	**Estimate the percentages of sand, mud and greenery and determine soil tissue**	6 hours
7	**PH** measurement **of soil and soil salinity**	3 hours
8	**Urban exam.**	3 hours
9	**Estimate some positive dissolved ions in soil solution (Ca2+, Mg2+, Na+ andk+)**	3 hours
10	**Estimate some negative dissolved ions in soil solution (Cl-,CO32-and HCO3-)**	3 hours
11	**Estimate soil content of carbonate minerals**	3 hours
12	**Assessment of organic soil material**	3 hours
13	**Estimate ready nitrogen in soil**	3 hours
14	**Estimate some vital characteristics of the soil, such as estimating the total numbers of fungi and bacteria in the soil**	3 hours
15	**Digging and describing soil**	3 hours

Systematic book:

6. Sumner, M. E. 2000. Handbook of soil science. CRC press

7. Abdullah al-Ani, 1981. Principles of soil science

8. Daniel Hall. The entrance to soil physics. Translated by Dr. Mehdi Ibrahim Odeh

9. Ahmed Zubeidi. Soil salinity.

10. Walid Al-Akidi and Shaker al-Issawi.1989.

Auditions:

Theoretical part (lectures)

E. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

F. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

G. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

H. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**agricultural machinery**	**Class :**	**Second**
Decision code:	**TMZ 223**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The concept of machinery is to introduce the student to all agricultural machinery and machinery of all kinds, from agricultural tugs and engines to tillage and softening equipment and developing crop service equipment to end with harvest and post-harvest equipment and how to optimize them to increase productivity and reduce physical effort and known time for agricultural operations by selecting and testing agricultural machinery suitable for each crop and increasing plant and animal production.

The purpose of teaching the curriculum is:

4. Preparing graduate students of the Faculty of Agriculture trained to use and manage tugs and agricultural equipment
5. Reducing the costs of agriculture, production and distribution
6. Introducing modern technologies for the optimal use of agricultural women and equipment

Learning results:

4. Increase sufficient expertise to use and manage agricultural machinery and machinery
5. Increase crop service to increase the area of cultivated fields
6. Meeting food needs with increased population associated with increased demand for agricultural production

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	Types of tugs and engines and their functions	2 hours
2	Methods used to transport and convert movement in agricultural engines and machinery	2 hours
3	Types of internal combustion engines and their parts	2 hours
4	Engine action theory and types of thermal cycles	2 hours
5	Calculating engine capabilities and competencies	2 hours
6	Internal combustion engine assistive devices	2 hours
7	Transmissions in the agricultural tug	2 hours
8	Tug-of-war devices	2 hours
9	Earth contact devices	2 hours
10	Soil preparation equipment (types, functions and work)	2 hours
11	Fertilization equipment (types, functions and work)	2 hours
12	Control equipment and sticks (types, functions and work)	2 hours
13	Seeding and agriculture equipment (types, functions and work)	2 hours
14	Harvest equipment	2 hours
15	Post-harvest equipment	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	See the types of tugs and engines	3 hours
2	Identify engine parts	3 hours
3	Watch movies about the work of tugs and engines	3 hours
4	Identify the transmissions in the tug	3 hours

5	Identify tug-of-war devices	3 hours
6	Tug driving exercises and networking methods with agricultural machinery	3 hours
7	Identify the types of contact devices with the ground	3 hours
8	Identification of soil preparation equipment (work and maintenance)	3 hours
9	Identification and maintenance of fertilization equipment	3 hours
10	Identification and maintenance of control and ad dilemma equipment	3 hours
11	Watch and calibrate the atoms	3 hours
12	Learn about the types of harvesting equipment and its work	3 hours
13	Watch movies on how harvest and post-harvest equipment works	3 hours
14	Field exercises on the application of the work of some agricultural machinery	3 hours
15	Watch movies about the work, operation and maintenance of agricultural machinery	3 hours

Systematic book:

- Agricultural machinery and machinery. Dr. Yasin Hashim Al-Tahan and Dr. Mohammed Jassim Al-Nema.2000

Auditions:

Theoretical part (lectures)

E. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

F. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

The practical part (field, laboratory and workshop)

G. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily performance in the field, laboratory and workshop (student activity).

10% commitment and discipline in the laboratory and field.

H. The final exam (20%) is distributed to:

70% practical test.

30% oral or editorial examination in scientific subject.

The name	**Soil organisms**	**Class:**	**Fourth**
Decision code:	**TMZ 424**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The material includes: division of soil biology, important soil revival groups and their relationships to agricultural production, microbiology of the root area, the most important vital activities of soil

biology, organic matter transformations, bear formation, nitrogen, phosphorus, sulfur and iron transformations, and modern applications of soil biology (biosafety, bioconference, biological therapy).

The purpose of teaching the curriculum is:

Introducing the student to the totals of the revival of the soil accurate in terms of its preparation, sizes, forms, nutrition, reproduction and harmful and beneficial effects, and the impact of physical, chemical and fertility soil factors in these groups, also aims to introduce students to biological relations in the area around the roots, as well as vital activities of soil neighborhoods and their importance in recycling nutrients, increasing agricultural production and obtaining a healthy product and maintaining a clean and sustainable environment.

Learning results:

After receiving this course, the student was able to learn about the activities of reviving beneficial and harmful soils and can use them in the fields of bio-fertilization, bio-control, compost production, biotherapy and sustainable agriculture.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	**Soil as home to microbiology**	**2 hours**
2	**Vital components of soil**	**2 hours**
3	**Presence and distribution of microbiology in the soil**	**2 hours**
4	**Factors affecting microbiology**	**2 hours**
5	**Metabolic processes of microbiology**	**2 hours**

6	**Soil enzymes**	**2 hours**
7	**Carbon and organic matter transformations**	**2 hours**
8	**Developments of Al-Naitrojin al-Bayulujiya**	**2 hours**
9	**Bio-installing atmospheric nitrogen**	**2 hours**
10	**Biomorphic shifts of sulfur in the soil**	**2 hours**
11	**Biophosphorus transformations**	**2 hours**
12	**Biochemical transformations of exotic chemical compounds in the soil**	**2 hours**
13	**Soil pollution and vital reclamation**	**2 hours**
14	**Biological transformations of other elements**	**2 hours**
15	**Greenhouse gases**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Introduction/Hardware and Materials**	**3 hours**
2	**Safety requirements in the microbiology laboratory andways to take soil models to study their biology**	**3 hours**
3	**Conditions affecting the growth of microbiology pH, heat, carbon source, aw Conditions affecting the growth of microbiology**	**3 hours**
4	**Conditions affecting the growth of microbiology**	**3 hours**
5	**Estimate the number of bacteria and radiological fungi**	**3 hours**
6	**Calculating the preparation of bacteria and radial fungi and studying their characteristics.**	**3 hours**
7	**Soil respiration (carbon dioxide estimate)**	**3 hours**
8	**Soil respiration (carbon dioxide estimate)**	**3 hours**
9	**Bio-stabilization of atmospheric nitrogen**	**3 hours**
10	**Soil enzymes**	**3 hours**
11	**The ynds**	**3 hours**
12	**The nitrite**	**3 hours**
13	**Soil Nematod**	**3 hours**
14	**Solvent living of phosphorus**	**3 hours**
15	**Rizosphere effect (R/S ratio)**	**3 hours**

Systematic book:

- Qasim, Ghaban Mohammed and Madir Abdul Sattar Ali.1989. Microscopic soil biology. Book House for Printing and Publishing. Mosul University

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Soil Management**	**Class :**	**Fourth**
Decision code:	**T.M.G. 422**	**Planned teaching hours :**	**70**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

To be the reference and guide in the implementation of agricultural projects and the optimal exploitation of land with the highest productivity and the best management.

The purpose of teaching the curriculum is:

The possibility of maintaining soil fertility and raising its productivity in order to increase agricultural production, which depends on the extent to which the nature of the soil is understood, as well as the nature of the application of technological and scientific progress in the process of exploiting these soils and studying the nature of the soils in terms of their physical، chemical and vital characteristics and classification in order to choose the best appropriate methods for the best exploitation of them and the transfer and analysis of scientific experiments.

Learning results:

The best exploitation of all arable land in the country and the provision of appropriate technical staff that carry out such a huge task.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours

1	**Introduction to concept and objectives**	**2 hours**
2	**The importance of classifying soils in their management, classification and how to benefit from it at the chain level**	**2 hours**
3	**Tasks of surveying soils in their management**	**2 hours**
4	**Sample and inspection for management and scientific research purposes**	**2 hours**
5	**The legitimate description of the farm site locally and internationally**	**2 hours**
6	**Classification of land for agriculture, engineering and others**	**2 hours**
7	**Land use assessment**	**2 hours**
8	**Land quality and its relationship to agricultural production**	**2 hours**
9	**General conditions of plant production and its relationship to soil management and the production of appropriate maps**	**2 hours**
10	**Agricultural courses and how to take advantage of them**	**2 hours**
11	**The conditions of the territories and soil of Iraq and the quality of the problems and how to manage them**	**2 hours**
12	**The conditions of the territories and soil of Iraq and the quality of the problems and how to manage them**	**2 hours**
13	**Diagnosis of soil and land problems at the farm level**	**2 hours**
14	**Planning the administrative program that the specialist must submit to the employer**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Methods of measuring areas on land and on the map, testing important drawing standards**	**3 hours**
2	**Forensic characterization of the location of the land and the farm: the methods of characterization, the use ofGPS in the location of the land and the farm**	**3 hours**
3	**Rules for the receipt of samples and all agricultural purposes**	**3 hours**
4	**Use of space and aerial images and topographic maps to locate sampling**	**3 hours**
5	**Tasks of classifying soils in their management**	**3 hours**
6	**How to use soil survey reports and maps in soil management**	**3 hours**
7	**How to use soil survey reports and maps in soil management**	**3 hours**
8	**Linking the map unit with the classification unit and the management unit in the formation of farm fields**	**3 hours**
9	**Linking the map unit with the classification unit and the management unit in the formation of farm fields**	**3 hours**
10	**Practical applications on land assessment methods**	**3 hours**
11	**Practical applications on land assessment methods**	**3 hours**
12	**Drawing a map of biological and ideological problems**	**3 hours**

13	**Structured diagnosis of soil problems on the farm**	**3 hours**
14	**Set up the administrative** map **(try in application)**	**3 hours**

Systematic book:

1- **Department of Soil and Land Use, 1990, Dr. Walid Khaled Hassan Al-Akidi.**

2- **Department of Soils in Land Planning and Use, 1999, Dr. Mohammed Khader Abbas.**

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

Decision code:	**T.M.G. 421**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Study the concept of reclamation and its role in agricultural production

Expansion of the issue of reclamation of soils affected by salts and stages of implementation of reclamation and management of reclaimed soils

- Discuss different soil problems and learn about the best ways to treat and reclaim

The purpose of teaching the curriculum is:

Learn about the concept of land reclamation and its role in agricultural production

- Study of various soil problems that hinder production (salinity, soda, gypsum, desert, calcareous)

- Learn about the best ways to address soil problems and bring them back to production

Learning results:

After the end of this course, the student is able to know the various soil problems and be able to identify treatments for soil problems and bring them back to production.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours

1	**The concept of land reclamation and its role in agricultural production**	**2 hours**
2	**Salt-affected soil reclamation methods**	**2 hours**
3	**Stages of implementation** of **saline reclamation** project	**2 hours**
4	**Phase 1/ Surveys and Field Investigations**	**2 hours**
5	**Phase II / Calculations, designs and decisions**	**2 hours**
6	**Phase 3/ Implementation**	**2 hours**
7	**Phase 4 / Culture**	**2 hours**
8	**Urban exam.**	**2 hours**
9	**Management of reclaimed soils and results of saline land reclamation experiments in Iraq**	**2 hours**
10	**Reclaiming the essaoui soil**	**2 hours**
11	**Gypsum soil** reclamation	**2 hours**
12	**Reclamation of desert and sand soils**	**2 hours**
13	**Limestone soil** reclamation	**2 hours**
14	**Urban exam.**	**2 hours**
15	**Soil** reclamation	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Saline soil test/cultivation**	**3 hours**
2	**Laboratory experiment washing saline soil**	**3 hours**
3	**EC ,pH**	**3 hours**
4	**Analysis of dissolved washing/ion scarves**	**3 hours**
5	**Soil analysis after EC** washing	**3 hours**
6	**Soil shills after washing/dissolved ions**	**3 hours**
7	**Draw soil washing curves and calculate the washing codified**	**3 hours**
8	**Calculating soil resistance to slavery salinity**	**3 hours**
9	**Sand soil reclamation** experience	**3 hours**
10	**Gypsum soil reclamation** experience	**3 hours**
11	**Discussion of test results**	**3 hours**
12	= = =	**3 hours**
13	= = =	**3 hours**

14	**Try**	**3 hours**
15	**Field trip to reclamation** project	**3 hours**

Systematic book:

- Zubeidi, Ahmed Haidar. 1989. Land Reclamation . Ministry of Higher Education. Baghdad University.

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**desertification**	**Class:**	**Fourth**

Decision code:	**---**	**Planned teaching hours :**	**28**
Units:	**2**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The concept of desertification and desertification-related terminology, the problem of desertification, describe the forms and causes of desertification. The harms, risks and losses of desertification, desertification globally, Arably and locally, combating desertification.

The purpose of teaching the curriculum is:

Introducing the student to the meaning of desertification, its causes and consequences, and how to monitor the problem and find ways and ways to prevent it.

Learning results:

1. Identify and understand the phenomenon of desertification in order to preserve natural resources and the ecosystem of which we are part
2. Introducing the student to how to preserve the land and not to overuse it and take responsibility in educating the community.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	Introduction to the concept of desertification and desertification-related terminology	2 hours
2	The problem of desertification, describing the forms and causes of desertification. The harms, risks and losses of desertification, desertification globally, Arably and locally	2 hours
3	The origin of desertification. Vegetation, salinity, drought	2 hours
4 - 5	Combating desertification. Agriculture and permanent agriculture. Water sources and combating desertification, administrative positions in civilized and civil behavior, land reclamation	4 hours
6 - 7	Sand dunes as a manifestation of desertification. Local distribution and spread of dune area. The origin of the dune problem. Sand dunes and sand dune. Methods and means of installing and combating sand dunes	4 hours
8	Means and methods of measuring desertification and sand dunes. Measure erosion. Measure soil susceptibility to removal. Measuring loss and addition	2 hours
9 - 10	Drought and dehydration. Definition of drought, dehydration and the factors causing them. The consequences of drought and dehydration. Methods of living with drought	4 hours
11 - 12	Global warming. The concept of global warming. Causes of global warming. Some methods of addressing global warming	4 hours
13 - 14	Harvesting water. The concept of water harvesting. Water harvesting methods. Factors that determine the choice of harvest methods	4 hours

Systematic book:

- Desertification. Land degradation in dry areas. Written by Dr. Mohamed Abdel Fattah al-Qassas. Dar al-Knowledge Publications. 1999.
- Desertification in the Arab world. Ibrahim Nahal. Arab Development Institute. 1987.
- FAO. 1994. Water Harvesting for improved Agricultural production.

Auditions:

Only theoretical part (lectures)

A. Continuous evaluation during the school year (40%) and distributed to:

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (60%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×15 = 30 degrees (25%)

The name	**Feeding a plant**	**Class:**	**Fourth**
Decision code:	**TMZ 415**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Learn about the concepts of soil fertility and fertility, the impact of soil components on their fertility, the importance of plant nutrients, their soil transformations, the symptoms of plant deficiency, fertility, nature, sources and the importance of OM for soil and plant fertility, and study the subject of fertile soil calendar

The purpose of teaching the curriculum is:

The student's knowledge of the basic concepts of plant nutrition and the relationship of the plant to the natural and artificial growth circles and how to transmit and absorb nutrients and the vesal functions of each element

Learning results:

The student acquires the skills that enable him to diagnose the symptoms of the deficiency of each nutrient and address its deficiency and how to prepare and added nutritious solutions to the natural or artificial growth circles.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	**Definition, division and importance of nutrients**	**2 hours**
2	**Factors affecting nutrient readiness**	**2 hours**
3	**Causes of nutrient deficiency** **Inorganic mineral composition of the plant**	**2 hours**
4	**Mineral nutrition and quality of the product**	**2 hours**
5	**Plant growth circles**	**2 hours**
6	**Quantitative relations (specific worker law and decreasing yield law)**	**2 hours**
7	**First monthly exam**	**2 hours**
8	**Paper feeding**	**2 hours**
9	**Nutrient bioabsorption machines**	**2 hours**
10	**The importance of Mikael's constant and derivation**	**2 hours**
11	**Theories of passive absorption of nutrients**	**2 hours**
12	**Follow theories of passive absorption of nutrients**	**2 hours**
13	**Bioabsorption theories of nutrients**	**2 hours**
14	**Follow theories of bioabsorption of nutrients**	**2 hours**
15	**Second monthly exam**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	Preparing nutritious solutions	3 hours
2	Experience sandy, water and air farms	3 hours
3	Symptoms of nutrient deficiency, diagnosis and treatment Nitrogen: physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
4	Phosphorus: physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
5	Potassium: physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
6	Nutritious solutions	3 hours
7	First monthly exam	3 hours
8	Sulfur: physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
9	Iron: physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
10	Types of artificial food farms	3 hours
11	Zinc: physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
12	Copper: physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
13	Boron: Physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
14	Mulbdenem: Physiological functions and diagnosis and treatment of symptoms of deficiency	3 hours
15	Second monthly exam	3 hours

Systematic book:

1 - Principles of Plant Nutrition, Saadallah Najm al-Nuaimi. Translated book by Mengel, K. and E.A.Kirkby.1984

2 - Plant Nutrition Guide, 1988 . Yusuf Mohammed Abu Dahi and Moayad Ahmed Al-Younis. Ministry of Higher Education and Scientific Research. Baghdad University. Directorate of Dar al-Kutub for Printing and Publishing. Mosul.

3- feeding the practical plant. Yusuf Mohammed Abu Dahi. 1989 . Ministry of Higher Education and Scientific Research. Baghdad University. House of Wisdom

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name of the rapporteur:	**Fertilizer technologies**	**Clas:**	**Fourth**

Decision code:	**---**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Spring**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Organic and vital fertilizers: types and methods of preparation, compound fertilizers and preparation, liquid fertilizers and preparation methods, fertilizers and environmental pollution

The purpose of teaching the curriculum is:

Introducing the student to fertilizers and their types (mineral- organic- vital) and the characteristics of each type and methods of manufacturing it.

Learning results:

The student acquires skills in calculating the amount of each of the major and small elements in simple fertilizer or vehicle and how to manufacture composite fertilizer from simple fertilizer and know the quantities, methods and dates added whether metal, organic or vital.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1-2	**Modern concepts related to fertilizers and their uses and fertilizer classification**	**4 hours**
3-4	**Organic and vital fertilizers: types and methods of preparation**	**4 hours**
5	**Mineral fertilizers: nitrogen fertilizer, soil behavior and degradation, classification, manufacture and management**	**2 hours**

6	**Phosphorus fertilizer, soil behavior, degradation, classification, manufacture and management.**	**2 hours**
7	**Urban Exam (2015)**	**2 hours**
8	**Potassium fertilizer, soil behavior, degradation, classification, manufacture and management.**	**2 hours**
9	**Calcium, magnesium and sulfur fertilizer: soil behavior and degradation, classification, manufacture and management**	**2 hours**
10	**Micronutrient fertilizer: soil behavior and degradation, classification, manufacture and management**	**2 hours**
11	**Compound fertilizers and preparation**	**2 hours**
12	**Liquid fertilizers and methods of preparation**	**2 hours**
13	**Methods of adding various fertilizers: mineral, organic, solid vitality and with irrigation water**	**2 hours**
14	**Fertilizers and environmental pollution**	**2 hours**
15	**Urban Exam (2015)**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1-2	**Start preparing for an ecological experiment (field or voyeuristic experiment) (preferably prepared before the start of the semester to buy time) in order to study the response of a particular crop to fertilize different fertilizer** sources **and different addition dates and methods (and continue and follow up along the semester)**	**6 hours**
3-4	**To calculate the quantities of various mineral, organic and vital fertilizers to be added on the basis of the nutrient of the hectare and fertilizer per hectare or for the kg soil.**	**6 hours**
5	**Identify some different fertilizer properties such as saline guide and degree of interaction.**	**3 hours**
6	**Estimating the concentration of nitrogen in different nitrogen fertilizers (digestion procedure for organic fertilizers)**	**3 hours**
7	**Detection of borite in urea fertilizer**	**3 hours**
8	**Estimating the amount of ammonia volatile from ammonia fertilizers**	**3 hours**

9	**Estimating the concentration of phosphorus in different phosphate fertilizers (digestion procedure for organic fertilizers)**	**3 hours**
10	**Study of phosphorus movement in the soil in practice**	**3 hours**
11	**How to prepare organic fertilizer (aerodynamic decomposition and influencing factors) and prepare bio fertilizers (use of ready-made insulation or commercial biosalm)**	**3 hours**
12	**Total nitrogen and total carbon measurement in organic fertilizer and C/N** calculation	**3 hours**
13	**How to prepare compound and liquid fertilizer in the laboratory**	**3 hours**
14-15	**Discussion of student reports on the results of analysis and biological experiment**	**6 hours**

Systematic book:

- **Fertilizer technologies and uses.**
- **Guide in plant nutrition.2012. Written by Alan Parker and David Bilbem. Translated by Dr. Noureddine Shawky Ali.**
- **Havlin,et al.2005.Soil fertility & fertilizers**

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Irrigation systems technologies**	**Class :**	**Fourth**
Decision code:	**TMZ 313**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Survey of irrigation methods in terms of their design, efficiency، energy to operate them and factors influencing their design. In addition to knowing the technical basis enough to select the required system and develop its operations and monitor its sustainability and gain the necessary expertise to manage irrigation operations

The purpose of teaching the curriculum is:

Students are informed of the basic principles of different irrigation methods, both traditionaland modern.

Learning results:

The student acquires scientific knowledge and practical experience in the field systems of irrigation, especially irrigation by spraying and drip, in terms of its components, components, management, calculations, efficiency and relationship to the plant and thus its management in addition to the development that has taken place in the world.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	**Introduction, irrigation system, field irrigation, foundations for the design of a field irrigation system**	**2 hours**
2	**Design factors, water consumption, soil, irrigation comma and depth of irrigation**	**2 hours**
3	**Surface irrigation, surface irrigation mechanism, tip time and depth of irrigation, water balance in surface irrigation, water transport and processing system in the field**	**2 hours**
4	**Bar irrigation, design hypotheses, design determinants, rate and depth of flow, length and width of barboard**	**2 hours**
5	**Palmrose irrigation, design considerations, hypotheses and determinants, decreasing irrigation, pulse irrigation**	**2 hours**
6	**Pelvic irrigation, hypotheses, equations and design determinants, design method**	**2 hours**

7	**Sprinkler irrigation, basic parts of the sprinkler irrigation system, accessories and supplementary equipment, types of sprinkler irrigation systems**	**2 hours**
8	**The basics of spraying irrigation, the distribution of water around the rotary sprinkler, the scheme of a fixed spraying irrigation system, the factors affecting the scheme,**	**2 hours**
9-10	**Consistency of the distribution of spray water, overlapping spraying patterns, water distribution consistency factors under sprinklers, exchange of spray pipe sites, spray spray waste, irrigation efficiency**	**4 hours**
11-12	**Spray tubes, lengths and preparation of spray pipes, hydraulic bases flow in pipes, permitted change in pressure, calculation of tube diameter and calculation of pressure charge**	**4 hours**
13	**Drip irrigation, main parts of drip irrigation system, dotted, hydraulic dotted, wet area**	**2 hours**
14-15	**Designed water need for drip irrigation, depth of irrigation and irrigation comma, hydraulic drip irrigation system**	**4 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Applications in irrigation comma and irrigation depth**	**3 hours**
2	**Efficiency, efficiency and consistency of the atmosphere**	**3 hours**
3	**Measuring the tip of the water in a double ring way**	**3 hours**
4	**Measuring the tip of the water in a maroze way**	**3 hours**
5	**Measuring the curves of progress and regression of surface irrigation (bar irrigation and maroz)**	**3 hours**
6	**Irrigation water transport facilities**	**3 hours**
7	**Irrigation water diversion facilities**	**3 hours**
8	**Irrigation water field distribution facilities**	**3 hours**
)-1010	**Checking and determining the pattern of water distribution under sprinklers - assessing the homogeneity of the distribution of spray water and water distribution consistency factors**	**6 hours**
11-12	**Inter-sprinklers and the shape of the order of sprinklers in the field**	**6 hours**
13	**Assessing the homogeneity of under-dotted water distribution and calculating distribution consistency factors**	**3 hours**

14-15	**Maintenance of irrigation systems - field visit to irrigation project and viewing various irrigation systems**	**6 hours**

Systematic book:

- Engineering field irrigation systems. 1992. Written by Dr. Ahmed Youssef Hajim and Hakki Ismail Yassin. Faculty of Engineering. Mosul University. Iraq

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name of the rapporteur:	**Soil maintenance**	**Row:**	**Fourth**
Decision code:	**T.M.G. 411**	**Planned teaching hours :**	**60**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

Objectives and principles of soil maintenance, soil maintenance methods, good ways to use land and maintain soil and water

The purpose of teaching the curriculum is:

They are tools for the development of soil maintenance for the optimal exploitation of land and water and their relationship to nudity and then know the effects and methods of treatment for use and management.

Learning results:

Introducing students to soil and water maintenance its concept and importance, the relationship of soil maintenance to other topics, factors affecting soil formation, objectives and principles, soil maintenance, good ways to use land and maintain soil and water

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours

1	**Introduction to soil and water maintenance concept and importance, the relationship of soil maintenance to other topics, factors affecting soil formation, objectives and principles, soil maintenance**	**2 hours**
2	**Clouds and water**	**2 hours**
3	**I clear**	**2 hours**
4	**Geological** erosion	**2 hours**
5	**Erosion of its types and mechanical occurrence and how to control it**	**2 hours**
6	**Soil maintenance methods, the general equation of soil loss**	**2 hours**
7	**Wind erosion**	**2 hours**
8	**Controlling wind erosion**	**2 hours**
9	**Contour agriculture , chip and terrace cultivation**	**2 hours**
10	**The nature of the use of land and its role in soil maintenance**	**2 hours**
11	**Good** ways **to use land and maintain soil and water**	**2 hours**
12	**Install sand dunes**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Analysis of rain data**	**3 hours**
2	**Calculating the maximum rate of the christ and using the basic water relations device**	**3 hours**
3	**Applications adopting the general equation of soil missing**	**3 hours**
4	**Calculating the factors of the general equation of soil missing in the field and choosing the appropriate method of soil maintenance in the field**	**3 hours**
5	**See ways to explain water erosion and ways to control it by making a scientific trip or doing a movie show**	**3 hours**
6	**Estimate the amount of wind erosion in the field using the general equation of wind** erosion	**3 hours**
7	**Making terrace designs**	**3 hours**
8	**Field observations on soil and water management procedures**	**3 hours**
9	**Visit to one of the air station in Tikrit**	**3 hours**
10	**The concept of gabia and its applications**	**3 hours**
11	**Calculating the amount of christ in the field**	**3 hours**

12	**Views on wind erosion (scientific trip)**	**3 hours**

Systematic book:

- TheForSpectrum, Nabil Ibrahim1991 . Soil and water maintenance. Ministry of Higher Education and Scientific Research. Baghdad University
- Ismail, Laith Khalil, 1985. Soil maintenance. Ministry of Higher Education and Scientific Research. Mosul University. Nineveh. translator.
- Al-Ani, Abdul Fattah Abdullah, 1987. Soil maintenance. Ministry of Higher Education and Scientific Research. Institute of Technical Institutes. Baghdad
- Fahad, Ali Abd. 1984. Soil and Water Maintenance Engineering. Ministry of Higher Education and Scientific Research. Baghdad University. Baghdad Translator.

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name of the rapporteur:	**Towater and plant soil**	**Row:**	**Fourth**
Decision code:	**TMZ 423**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

- Study of the physical, chemical, vital and fertile properties of soil and its impact on plant growth
- - Study of water properties, effort and movement in the soil during the soil/plant/atmosphere system
- - Study of the various stresses to which the plant is exposed
- - Study the role of soil organic matter in plant growth

The purpose of teaching the curriculum is:

- Know the different characteristics of the soil and its impact on plant growth
- Study of water effort, functions and movement in soil/plant/atmosphere
- Study the relationship of organic matter and soil biology to plant growth

Learning results:

The student will be able to know the different characteristics of the soil affecting the growth of the plant and know the water relationships of the plants and their impact on plant growth as well as know the stresses to which the plant is exposed and ways to overcome them

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

Presentation of electronic precursors to focus knowledge and science in the mind.

Topics: (theoretical part):

Weeks	Topics	Hours
1	Physical properties of soil and its effect on plant growth	2 hours
2	= = =	2 hours
3	The chemical properties of soil and its impact on plant growth	2 hours
4	= = =	2 hours
5	Soil biology and its relationship to plant growth	2 hours
6	Urban exam.	2 hours
7	Mineral nutrition and its relationship to plant growth	2 hours
8	Water has its properties and functions.	2 hours
9	Soil water - its effort and movement in the soil	2 hours
10	Roots - their functions and growth	2 hours
11	Movement of water through the soil system - plant - atmosphere	2 hours
12	Water efficiency and its relationship to plant growth	2 hours
13	Urban exam.	2 hours
14	Relationship of organic matter and soil biology to plant growth	2 hours
15	Various stresses to which the plant is exposed	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	Introduction to planned trials and preparation of their supplies	3 hours
2	Comparison of the development and growth of roots in different tissue soils	3 hours
3	Study of virtual density (stacking) and its effect on plant growth (roots)	3 hours
4	Salinity effect in root development	3 hours
5	Nutrient and plant behavior	3 hours
6	Evaporation and erosion measurements	3 hours

7	**Calculating the water needs of the plant**	**3 hours**
8	**Follow-up experiments and take notes**	**3 hours**
9	= =	**3 hours**
10	= =	**3 hours**
11	= =	**3 hours**
12	**Discussion of relevant research and presentation of results and graphic shapes**	**3 hours**
13	**Analysis, presentation and reporting**	**3 hours**
14	**Try**	**3 hours**
15	**Discuss results with all totals**	**3 hours**

Systematic book:

- Al-Nuaimi, Saadallah Najm. 1990. The relationship of soil to water and plant. Mosul University.

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Hydrological and water resources**	**Class:**	**Fourth**
Decision code:	**T.M.G. 412**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The water equation includes all its components, well drilling, porous and permeable, Darcy Law, confined and uncultured reservoirs, runoff networks, geosurface water access, study of surface and subsurface water characteristics in terms of occurrence, distribution, movement and relationship to environmental conditions and the water cycle.

The purpose of teaching the curriculum is:

The foundations and processes that govern the movement of water during the water cycle and its relationship to the abundance of water from its various sources and its impact on the human and plant environment.

Learning results:

After receiving this article, the learner is able to know the different surface and subsurface water sources and their relationship with each other and the processes governing them and their calculation and the loss of their output and thus manage them in addition to dealing with the problems that occur and how to solve them by benefiting from the experiences of the developed world in this field.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

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Topics: (theoretical part):

Weeks	Topics	Hours
1	**Hydrological cycle and water distribution on continents and oceans**	**2 hours**
2	**Falling, loss of precipitation**	**2 hours**
3	**Surface, tip and base runoff**	**2 hours**
4	**Factors affecting surface serface**	**2 hours**
5	**Types of waterways**	**2 hours**
6	**Floods and their negative effects on public property**	**2 hours**
7	**Storing water and reducing the effects of drought**	**2 hours**
8	**Water budget**	**2 hours**
9	**Hydrograph and hydrograph analysis**	**2 hours**
10	**Water reservoirs**	**2 hours**
11	**The importance of groundwater, groundwater feed sources**	**2 hours**
12	**Groundwater movement**	**2 hours**
13	**Drilling water wells and factors to consider when drilling**	**2 hours**
14	**Flow curves and water inbox calculation**	**2 hours**
15	**The importance of remote sensing in surface water monitoring**	**2 hours**

Topics: (Practical Part):

Weeks	Topics	Hours
1	**Methods of measuring precipitation**	**3 hours**
2	**Methods of expressing precipitation measurements**	**3 hours**
3	**Evaporation measurements from water bodies and how to reduce evaporation**	**3 hours**
4	**Measuring the tip of the water and its relation to the surface surface**	**3 hours**
5	**Evaporation estimate - we're using positive equations**	**3 hours**

6	**Measuring water level in waterways**	**3 hours**
7	**Measuring drainage in different rivers**	**3 hours**
8	**Hydrograph**	**3 hours**
9	**Standard hydrographic and hydrograph derivation**	**3 hours**
10	**Methods of separation of basal flow in hydrographic**	**3 hours**
11	**Methods of separation of basal flow in hydrographic**	**3 hours**
12	**Water budget calculation**	**3 hours**
13	**Groundwater movement in reservoirs**	**3 hours**
14	**Methods of drilling water wells**	**3 hours**
15	**Safe extraction of water from wells**	**3 hours**

Systematic book:

- Engineering hydrology. 1992. Mohammed Suleiman Hassan and others. Mosul University.
- Applied Hydrology. 1988. Ray K. Linsley et al. New York. USA.

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

The name	**Surveying and classifying soils**	**Class:**	**Fourth**
Decision code:	**TMZ 413**	**Planned teaching hours :**	**75**
Units:	**3**	**Available attendance:**	**Required**
Chapter:	**Autumnal**	**The date of the description :**	**22 /1 / 2025**

Description of the curriculum:

The relationship between pedagogical sciences and general classification objectives, surface and subsurface diagnostic horizons, soil maps and soil survey report, how soil maps are prepared and interpreted, land classification and use

The purpose of teaching the curriculum is:

The student's understanding of the concept of surveying and its importance and its pillars and degrees and types and how to implement it and its relationship to the management of soils as well as the concept of classification of soils and different classification systems.

Learning results:

After receiving this subject, the student can prepare a map of soils, interpret soil characteristics and write a survey report.

Teaching and learning methods:

- Examinations

- Opinions of students, opinions of faculty members and opinions of graduates

Opinions of employers and beneficiaries in accordance with scientific and technological development in the field of specialization.

Books.

Agricultural scientific journals and websites in general.

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Topics: (theoretical part):

Weeks	Topics	Hours
1	A brief history of the classification of soils in the world	2 hours
2	The relationship between pedagogial sciences and the objectives of the general classification	2 hours
3	Horizons: Genetic Prospects	2 hours
4	Surface and subsurface diagnostic horizons	2 hours
5	Genetic systems for soil classification: Russian systems	2 hours
6	Canadian systems andFAO, WRB	2 hours
7	The old American system.	2 hours
8	U.S. Quantitative System	2 hours
9	System structure and level-setting foundations	2 hours
10	Inheritance and characteristic qualities of the soil ranks	2 hours
11	Inheritance and characteristic qualities of the soil ranks	2 hours
12	Soil Survey: Concept and Goals	2 hours
13	Grades and survey work	2 hours
14	Soil maps and soil survey report	2 hours
15	Classification of land and its uses	2 hours

Topics: (Practical Part):

Weeks	Topics	Hours
1	Field applications to describe soil	3 hours
2	How to numbers and interpret soil maps	3 hours
3	Interpreting aerial images and using them as maps	3 hours
4	Step coefficient and drawing scale	3 hours

5	**Soil scanning tools and how to write down information**	**3 hours**
6	**Comparing iraqi and international soil survey reports**	**3 hours**
7	**Carrying out ground sweep work**	**3 hours**
8	**Carrying out ground sweep work**	**3 hours**
9	**Carrying out ground sweep work**	**3 hours**
10	**Soil survey report numbers**	**3 hours**
11	**Interpreting the results of soil surveying and mapping**	**3 hours**
12	**Interpreting the results of soil surveying and mapping**	**3 hours**
13	**Characteristics of Iraqi soil units**	**3 hours**
14	**Numbers of iraqi soil units distribution**	**3 hours**
15	**Numbers of iraqi soil units distribution**	**3 hours**

Systematic book:

1. **Survey and classify the soil. Dr. Ahmed Saleh Mohimed 1994.**
2. **Pedology. Clear and classify the soils. Dr. Walid Khalid Hassan Al-Akidi. 1986.**
3. **Soil genesis and classification, Boul, et.al. 2005**

Auditions:

Theoretical part (lectures)

A. Continuous evaluation during the semester (30%) and distributed to: *(+ evaluation of the practical part of the semester 10%)

70% theoretical exam number / 2

20% home duties.

10% attendance and activity of my class.

B. The final exam (40%) is distributed to:

Part A: Questions with comprehensive short answers to curriculum 2×10 = 20 degrees (50%)

Part B: Questions for absorption and analysis 1×10 = 10 degrees (25%)

Part C: Objective questions (explanation and clarification) 2×5 = 10 degrees (25%)

Practical part (laboratories)

C. Continuous evaluation during the semester (10%) and distributed to: *(+ evaluation of the theoretical part of the semester 30%)

70% two practical tests.

20% daily field and laboratory performance (student activity).

10% commitment and discipline in the laboratory and field.

D. The final exam (20%) is distributed to:

70% field practical test.

30% oral or editorial examination in scientific subject.

Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: College of Agriculture

Scientific Department: Field Crops Department

Academic or Professional Program Name: Bachelor of Agricultural Sciences/ Field Crops

Final Certificate Name: Bachelor of Agricultural Sciences/ Field Crops

Academic System: Season

Description Preparation Date: 22/1/2025

File Completion Date: 22/1/2025

Signature:

Head of Department Name:
assistant professor Salah Hameed Jumaah

Date: 27/1/2025

Signature:

Scientific Associate Name:
assistant professor Mohammed saleh Mohammed

Date: 27/1/2025

أ.م.د. محمد صالح محمد
[illegible]

The file is checked by:

Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Assistant professor Aslam Saud Alwan

Date:

Signature:

Approval of the Dean

Tikrit University
Faculty of Agriculture
Field Crops Department

Course Description

M H 131	Principles of field crops	The first stage	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
This approach includes scientific and technical studies of field crops in terms of production, breeding, improvement and use in order to find ways to increase production and improve quality at the lowest costs and easiest ways under different environmental conditions.			Curriculum Description
Provide an overview of topics related to field crops and their many branches.			The purpose of teaching the curriculum
After receiving this material, the learner will be able to manage field crops from many aspects, including the environmental aspect.Technical, physiological, and productive			Learning outcomes
Al-Ansari, Majeed Mohsen, Al-Younis, Abdul Hamid Ahmed, Hasawi, Ghanem Saad Allah, and Al-Shamaa, Faqi Shaker (2011), Principles of Field Crops, 2nd ed..			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	View and draw available crops.	2	Field crops, definition, origin, development, and methods of division	1
3	Crop seed discrimination	2	Physiological factors and their relationship to crop growth and production	2

3	**Germination in field crop seeds and factors affecting it**	**2**	**Crop growth stages, field crop efficiency and its relationship to production**	**3**
3	**Ground service operations and used machinery**	**2**	**Plant growth regulators and their uses in field crops**	**4**
3	**First practical semester exam**	**2**	**Environmental factors and their relationship to field crop growth/temperature**	**5**
3	**Methods of adding fertilizers**	**2**	**Environmental factors and their relationship to field crop growth/light**	**6**
3	**Soil service operations**	**2**	**First theoretical semester exam**	**7**
3	**Irrigation, drainage and types of drains.**	**2**	**Environmental factors and their relationship to field crop growth/water**	**8**
3	**Watch the main weeds in crop fields and ways to control them**	**2**	**Environmental factors and their relationship to field crop growth/soil**	**9**
3	**Seed preparation process**	**2**	**Environmental factors and their relationship to field crop growth/air**	**10**
3	**Grading and cleaning**	**2**	**Biological factors and their relationship to the growth of field crops, social and economic factors and their impact on the production and distribution of field crops**	**11**
3	**Sampling and seed treatment**	**2**	**Seeds/plant testing and purity, conditions required for field crop seeds intended for planting.**	**12**
3	**.Used machines**	**2**	**Grain grading, crop drying and storage**	**13**
3	**Drying, storing and marketing of yellow and white corn**	**2**	**Jungles and ways to combat them**	**14**
3	**Second practical semester exam**	**2**	**Second semester theoretical exam**	**15**

Tikrit University
Faculty of Agriculture
Field Crops Department

Course Description

M H Z 121	**General Plant**	**The first stage**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
This topic covers the plant cell, its types, components, structures, division, specialization, and types of plant tissues and organs represented by roots, stems, leaves, flowers, fruits, and seeds, and their definition and clear explanation of their functions.			**Curriculum Description**
To provide an overview of the plant cell and how it forms a complete plant body, which is useful in the field of botany in an abstract and simplified concept as an introduction to a broader understanding of field crop plants later on.			**The purpose of teaching the curriculum**
After receiving this material, the learner will be able to understand the plant as a living organism that has the characteristics of growth and reproduction.It consists of a root under the soil surface, a stem, leaves, flowers and fruits - it has its functions and seeds, and each organ has its own			**Learning outcomes**
			The textbook

Final theoretical exam	**Final Practical Exam**	**Daily theoretical tests**	**Practical semester tests**	**Theoretical semester exams**	**Semester Estimates**
40%	**20%**	**5%**	**10%**	**25%**	

Topics

Number of hours	**Practical material**	**Number of hours**	**Theoretical material**	**The week**
3	**Microscope and how to handle it and prepare slides**	**2**	**Introduction to the emergence of life on Earth, the formation of organic compounds and living matter, the transition to autotrophic nutrition, the emergence of photosynthesis, and the transition from aquatic to terrestrial life.**	**1**

3	**Basic structures of a typical cell**	**2**	**Cell, chemical structure of the cell, water, its composition, structure, relationship and behavior in the cell**	**2**
3	**meristematic tissue**	**2**	**Chemical structure of the cell/organic compounds, carbohydrates, oils, fats, waxesand phospholipids**	**3**
3	**Simple and compound adult tissuesAnd the adult**	**2**	**Chemical structure of the cell/ proteins, amino acids, polypeptides, enzymes and their activities**	**4**
3	**First practical semester exam**	**2**	**Chemical structure of the cell/nucleotides and nucleic acids**	**5**
3	**cortex tissue**	**2**	**Basic living cell structures, cell membrane, cytoplasm, nucleus, plastidsMitochondria, plasma reticulum, and Golgi apparatus**	**6**
3	**Root, appearance, types and modifications**	**2**	**First theoretical semester exam**	**7**
3	**Internal structure of the root**	**2**	**For the basic non-living structures of the cell, cell wall, crystals, starch and its forms**	**8**
3	**Leg, Types and Modifications**	**2**	**Cell division, mitosis and meiosis**	**9**
3	**-Aerial stems and ground stems**	**2**	**Undifferentiated tissues, mature tissues, their types, shapes, and locations**	**10**
3	**Typical paper, shapes and types**	**2**	**Roots, origin, types, modifications, and functions.**	**11**
3	**Typical flower and its parts**	**2**	**Stems, origin, types, modifications, functions, buds and their types and locations**	**12**
3	**soft and dry fruit**	**2**	**Leaves, origin, types, modifications, forms, unions, their forms and functions**	**13**
3	**Germination and its types**	**2**	**Inflorescences and flowers, their definition and types** **Fruits and seeds, definition, origin and types**	**14**
3	**Second practical semester exam**	**2**	**Second semester theoretical exam**	**15**

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Course Description

b m 131	plant environment	Stage 2	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
Delivering an overview of environmental concepts related to plants, and the response of plants to environmental factors and their impact on these crops or plants. These are very important concepts in the life of the organism and the extent of its response to various environmental conditions.			Curriculum Description
Description of the environment surrounding the plant and knowledge of the factors through which the study is carried out			The purpose of teaching the curriculum
The recipient of plant ecology is able to comprehend and understand the conditions surrounding the plant and their impact on the life of the organism, including improving such conditions and preventing negative effects on them..			Learning outcomes
Natural environment and environmental pollution			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Get to know the environmental laboratory	6	Definition of Ecology - Historical Introduction - The Evolution of the Concept of Ecology and the Reality of Plants with These Circumstances	1

3	**Study the environmental factors and identify the devices used**	**6**	**Plant community - its characteristics - its types - the plant species - as an ecological unit**	**2**
6	**Measures temperature, humidity, pressure, wind and rain.**	**6**	**Environment and Surrounding Factors - Plant Clan**	**3**
6	**Visit to the Meteorological Department**	**2**	**Climatic factors: 1- Light factor**	**4**
3	**First practical semester exam**	**2**	**Light conditioning**	**5**
6	**Introducing the student to the vegetation, green cover and its types**	**4**	**Heat Factor - Adapting Plants to Heat**	**6**
3	**Field Density Measurement**	**2**	**First theoretical semester exam**	**7**
3	**Study of soil and its material contents**	**4**	**Water factor - adaptation of plants to drought and cold**	**8**
3	**Select and teach students about recording temperature, humidity and wind.**	**2**	**Fallout The effect of these falls on the plant**	**9**
6	**- A visit to some laboratories to learn about the principles and methods of environmental conservation.**	**2**	**Soil factor - vegetation cover**	**10**
3	**Pollution prevention measures**	**4**	**Wind factor and fire factor, the effect of these factors on the plant**	**11**
3	**Watch plant adaptations in the field to environmental factors.**	**4**	**Environmental pollution and ways to preserve it from air and soil**	**12**
6	**Collection of examples of green vegetation**	**4**	**Radiation hazards and their effects on plants and other organisms**	**13**
3	**a test**	**2**		**14**
3	**Second practical semester exam**	**2**	**Second semester theoretical exam**	**15**

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Course Description

M A 432	Fiber crops	Stage 2	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
Introducing the student to a group of the most important plants and crops whose fibers are used in manufacturing, improving and developing the quality of these crops and making them at the forefront of plants in terms of production and quality.			Curriculum Description
Study of the recipient of the details of growth and production of fiber crops and preparation of these crops for the manufacture of various fabrics.			The purpose of teaching the curriculum
Providing the recipient with concepts and information that help develop the cultivation, production and improvement of these industrial crops, as they are of the foremost importance.			Learning outcomes
Fiber Crops - Ayad Talat Shaker Environmental Pollution			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week

3	**Botanical description of the Malvaceae family**	**6**	**Definition of fiber crops - historical introduction - and their economic importance**	**1**
6	**Cotton Plant and Seed Identification – Botanical Description**	**6**	**Obstacles to the cultivation and production of fiber crops**	**2**
6	**Agricultural and preparatory operations for cotton cultivation**	**6**	**Fiber division - types of division**	**3**
6	**Suitable conditions for planting and growing cotton plants**	**2**	**Properties that must be available in fibers with centers and its importance in manufacturing**	**4**
3	**First practical semester exam**	**2**	**Cotton - Production Centers - Economic Importance Chemical Composition of Hair**	**5**
6	**Fertilization - weeding - irrigation operations**	**2**	**Types and varieties of cotton**	**6**
3	**Introduction to mechanical cotton harvesting processes**	**2**	**First theoretical semester exam**	**7**
3	**Definition of cotton ginning processes**	**2**	**Crop rotations, harvesting and crop quantities**	**8**
3	**Cotton cleaning and grading**	**4**	**Diseases and Insects - Cotton Breeding**	**9**
6	**Cotton mixing, baling and production processes**	**2**	**Cotton ginning - sorting cotton**	**10**
3	**Physical properties of cotton fibers, principles of cotton spinning processes and thread production**	**4**	**Cotton spinning processes - yarn production - specifications of good yarn**	**11**
3	**Learn about flax and flax seeds**	**4**	**Flax - its importance, production, problems and classification**	**12**
6	**Learn about jute, safflower, ramie, siyal and other crops.**	**4**	**Jute and linseed - Importance - Production - Problems**	**13**

3	Visit to fields and agricultural areas with cropsFiber	4	Rami - Al-Sayyal - Other crops - Importance, production and manufacturing	14
3	Second practical semester exam	2	Second semester theoretical exam	15

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Course Description

A H 132	count	Stage 2	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
Introducing the student to statistical laws and applying these laws in interpreting the results of experiments and research related to plant concepts specific to the field crops department.			Curriculum Description
Teaching the student about statistical laws and how to apply them to different aspects of biology, including plants..			The purpose of teaching the curriculum
Bringing the student to a level where he has the ability to interpret the results (research) and transform them into practical realityIt will be used in the future, during and after graduation.			Learning outcomes
Introduction to Statistics by Dr. Khasha Mahmoud Al-Rawi			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Practical applications for the first lesson	2	General definitions and statistical symbols	1

3	**Practical applications for the second lesson**	**2**	**Frequency distribution table**	**2**
3	**Practical applications for the third lesson**	**2**	**graphic representation**	**3**
3	**Practical applications for the fourth lesson**	**2**	**Mediation scales**	**4**
3	**First practical semester exam**	**2**	**Dispersion scales**	**5**
3	**Practical applications for the fifth and sixth lessons**	**2**	**Probability and probability laws**	**6**
3	**Practical applications for the seventh lesson**	**2**	**First theoretical semester exam**	**7**
3	**Practical applications for the eighth lesson**	**2**	**Discrete Probability Distributions (Binomial Square)(**	**8**
3	**Practical applications for the ninth lesson**	**2**	**Continuous probability distributions (normal curve)(**	**9**
3	**Practical applications for the tenth lesson**	**2**	**statistical hypothesis**	**10**
3	**Practical applications for lesson eleven**	**2**	**distributionZ and t distribution**	**11**
3	**Practical applications for the twelfth lesson**	**2**	**chi-square distribution**	**12**
3	**Practical applications for the thirteenth lesson**	**2**	**Slope**	**13**
3	**Practical applications for the fourteenth lesson**	**2**	**simple association**	**14**
3	**Second practical semester exam**	**2**	**Second semester theoretical exam**	**15**

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Course Description

F B 431	**Seed technology**	**Stage 3**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
Introducing the student to a set of grain and seed production techniques and the suitability of these seeds for storage and marketing factors and applying all the health conditions that qualify for the process of manufacturing these grains.			**Curriculum Description**
It is teaching the student the different methods through which the student learns the basic principles of manufacturing and preparing seeds.			**The purpose of teaching the curriculum**
Graduating a specialized cadre that understands the selection of technical and practical methods in testing sound seeds prepared for a specific manufacturing process and producing excellent types for this process.			**Learning outcomes**
Seeds - Production and Improvement - Abdullah Qasim Al-Fakhri Seed Technology - Kamel Al-Khafa			**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Numb er of hours	Theoretical material	The week
4	Seed Diagnosis - Methods Used in the Diagnosis Process	4	Seeds - Meaning - Importance - Diagnosis and examination of seeds in the world and Iraq	1
6	Draw different sections of seeds – Know the anatomical and chemical composition of seeds	4	Seeds Chemical compositions - their importance - agriculture and quality	2
3	Methods and foundations of taking samples	4	Dormancy in Seeds – Factors Affecting Dormancy	3
3	Purity tests	2	Vitality and vegetation	4
3	First practical semester exam	2	Growth regulators for seeds and plants	5
6	Germination and Vitality Tests	2	Certified Seed Production – Propagation and Production Fields	6
3	Seed moisture content tests	2	First theoretical semester exam	7
3	Seed health check tests	4	Field inspection	8
6	Increase in seed inspection and certification stations	4	Seed Certification and Preparation System	9
3	Rejection and acceptance rates of shipments	4	Harvesting, drying and storing seeds	10
3	Issuance of acceptance certificates	4	Seed Pests and Diseases in Stores Moisture Containment - Healthy Humidity Rates	11
3	Disease and health checks of seeds	4	Preparing seeds for processing	12
3	Visit to the seed banks	4	Legislation and laws for the circulation of certified and approved seeds	13
3	Second practical semester exam	2	Second semester theoretical exam	15

Course Description

M A 131	**Forage and pasture crops**	**Stage 3**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
This topic covers natural and fictional pastures, pasture load, grazing areas in Iraq and their natural plants, methods of estimating forage productivity in pastures, the relationship of soil organisms and animals to natural pastures and methods of measuring them and their relationship to grazing methods..			**Curriculum Description**
Exploiting the enormous agricultural potential that God Almighty has bestowed upon our country, exploiting it properly by following modern scientific methods and advanced technology to raise the production rates of current fodder crops and pastures fields and those that need to be expanded.			**The purpose of teaching the curriculum**
After receiving this material, the learner will be able to exploit natural and fictional pastures and give scientific and technical notes and directions in this field.			**Learning outcomes**
Dr. Ramadan Ahmed Al-Tayef Al-Tikriti Dr. Tawakkol Younis Rizk Dr. Hekmat Askar Al-Rum			**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
9	Botanical description of the legume family: Alfalfa, clover, fenugreek, bird's tongue	2	Some important terms	1
9	Botanical description of the Poaceae family: wheat, barley, yellow corn, and white corn.	2	The economic importance of forage crops and pastures	2

3	**distinguish between seeds**	**6**	**Classification of fodder crops: A- Legumes: alfalfa, clover, ryegrass, hartaman, fodder beans, sweet clover, bird's tail and other fodder legumes..** **B- Fodder crops include: barley, rye, oats, yellow corn, white corn, Sudanese grass and millet..** **The following are studied for each crop: its economic and agricultural importance, its original habitat, its nutritional value, its suitable environment, crop service processes, its varieties, its fodder uses, and the pests that affect the crop..**	**3**
3	**Field visits**	**2**	**Feed mixtures**	**4**
3	**First practical semester exam**	**2**	**Methods of exploiting forage crops**	**5**
3	**Views of farming methods**	**2**	**Green Nutrition**	**6**
3	**pasture plant**	**2**	**First theoretical semester exam**	**7**
3	**Methods of measuring natural vegetation in pastures**	**2**	**Al-Drees, silage, forage concentrates, types of natural pastures, their divisions and distribution**	**8**
3	**-Repetition, plant composition**	**2**	**Pastoral areas in Iraq and the most important plants spread there**	**9**
3	**Vegetation**	**2**	**Pasture Management - Its Objectives - Ways to Achieve These Objectives**	**10**
3	**Ways to exploit pastures**	**2**	**Animal load - definition, factors affecting it, methods of calculating it, exploitation standard and influencing factors**	**11**
3		**2**	**Grazing and its effects on plants, fodder production, root growth, plant physiology and reproduction**	**12**
3		**2**	**Different grazing systems**	**13**
3		**2**	**Pasture Animal Management**	**14**
3	**Second practical semester exam**	**2**	**Second semester theoretical exam**	**15**

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Course Description

	Plant breeding	**Stage 4**			**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**			**Planned teaching hours per week**
Introducing student t the importance of plant breeding, role of breeder and methods used in breeding according to type of crop and distinguishing between self- pollinated and cross plants and how to raise each type separately.					**Curriculum Description**
To provide student with knowledge of different methods of breeding and improving different crops, which would increase production in terms of quantity and quality.					**Purpose of teaching curriculum**
To convey this information to benefit from it practically in future fields and studies and to look forward to the development of this science.					**Learning outcomes**
Plant Breeding and Improvement Dr. Hamid Jalub Ali					**The textbook**
Final theoretical exam	**Final Practical Exam**	**Daily theoretical tests**	**Practical semester tests**	**Theoretical semester exams**	**Semester Estimates**

40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	week
3	Importance of education	2	Plant Breeding Introduction, Definition	1
3	Variety experiences	2	Reproductive systems in plants	2
3	Design	2	Gene action and gene replication	3
3	Education records	2	Quantitative adjectives	4
3	First practical semester exam	2	Breeding self-pollinating crops	5
3	Hybridization in crops	2	Cross-pollinated crop breeding	6
3	Breeding to improve wheat quality	2	First theoretical semester exam	7
3	Breeding for quantitative traits	2	Infertility and its types	8
3	Breeding for qualitative traits	2	Vegetable crop breeding reproduction	9
3	Statistics	2	Inheritance	10
3	Election	2	Education for resistance	11
3	Methods of estimating heritability and breeding for disease resistance	2	Genetic-environmental interference	12
3	Pollination in Wheat and Barley	2	Plant Breeding and molecular biology	13
3	Seeds	2	Launch and distribution of items	14
3	Second practical semester exam	2	Second semester theoretical exam	15

Course Description

-------	Design and analysis of experiments	Stage 2	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
Providing student with information about planning, applying, designing, implementing and analyzing the results of research and studies conducted in laboratories and fields for purpose of generalizing success of idea of scientific research and generalizing it at level of practical application..			Curriculum Description
The student's knowledge of basics of applying programs and designs to solve problems encountered in a specific research project and develop solutions for them.			The purpose of teaching curriculum
The student obtains information that helps him interpret results that he designed and implemented into practice, so that he is able to interpret the results.			Learning outcomes
Design and analysis of experiments Authored by Dr. Khasha Mahmoud Al-Rawi			Textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	week
3	Practical applications for first lesson	2	General definitions	1
3	Practical applications for the second lesson	2	Measures of mean and varianceSingle-factor experiments: Completely randomized design with equal replications Completely randomized design with unequal replications	2
3	Practical applications for third lesson	2	Randomized complete block design	3
3	Practical applications for fourth lesson	2	Estimating missing values for a randomized complete block design. Estimating the relative efficiency of	4

			a randomized complete block design.	
3	First practical semester exam	2	Latin square design	5
3	Practical applications for fifth and sixth lessons	2	Estimating missing values for a Latin square design	6
3	Practical applications for seventh lesson	2	First theoretical semester exam	7
3	Practical applications for eighth lesson	2	Relative efficiency of Latin square design	8
3	Practical applications for ninth lesson	2	Comparison of coefficient averages for single-factor experiments	9
3	Practical applications for the tenth lesson	2	Factorial experiments - randomized completely block design	10
3	Practical applications for lesson eleven	2	Practical experiments - Randomized complete block design.	11
3	Practical applications for twelfth lesson	2	Arithmetic mean test for factorial experiments	12
3	Practical applications for thirteenth lesson	2	Split Panel System Experiments	13
3	Practical applications for fourteenth lesson	2	Three-factor Complete randomized design	14
3	Second practical semester exam	2	Second semester theoretical exam	15

And R 132	Genetics	Stage 3	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
A general introduction to the basics of heredity, Mendel's laws, genetic material, the nature of reproduction, the formation of quantities and variations, genetic mapping, and the inheritance of some traits in humans.			Curriculum Description
Introducing the student to the basics of general genetics, genetic material, similarity and dissimilarity between lineages, scientific and practical applications of them, genetic variations and their causes in living organisms.			The purpose of teaching the curriculum
The student acquires an amount of information that controls the inheritance of traits and their expression in the living organism.			Learning outcomes
Fundamentals of plant genetics and breeding			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Cells and their components: definition of the cell, components of the cell, cell wall and its components, plasma membrane, cytoplasm, mitochondria, plastids, Golgi bodies, vacuoles, centrosome, endoplasmic reticulum.	2	Introduction to genetics, the scientific and practical importance of genetics, requirements of genetic studies	1
3	Cell divisions: 1- Direct division 2- Mitosis and its stages 3- Meiosis and its stages	2	The nature of genetic material and its evidence The chemical composition of nucleic acids	2
3	Formation of male and female quantities and their different stages	2	Study of genetic kinship between organisms	3
3	Mendel's laws of heredity with genetic codes: Mendel's first law, Mendel's second law	2	Nucleic acid bonds, duplication of genetic material	4
3	Applications of Mendel's law, test pollination and back pollination, exercises on	2	Preparing theDNA in the lab, evidence that the genetic material is DNA and RNA	5

	Mendel's first law, Mendel's second law			
3	Midterm ExamPracticalthe first	2	First theoretical semester exam	6
3	Hybridization between three pairs of genes	2	Periodic and quantitative changes in nucleic acids	7
3	Mendelian law interpretations and types of dominance	2	Organization of genetic material within the cell, chromosome structure	8
3	sex-influenced traits, sex-determined traits	2	Non-nuclear inheritance, cytological basis of Mendel's laws, new combinations	9
3	Genes that control more than one trait and traits affected by more than one gene	2	confusionAnd methods of determining it,Hereditary blindness	10
3	Lethal and semi-lethal genes, superiority and its types	2	Cellular basis of crossing over, crossing over theories, genetic mapping	11
3	Probability laws and their use in genetics) binomial law, chi-square distribution	2	Types of genetic crossing and factors affecting it, mutation: its types and genetic properties	12
3	Allelomorphic genes, sexual incompatibility, human blood groups	2	Numerical and structural variations in chromosomes and their causes, types of nucleic acids and how proteins are synthesized	13
3	General review	2	General review	14
3	Second practical semester exam	2	Second semester theoretical exam	15

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DM 232	Jungles and ways to combat them	Stage Four	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week

Introduce and acquaint students with the morphological specifications of different weed plants and their growth patterns and learn how to get rid of them using scientific methods that lead to reducing their damage and increasing the productivity of economic crops.	**Curriculum Description**
Teaching students about the importance of jungle plants and the importance of combating them in various ways to reduce damage..	**The purpose of teaching the curriculum**
After receiving this material, the learner will have a comprehensive knowledge of the basic principles of this important science, which has become one of the pillars of the various agricultural sciences, as it deals with the most important agricultural pests in the world.	**Learning outcomes**
Jungles and ways to combat them Written by Dr. Baqer Abdul Khalaf Al-Jabouri Dr. Ghanem Saad Allah Hassaw	**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Instructions and guidelines related to the nature of the practical material and a field trip to the fields and gardens to survey the types of widespread jungles.	2	Definition of jungle	1
3	Training students on how to collect, dry and preserve plant specimens	2	Damage caused by weeds	2
3	Diagnosis and classification of bushes according to their growth nature and classification of bushes according to their morphological form	2	Weed control	3
3	Midterm ExamPracticalthe first	4	Ways to combat the jungle	4
3	Identifying jungle seeds and their modifications	2	Methods of classification of herbicides	5
3	Identify the types of pesticides used in weed control	2	First theoretical semester exam	6
3	Training students on how to use pesticides and how to use them	2	Chemical groups of herbicides	7

3	An hour of training students on methods of combating and how to carry them out.	2	herbicides	8
3	Chemical control of weeds growing in college fields	2	herbicides and soil	9
3	Chemical control of weeds growing in greenhouses	4	Weed control in major agricultural crops	10
3	Training students on how to calculate the amount of pesticides needed for pest control	2	Control of major perennial weeds and irrigation and drainage canals.	11
3	I show the students the available pesticide spraying machines and equipment and train them on how to use them.	4	Control of weeds growing in irrigation and drainage canals	12
3	Evaluation of the control process implemented in paragraph 11 and how to calculate the control percentage	2	Pesticides and the environment	13
3	Evaluation of plant models collected by each student	2	General review	14
3	Second practical semester exam	2	Second semester theoretical exam	15

H J 331	Molecular Bio	Stage Four	Mandatory (Basic)

Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
Providing the student with information about the importance of molecular biology, the structure and regulation of genes, the mechanism of gene action in protein synthesis, the basic structure of genetic material, the mechanism of its multiplication, the extraction and isolation of genetic material, and genetic transfer..			Curriculum Description
Study and knowledge of the laws that control the genetic direction of a group of cells and knowledge of the composition of these cells to be qualified to receive encoded information.			The purpose of teaching the curriculum
The student obtains information that benefits the student in the applications of molecular biology in understanding biotechnology in relation to applications.PCR, molecular markers and genetic engineering applications			Learning outcomes
Molecular Biology Book: Methodological Fundamentals of Biotechnology - My Source - Written by Ali Ibrahim and Ahmed Abdel Fattah / Alexandria University			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Cell layers, nucleus and chromosomes	2	Cell, nucleus and chromosome	1
3	Cell division applications	2	Cell division	2
3	genetic material applications	2	and genetic material	3
3	Midterm ExamPracticalthe first	4	Chemical composition of genetic material and its replication	4
3	Applications of chemical composition of genetic material and its replication	2	genetic code	5
3	Genetic code applications	2	First theoretical semester exam	6
3	Applications of chromosome chemical structure, gene expression and protein synthesis	2	Chemical composition of chromosome	7
3	Applications of gene expression regulation in prokaryotic and eukaryotic organisms	2	Gene expression and protein synthesis	8

3	Applications of extrachromosomal genetic material	2	Regulation of gene expression in prokaryotes and eukaryotes	9
3	Applications of mitochondrial DNA	4	Extrachromosomal genetic material	10
3	Chloroplast applications and cytoplasmic genetics	2	Mitochondrial DNA Chloroplast and Cytoplasmic Genetics	11
3	Gene transfer applications	4	Gene transfer	12
3	Applications of molecular methods in genetic diagnosis	2	Molecular methods in genetic diagnosis	13
3	Genetic engineering applications	2	Genetic engineering clock	14
3	Second practical semester exam	2	Second semester theoretical exam	15

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T M 231	**Cereal crops**	**Stage Four**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
The curriculum includes scientific and technical studies of basic grain crops in terms of use, areas of origin and production, growth stages, suitable environmental conditions, and agricultural operations required from planting to harvesting and storage in order to achieve the highest yield and best quality.			**Curriculum Description**
It provides a general and detailed idea about the important grain crops, their cultivation methods, and their service methods to obtain a high yield and excellent quality...			**The purpose of teaching the curriculum**
After receiving this material, the learner will be able to distinguish cereal crops and able to manage agricultural and service operations for them, taking into consideration environmental changes in climatic and soil conditions, and able to prepare the appropriate conditions and operations for dealing with and managing crops.			**Learning outcomes**
Cereal crops Dr. Abdul Hamid Ahmed Al-Younes			**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Classification of field crops according to use, growth season and plant classification	2	The importance of cereal crops, production centers, the relationship between cereal production and the food problem	1
3	Wheat: Botanical description, field practice for preparing land for cultivation	2	Wheat: its nutritional and economic importance, original habitat, stages of development and suitable environmental conditions	2
3	Wheat grain components, wheat groups, field follow-up to prepare land for agriculture	2	Wheat growth stages, agricultural cycle, farming methods	3
3	Barley, botanical description, distinguishing between wheat and barley, barley groups, field division	4	Service operations, seeding, fertilization, planting dates, causes of lodging and its treatment, harvesting and storage	4
3	Midterm ExamPracticalthe first	2	Barley: its importance, its original homeland, production centers, suitable conditions, cultivation and service operations	5
3	Rice, botanical description, principles of dividing rice groups and types, field cultivation of wheat and barley	2	First theoretical semester exam	6
3	Yellow corn, botanical description, types and groups of corn, follow-up of wheat and barley fields	2	Rice: its importance and uses, habitat and production centers, growth stages, suitable conditions, cultivation methods, service operations, its problems in Iraq, harvesting and storage	7
3	White corn, botanical description, types, wheat and barley field service	2	Yellow corn: its importance and uses, original habitat and production centers, planting	8

			dates, suitable conditions, service operations, thinning and patching, lodging, harvesting and storage.	
3	Shelam, botanical description, field weeding and fertilization operations	2	White corn: its importance and uses in green fodder, suitable conditions, and its tolerance to dry weather, agriculture and service operations	9
3	Oats, botanical description, field monitoring	4	Sheelm, its importance and uses, production centers, suitable conditions, cultivation and service operations	10
3	Shelmi wheat, methods of production, plant description, comparison with wheat, field monitoring and service	2	Oats: its importance and uses, production centers, environmental conditions and suitable soil, cultivation, service and harvesting operations	11
3	How to make hybrids in self-pollinating crops	4	Shelmi wheat usesIts production method, suitable conditions, cultivation, service and harvesting processes	12
3	How to make hybrids in mixed crops, pollination, field follow-up	2	Methods of production and breeding of self-pollinated and line-pollinated cereal crops: a general review	13
3	General review	2	General review	14
3	Second practical semester exam	2	Second semester theoretical exam	15

Course Description

M T 131	**Medicinal and aromatic plants**	**Stage Four**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
This course shows fourth-year students the importance of medicinal and aromatic plants, ways to care for them, cultivate them, and propagate them, and discover the most important active ingredients in them, how to benefit from them and extract them, their effects on human health and nutrition, and their importance from an economic perspective for the country..			**Curriculum Description**
The student's knowledge of the basics of cultivation and production of a group of medicinal plants and the extraction of concentrated materials from them..			**The purpose of teaching the curriculum**
This subject qualifies the student after passing it to be able to identify the most important medicinal, aromatic and poisonous plants with therapeutic and nutritional effects on humans, the importance of their cultivation and their inclusion in agricultural cycles, and their important economic return for the country, so that he has the ability to prepare a comprehensive and comprehensive study on how to plan and establish farms specialized in medicinal, aromatic and poisonous plants and determine the most important environmental conditions necessary for their cultivation, harvesting and storage, and ways to make the most of the active compounds and aromatic oils in them with medical, nutritional and industrial effects.			**Learning outcomes**
Medicinal and aromatic plants (cultivation and care)Dr. Adel Youssef Nasrallah 2013			**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Identifying medicinal plants	2	A brief history of medicinal and aromatic plants, two hours, and the economic importance of medicinal and aromatic plants.	1
3	Identify plants that contain volatile oils.	2	Factors affecting the growth and cultivation of medicinal plants	2

3	Identifying glycosides	2	Storing medicinal and aromatic plants	3
3	Identifying alkaloids	4	Corruption of medicinal and aromatic plants	4
3	First practical semester exam	2	Secondary compounds in medicinal plants	5
3	Recognizing groans	2	First theoretical semester exam	6
3	Identifying resins	2	Alkaloids with examples (datura, baldona) and glycosides with examples (licorice, fenugreek)	7
3	Identifying poisonous plants	2		8
3	Extraction of active ingredients	2	Volatile oils with examples (anise, cumin) and tannins with examples (tea, pomegranate)	9
3	Extraction of active ingredients	4	Resins	10
3	Extraction of active ingredients	2	Free materials	11
3	HPLC	4	Fixed oils	12
3	GC	2	Vitamins and antibiotics	13
3	Extraction by caliper	2	Carbohydrates and amino acids	14
3	Second practical semester exam	2	Second semester theoretical exam	15

Tikrit University
Faculty of Agriculture
Field Crops Department
Course Description

	Growth Organizations	**Stage Four**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
The curriculum covers the basics of plant growth regulators, their physiological effects and their role in increasing production in field crops from both theoretical and practical perspectives.			**Curriculum Description**

Teaching students the basics of growth science, types of growth regulators, and how to treat plants with them. **Knowing the methods of controlling growth through treatment with it, knowing its physiological effects and various agricultural applications, and its role in increasing and improving the quality of production.**	**The purpose of teaching the curriculum**
After receiving this material, the student will be able to identify the types of growth regulators, their physiological effects and applications, understand the hormonal needs of the plant, improve growth and increase hormonal yield. Students will acquire the skills necessary to work in the laboratory and methods of preparing growth regulators for plant treatment and methods of adding them.	**Learning outcomes**
Plant hormones, their physiology and biochemistry (translated by Dr. Qutaiba Muhammad),Plant Hormones (TK Davies), Plant Biotechnology (translated by Kazem Ibrahim Al-Sumaidaie and Qais Jamil Al-Salihi)	**Textbook and Resources**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Examples and applications of growth measurement methods.	2	Knowing the terms related to growth, differentiation and development in plantsMethods of measuring growth, factors affecting growth.	1
3	Examples and applications of growth equations and growth curve.	2	Know the terms related to growth regulators and their applications..	2
3	Safety procedures for working in laboratories, identification of laboratory equipment and materials and the practical skills for using them.	2	Definition of plant growth regulators, their classifications, and their uses.	3
3	Examples and applications of the preparation and use of different concentrations of	2	Auxins: their discovery, composition, classifications, sites of synthesis, transport, biological testing, distribution,	4

	plant growth regulators.		**construction and decomposition of auxins in plants.**	
3	**Physiological effects of plant growth regulators: cell division and cell elongation, their role in rooting, apical dominance, and dormancy of seeds and buds.**	**2**	**Auxins: The role of auxins in different plant stages, their physiological effects, and agricultural applications of auxins.**	**5**
3	**Auxin bioassay experiment.**	**2**	**The first theoretical semester exam.**	**6**
3	**First practical semester exam.**	**2**	**Gibberellins: their discovery, chemistry of gibberellins, their classifications, sites of synthesis, their transport, their biological testing, their mechanism of action.**	**7**
3	**Gibberellin bioassay experiment.**	**2**	**Gibberellins: The role of gibberellins in different plant stages, the interaction of gibberellins and auxins, their physiological effects, and their agricultural applications.**	**8**
3	**Physiological effects of plant growth regulators: vegetative growth, flowering, fruit set, seed and fruit growth and development.**	**2**	**Cytokinins: discovery, structure, classification, sites of synthesis, transport, biological testing, mechanism of action.**	**9**
3	**Cytokinin bioassay experiment.**	**2**	**Cytokinins: The role of cytokinins in different plant stages, their physiological effects, and their agricultural applications.**	**10**
3	**Physiological effects of plant growth regulators: maturation, senescence, shedding and the phenomenon of resistance.**	**2**	**Abscisic acid: Its discovery, composition, places of synthesis, transport, mechanism of action, its role in the different plant stages, its physiological effects, and its agricultural applications.**	**11**

3	Application of seed soaking systems with growth regulators.	2	Ethylene: Its discovery, composition, sites of synthesis, transport, mechanism of action, its role in the different plant stages, the importance of auxin in its production, its physiological effects, and its agricultural applications.	12
3	Application of vegetative spraying systems with growth regulators and interaction of climatic factors.	2	The second theoretical semester exam.	13
3	Second practical semester exam.	2	Identify other compounds that act as growth regulators: cyclosporine, salicylic acid, polyamino acids, hyaluronic acid.	14
3	Experiences Use of plant growth regulators in tissue culture.	2	Use of plant growth regulators in tissue culture and micropropagation.	15

Tikrit University
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Course Description

	Weeds Ecology	Stage Four	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
Introduce students to the morphological specifications of different weed plants and their growth patterns. Then, learn how weed seeds start planting and the conditions of weed plants flowering, pollution, and germination. Make seeds with speared and use scientific methods that reduce their damage and increase the productivity of economic crops.			Curriculum Description
1—The program aims to raise the student's ability to understand agriculture and its applications. 2- Enabling the student to learn about Weed plants, their germination, growth, and reproduction, and the factors influencing their reproduction.			The purpose of teaching the curriculum

The student will be able to learn about the methods of propagation and germination of seeds of different types of Weed plants in different environmental conditions and ways to identify and distinguish them to reduce their harm.	**Learning outcomes**
Weeds and ways to combat them Written by Dr. Nader F. Ali and Dr. Salem H. Anter.	**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Definition of weed	2	Definition of Weed, History of Weed Control	1
3	Specifications of weed plants	2	Weeds and crop productivity	2
3	Characteristics of the weed	2	Definition of seed, germination, and the effect of various environmental factors on germination	3
3	Methods of spreading and transmitting weed seeds	4	Biological factors affecting germination	4
3	Germination of weed seeds	2	Abiotic factors affecting germination	5
3	First Practical Exam	2	First-semester theoretical exam	6
3	A scientific visit to the college field stations	2	Methods of spreading weed seeds and ways to prevent them	7
3	Classification of weed plants	2	The relationship between agricultural pests and the relationship between weed plants and other pests	8
3	A laboratory experiment to study the germination of weed seeds	2	Specifications of weed plants: appearance and size of the stem	9

3	Identifying the weeds accompanying the wheat crop	4	The increase in types of weeds per unit area and the inability to eliminate all the weeds present in the field in one season.	10
3	Broad-leaved weed	2	The great similarity between weed plants and some economic crops	11
3	A scientific visit to the college field stations	4	Classification of weed plants	12
3	Thin-leaved weed	2	Characteristics of weed plants	13
3	Aquatic weed	2	Dormancy in the seeds of weed plants	14
3	The second practical semester exam	2	The second-semester theoretical exam	15

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Course Description

	Weeds Control	Stage Four	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
Introduce and acquaint students with the morphological specifications of different weed plants and their growth patterns. Then, learn how to get rid of them using scientific methods that reduce their damage and increase the productivity of economic crops.			Curriculum Description

Teaching students about the importance of Weed plants and combating them in various ways to reduce damage.					**The purpose of teaching the curriculum**
After receiving this material, the learner will have a comprehensive knowledge of the basic principles of this important science, which has become one of the pillars of the various agricultural sciences, as it deals with the most important agricultural pests in the world.					**Learning outcomes**
Weeds and ways to combat them Written by Dr. Baqer Abdul Khalaf Al-Jabouri Dr. salem H. Anter.					**The textbook**
Final theoretical exam	**Final Practical Exam**	**Daily theoretical tests**	**Practical semester tests**	**Theoretical semester exams**	**Semester Estimates**
40%	**20%**	**5%**	**10%**	**25%**	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	**Definition of jungle**	**2**	**Definition of Weed, weeds control**	**1**
3	**Training students on how to collect, dry, and preserve plant specimens**	**2**	**The ancient history of combating weeds**	**2**
3	**Diagnosis and classification of weeds according to their growth nature and classification of weed according to their morphological form**	**2**	**The development of weed science and control processes for weed plants**	**3**
3	**First- semester exam**	**4**	**Weeds and crop productivity**	**4**
3	**Identifying Weed seeds and their modifications**	**2**	**Classification of weed plants**	**5**
3	**Identify the types of pesticides used in weed control**	**2**	**First semester exam**	**6**
3	**Training students on how to use pesticides and how to use them**	**2**	**Characteristics of weed plants**	**7**

3	An hour of training students on methods of combating and how to carry them out.	2	Losses caused by weed plants	8
3	Chemical control of weeds growing in college fields	2	Prevention of weed plants	9
3	Chemical control of weeds growing in greenhouses	4	Ways to combat weeds	10
3	Training students on how to calculate the number of pesticides needed for pest control	2	Methods of classification of herbicides	11
3	I show the students the available pesticide spraying machines and equipment and train them on how to use them.	4	Chemical groups of herbicides	12
3	Evaluation of the control process implemented in paragraph 11 and how to calculate the control percentage	2	Herbicides and plants	13
3	Evaluation of plant models collected by each student	2	Dormancy in the seeds of weed plants	14
3	Second practical semester exam	2	second-semester theoretical exam	15

Tikrit University
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Course Description

Course Description Template	
This course description provides a concise summary of the key characteristics of the course and the expected learning outcomes for students, demonstrating whether they have maximized the benefits of the available learning opportunities. It is essential to link these outcomes with the program description.	
Educational Institution	Agriculture College, Tikrit University
University Department / Center	Field Crops Department
Course Name / Code	Plant Physiology
Programs Involved	Ministry of Higher Education and Scientific Research
Available Attendance Forms	Mandatory

Semester / Year	Semester
Number of Study Hours (Total)	75 hours
Date of Preparation of this Description	01/25/2025
Course objectives	
Ability to work in the agricultural sector and field crops	
Increase the spirit of competition among students for academic excellence to obtain good job opportunities	
Increase competition among students for the opportunity to apply for postgraduate studies	
To produce students who have the ability to continue learning and developing inside and outside Iraq	
Preparing scientific researchers in the field of field crop sciences (plant physiology).	
Providing good advice and information to relevant institutions and ministries	
Ability to work in the agricultural sector and field crops	

Learning Outcomes, Teaching, and Learning Methods & Assessment		
1	**Knowledge and understanding**	Knowledge and understanding of all topics that will be included in the curriculum of the subject
2	**Subject-specific skills**	Basics of dealing with the laboratory as a building, equipment, chemicals and general safety
3	**Teaching and learning methods**	Providing students with full lectures with a presentation during the lecture with the names of the scientific sources they need with some practical applications and assigning students homework
4	**Assessment methods**	Daily and monthly tests with the presentation of a project for the lesson in the form of a presentation on one of the subject's components (according to the student's choice)
5	**Thinking skills**	Putting inferential questions on students, and enabling students to conduct the largest possible number of practical issues in the practical part
6	**General and transferable skills**	How to use the laboratory and conduct some analyses related to plant physiology and understanding the mechanism of plant work and the interaction between plants and environmental factors

Mandatory (Basic)	**The 4th year of study**	**Plant Physiology**	
Planned teaching hours per week	**(2) Theoretical lecture hours**	**(3) Practical hours**	**Number of units: 3**
Curriculum Description	This course focuses on the study of fundamental physiological processes in plants, including photosynthesis, respiration, and the transport of water and nutrients. It also addresses the impact of environmental factors on these processes and how plants respond to environmental stresses. Additionally, the course covers the role of plant hormones in regulating growth and development, including auxins, gibberellins, and .cytokinins. It examines how these regulators affect various physiological processes Furthermore, the course emphasizes crop management strategies to improve productivity, including sustainable agriculture techniques, and discusses how to apply physiological knowledge in crop management. In addition to the above, it studies the effects of environmental stressors such as drought, salinity, and high temperatures on .plants, as well as the adaptation strategies that plants use to cope with these stresses		

Curriculum Teaching Objective	Enhancing students' understanding of the fundamental physiological processes and their impact on crop growth. Developing research skills and practical application in the field of plant physiology. Empowering students to apply physiological knowledge in crop management and improve productivity.				
Learning Outcomes	**Understanding Physiological Processes**: Empowering students to understand the physiological mechanisms that affect plant growth and development, which helps them interpret how plants respond to various environmental stresses. **Applying Knowledge in Agriculture**: Enhancing the ability to apply physiological knowledge to improve agricultural strategies, such as selecting varieties resistant to environmental stresses, leading to increased agricultural productivity. **Developing Scientific Research Skills**: Cultivating students' scientific research skills through conducting experiments and studies related to plant physiology, which enhances their ability to analyze data and interpret results. **Adapting to Environmental Changes**: Understanding how plants adapt to environmental changes, enabling students to develop sustainable agricultural strategies that align with changing climatic conditions. **Enhancing Environmental Awareness**: Increasing awareness of the importance of plants in the ecosystem and their role in addressing environmental challenges, contributing to the promotion of sustainable agricultural practices. **Developing Innovative Solutions**: Encouraging critical and creative thinking among students to develop innovative solutions to contemporary agricultural problems, such as resistance to diseases and pests.				
Textbook	Plant Physiology by Taiz and Zeiger, 2015 the 5th addition				
Semester Estimates	**Theoretical Midterm Exams**	**Practical Midterm Exams**	**Daily Theoretical Exams**	**Final Practical Exam**	**Final Theoretical Exam**
	25%	10%	5%	20%	40%

Curriculum				
Weeks	**Theoretical subject**	**Number of hours**	**Practical subject**	**Number of hours**
1	General introduction in plant physiology and the basic rules of this science with related sciences	**2**	Study the phenomenon of diffusion and plasmonization with the selection of a research topic related to the subject	**3**
2	Solutions and colloidal systems	**2**	Types of solutions and how to prepare them	**3**
3	Water relations and the process of transpiration	**2**	Effect of different salt concentrations on seed germination	**3**
4	Absorption and transfer of water and mineral elements	**2**	Effect of acidity and alkalinity on the germination and growth of some plants	**3**
5	First test	**2**	First month test	**3**
6	Photosynthesis	**2**	Effect of macro and micro nutrients on the growth of some crops	**3**
7	Completion of the topic of photosynthesis	**2**	Relationship between light interception and plant growth	**3**

8	Respiration	**2**	Measuring chlorophyll in plants	**3**
9	Metabolism (synthesis)	**2**	Effect of plant hormones on the growth of some plants	**3**
10	Plant nutrition and biological nitrogen fixation	**2**	Study of the phenomenon of imbibition and transpiration	**3**
11	Second test	**2**	Second month test	**3**
12	Growth and emergence	**2**	How to measure growth characteristics	**3**
13	Hormones and plant growth regulators	**2**	Field visit to the department's fields to learn about some physiological phenomena	**3**
14	Physiology of crops under stress with tolerance mechanisms	**2**	Presenting scientific research	**3**
15	General review	**2**	General review	**3**

Tikrit University
Faculty of Agriculture
Field Crops Department
Course Description

----	**Land Farming**	**Stage 4**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
Explaining to students importance of understanding factors affecting plants such as climatic and other environments conditions and their relationship primarily and in addition to introducing students to steps of farming , its types and future plans to avoid its effects.			**Curriculum Description**
Introducing students to how farming land, identify types and problems and develop appropriate solutions for these agricultural lands.			**The purpose of teaching the curriculum**
Students obtains information that enable him to exploit agriculture lands scientifically and exploit environmental factors to increase production in terms of quantity and quality.			**Learning outcomes**

Reclamation farming of ,Land Farming(Prof.Medhat Al- Sahouki) saline lands (Jassim Mohammed AL- Awadhi),Scientific foundation for managing , producing and improving field crops (Prof.Ayad AL-Muaini)	**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Practical applications on how to exploit production factors to increase it.	2	Factors of production, food production and population growth	1
3	Distinguishing between three and four carbon plants morphological and anatomically	2	Carbon assimilation in field crop plants	2
3	Applications of effect environmental factors on crop growth and yield	2	Production factors , plants density , planting dates and other environmental factors	3
3	Differentiations between legumes and other factors of botanical description	2	Nitrogen fixation land productivity , crop succession and ecosystems	4
3	Frist practical semester exam	2	Energy expenditure relationship on crop, energy calculations and energy efficiency process	5
3	Practical applications in calculating and measuring losses.	2	Post – harvest losses , their measurements , calculations of losses percentage and types and reducing impact of losses.	6
3	Differences between shade and sun plants.	2	Frist theoretical semester exam	7
3	Differences between plants that can tolerance high and low temperatures.	2	Disadvantage of agricultural land, distribution of plants according to climate , extent of horizontal expansion of land farming and steps of horizontal expansion in Arab world	8
3	Comparison between soil types and their field identification.	2	Farming of lands with topographical defects gypsum lands and lands with biological defects.	9

3	Morphological description of desert plants.	2	Evidence of agriculture vegetation development ,desert ,saline, alkaline and humic soil plants	10
3	Distinguish between fresh and saline water and explain effect of each type on growth of field crops	2	Irrigations and farming requirements , crop productivity under irrigation , relationship of irrigation water to expected yield, soil result and crop water requirements	11
3	Identify saline and pH measurements of water and soil in laboratory.	2	Soil and water environment requirement for crops , soil and relationship of soil water to aquatic organisms ,fungi and Algae	12
3	Identifying saline soils in field , stating their specifications and plants growing in them.	2	Potential soil farming for salinity , exchangeable sodium , calcium carbonate and pH	13
3	Identify plants that reduce impact and stabilize sand dunes.	2	Field crop service under farming ,irrigation salinity and wind break conditions.	14
3	Second practical semester exam	2	Second semester theoretical exam	15

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Specialized English Language	**Module Delivery**
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code		
ECTS Credits	**8**	

SWL (hr/sem)	**200**		
Module Level	UGx11 1	**Semester of Delivery**	1
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Name	**e-mail**	E-mail
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	Luai Nahar Muhammad	**e-mail**	luai.muhammad@tu.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	1
Co-requisites module	None	**Semester**	1

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	

أهداف المادة الدراسية	1. To develop students skill in English language in Grammar. 2. To develop students skill in English language in terms of speaking. 3. To develop students skill in English language in terms of writing. 4. To develop students skill in English language in terms of comprehension. 5. To develop students skill in English language in terms of listening. 6. To develop students skill in English language Specialized in Soil Science.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The student will be able to learn English vocabulary. 2. The student will be able to learn English grammar. 3. The student will be able to learn English speaking 4. The student will be able to learn English writing. 5. The student will be able to learn English listening. 6. The student will be able to learn English Soil science.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1- Parts of speech, the kind of sentence in English. 2- Proper nouns, indefinite nouns and others. 3- Countable and uncountable articles. 4- Pronouns, accusative, genitive, possessive. 5- Auxiliary verbs. 6- Simple present, simple past, simple future. 7- Continuous present, Continuous past, Continuous future 8- Present perfect, past perfect, future perfect. 9- The kind of Adjective. 10- The vowel and constant sound in English. Total hrs = 105 = SSWL - (Exam hrs) = 109 - 4 = 105 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
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 English language.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation تقييم المادة الدراسية					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	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, #8 and #10
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) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week 1	Introduction in English language
Week 2	Unit 1 (vocabulary, Grammar, conversation, comprehensions and others)
Week 3	Unit 2 (vocabulary, Grammar, conversation, comprehensions and others)
Week 4	Unit 3 (vocabulary, Grammar, conversation, comprehensions and others)
Week 5	Unit 4 (vocabulary, Grammar, conversation, comprehensions and others)
Week 6	First Examination
Week 7	Unit 5 (vocabulary, Grammar, conversation, comprehensions and others)
Week 8	Unit 6 (vocabulary, Grammar, conversation, comprehensions and others)
Week 9	Unit 7 (vocabulary, Grammar, conversation, comprehensions and others)
Week 10	Unit 8 (vocabulary, Grammar, conversation, comprehensions and others)
Week 11	Unit 8 (vocabulary, Grammar, conversation, comprehensions and others)
Week 12	Unit 8 (vocabulary, Grammar, conversation, comprehensions and others)
Week 13	Second Examination

Week 14	Review
Week 15	Review
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**NEW Headway (Beginner)** **John and Liz Soars**	Yes
Recommended Texts	**A Practical English Grammar** **A. J. Thomson, A. V. Martinet** **Oxford University Press Walton Street, Oxford 0X2 6DP**	yes
Websites	http://www.ef.com	

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.

Tikrit University
Faculty of Agriculture
Field Crops Department

Course Description

M H 131	Rangeland management	The fourth stage	Mandatory (Basic)
Number of units: 3	(3) Practical hours	(2) Hours of theoretical lectures	Planned teaching hours per week
This topic covers natural and artificial rangelands, rangeland carrying capacity, grazing areas in Iraq and their natural vegetation, methods for estimating forage productivity in rangelands, the relationship between soil organisms and animals with natural rangelands and methods for measuring them, as well as their connection to grazing practices.			Curriculum Description
Studying the scientific aspects related to the utilization and development of natural rangelands in general, and in Iraq in particular, as well as exploring ways to improve and develop them. This also aims to expand the students' theoretical and practical knowledge.			The purpose of teaching the curriculum
Upon completing this course, the learner will be able to utilize natural and artificial rangelands effectively, as well as provide scientific and technical observations and guidance in this field.			Learning outcomes
Natural Rangeland Management - Dr. Ramadan Ahmed Al-Taif Al-Tikriti, Dr. Tawakul Younis Rizk, and Abbas Mahdi Al-Hassan. **Natural Rangeland Management (Translated)** - Dr. Ramadan Ahmed Al-Taif Al-Tikriti and Ramzi Mohiuddin Mohammed.			The textbook

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	**Methods of Sampling for Rangeland Study Technical Methods**	2	The Importance of Natural Rangelands, Their Distribution, and Their Relationship with Other Sciences	1

3	Rainwater Harvesting, Rangeland Management, and Key Techniques Used	**2**	Natural, Environmental, and Soil Factors Affecting Natural Rangelands	**2**
3	Qualitative Assessment of Rangeland	**2**	Biotic, Fire, and Locational Factors Affecting Natural Rangelands	**3**
3	Physical Impacts Resulting from Animal Grazing	**2**	Natural Vegetation and Grazing Areas in Iraq	**4**
3	**First Monthly Exam**	**2**	Grazing Plants and Their Relationship with Soil and Water Conservation – Importance of Water and Soil – Erosion Processes	**5**
3	Utilization Criteria: Numerical Examples	**2**	Utilization of Natural Rangelands – Utilization Criteria – Forage Utilization Determination – Animal Carrying Capacity	**6**
3	Animal Distribution: Factors Affecting Distribution	**2**	**First Monthly Exam**	**7**
3	Rangeland Seed	**2**	Condition of Natural Rangelands – Judging Rangeland Condition	**8**
3	Visits to Nearby Rangelands	**2**	Natural Rangeland Covering – Natural Re-vegetation – Increasing Rangeland Carrying Capacity – Artificial Covering – Species Testing	**9**
3	Identifying the Most Important Rangeland Plants	**2**	Harmful and Toxic Plants in Rangeland Areas	**10**
3	Chemical Composition of Forage and Rangeland Plants	**2**	Poisoning and Bloat in Grazing Animals	**11**

3	**Second Monthly Exam**	**2**	Rangeland Management in Natural Rangeland Conditions – Livestock Selection – Grazing in the Right Seasons – Animal Distribution – Watering Animals	**12**
3		**2**	Grazing Intensity – Effect of Grazing on the Reproduction and Persistence of Grazing Plants – Impact of Grazing on Vegetation Composition of Ground Cover	**13**
3		**2**	Rangeland Animal Care – Animal Behavior in Rangelands	**14**
3		**2**	**Second Monthly Exam**	**15**

Tikrit University
Faculty of Agriculture
Field Crops Department
Course Description

	Plant classification	**Stage Four**	**Mandatory (Basic)**
Number of units: 3	**(3) Practical hours**	**(2) Hours of theoretical lectures**	**Planned teaching hours per week**
Plant classification			**Curriculum Description**
Teaching the student how to classify and diagnose plants in order to identify their identity and detect phenotypic and anatomical differences to diagnose genera and species of plants based on morphological characteristics.			**The purpose of teaching the curriculum**

The student is able to know the types of plants, classify them, diagnose them, and learn about their phenotypic and anatomical characteristics	**Learning outcomes**
Lectures from several sources: 1- The book Classification of Seed Plants by Dr. Youssef Mansour Al-Kateb 2- Plant Taxonomy by Dr. Ali Hussein Issa 3- Classification of Flowering Plants by Dr. Fawzi Mahmoud 4- Other sources from the Internet	**The textbook**

Final theoretical exam	Final Practical Exam	Daily theoretical tests	Practical semester tests	Theoretical semester exams	Semester Estimates
40%	20%	5%	10%	25%	

Topics

Number of hours	Practical material	Number of hours	Theoretical material	The week
3	Definition of taxonomy	2	Definition of taxonomy, its importance, and its relationship to other sciences	1
3	Methods of preserving plant specimens in botanical herbaria	2	The history of taxonomy, the most important taxonomists, and the goals of taxonomy	2
3	Collecting and classifying plant samples	2	Seed plants	3
3	The root and learning about the most important types of roots	4	Vegetative parts, root and stem	4
3	First semester exam	2	Vegetative parts, buds and leaves	5
3	The stem and the distinction between nodes and phalange	2	Leaf surface coating, leaf venation, auricles	6
3	Field trip	2	First-semester exam	7
3	Plant leaves	2	Definition of the flower, its parts, and arrangement of the floral parts	8

3	**Classification of plant leaves in the laboratory**	**2**	**Floral quadrature and floral symmetry**	**9**
3	**Types of veins in leaves**	**4**	**Floral systems and the floral equation**	**10**
3	**Botanical flower**	**2**	**Fruits and seeds**	**11**
3	**A field Trip to the field crops field station**	**4**	**Foundations of classification, the concept of type - taxonomic ranks**	**12**
3	**Second-semester exam**	**2**	**Classification systems**	**13**
3	**How to write scientific names**	**2**	**Gymnosperms and covered seeds**	**14**
3	**General review**	**2**	**Second-semester exam**	**15**

Teaching staff in the Department of Agricultural Machinery and Equipment

	Names teaching staff	Academic title	Degree	General Specialization	Subspecialization	Email	Notes
	Momtaz Isaak Hommood	Professor	PhD	Agricultural Mechanization	Agricultural Machinery and Equipment	momtaz.isaak@tu.edu.iq	Head of Department
	Thaer Turki Abdul Karim	Assist. Professor	PhD	Agricultural Machinery and Equipment	Agricultural Machinery and Power	thaerturky@tu.edu.iq	Department Rapporteur
	Ahmed Abdul Ali Abtan	Lecturer	PhD	Agricultural Mechanization	Agricultural Machinery and Equipment	ahmedabtan@tu.edu.iq	
	Ahmed Imad Saleh	Lecturer	PhD	Food Science	Food Science	a.emad004@tu.edu.iq	
	Ahmed Dawood Salman	Lecturer	PhD	Soil Science	Soil Physics	a.dawood006@tu.edu.iq	
	Abdullah Azawi Issa	Lecturer	Master's	Agricultural Mechanization	Agricultural Machinery and Equipment	abdullah.azawi@tu.edu.iq	PhD Student, University of Baghdad
	Abdul Qader Ghaleb Nasser	Lecturer	Master's	Agricultural Mechanization	Agricultural Machinery and Equipment	abdalkader.ghalib@tu.edu.iq	PhD Student, UPM, Malay
	Sara Namas Ahmed	Assist. Lecturer	Master's	Soil Science	Soil Physics	sara.namis@tu.edu.iq	PhD Student, Tikrit University

Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: College of Agriculture

Scientific Department: Animal Production Department

Academic or Professional Program Name: Bachelor of Agricultural Sciences/Animal Production

Final Certificate Name: Bachelor of Agricultural Sciences/Animal Production

Academic System: Season

Description Preparation Date: 22/1/2025

File Completion Date: 22/1/2025

Signature:

Head of Department Name:
professor Tareq Khalaf Hasan Khalaf Aljumaily

Date:

Signature:

Scientific Associate Name:
assistant professor Mohammed saleh Mohammed

Date:

The file is checked by:

Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Assistant professor Aslam Saud Alwan

Date: 22/1/2025

Signature:

Approval of the Dean

Names of Animal Production Department Lecturers 2024-2025

N	The full name	Academic Qualification	Academic title	E.mail
1	Ahmed Abd Allaw	Ph.D	Professor	drallaw@tu.edu.iq
2	Maad Abdulkareem mahmood	Ph.D	Professor	maadalbaddy@tu.edu.iq
3	Ahmed Taies Taha	Ph.D	Professor	dr.att@tu.edu.iq
4	Samawal sadi abdullah	Ph.D	Professor	samawalsadi@tu.edu.iq
5	Tareq Khalaf Hasan	Ph.D	Professor	tariq.aljomaily@tu.edu.iq
6	Emad Ghaib Abdelrahman	Ph.D	Professor	dr.emadghaib@tu.edu.iq
7	Maysaloon Wail Ibraheem	Ph.D	Professor	maysaloon2019@tu.edu.iq
8	Ammar Salah	Ph.D	Professor	amarslssh@tu.edu.iq
9	Abdullah isam noaman	Ph.D	Professor	abdullah.noaman@tu.edu.iq
10	Nuha Hameed Sadiq	Ph.D	Professor	nuhaalbassam@tu.edu.iq
11	Abdulkhaliq Ahmed Farhan	Ph.D	Professor	dr.abdulkhalid45@tu.edu.iq
12	Akeel Abd shelij	Ph.D	Professor	akeelabd78@tu.edu.iq
13	Arkan Baraa Mohammed	Ph.D	Professor	dr.arkanmohammed@tu.edu.iq
14	Ahmed Khalid Ahmed	Ph.D	Assistant professor	Ahmedkhalid76700@tu.edu.iq
15	Aslam Saud Alwan	Ph.D	Assistant professor	aslam.alwan@tu.edu.iq
16	Mohammed Saleh	Ph.D	Assistant professor	dr.mohsaleh@tu.edu.iq
17	Afraah Mustafa Mohammad	Ph.D	Assistant professor	afrah_mustafa@tu.edu.iq
18	Ahmed Ramadan Muhammed	Ph.D	Assistant professor	ahmed.ramadhan@tu.edu.iq
19	Mowafaq Hussein Ali	Ph.D	Assistant professor	drmwaffuk75@tu.edu.iq
20	Sadam Mohamad Hassan	Ph.D	Assistant professor	sadam.mohamad@tu.edu.iq
21	Mokhalad Oraibi Hasan	Ph.D	Assistant professor	mokhalad082@tu.edu.iq
22	Samah Maiser Raouf	Ph.D	Assistant professor	samahmaiser@tu.edu.iq
23	Haitham Rajab Manhee	Ph.D	Assistant professor	haithamalkaisi85@tu.edu.iq
24	Ashraf Kamil Azeez	Ph.D	Lecturer	ashraf.kamil@tu.edu.iq
25	Falah hasan salih	Ph.D	Lecturer	falahhasan1984@tu.edu.iq
26	Mohammed Abdelkader	Ph.D	Lecturer	mohamadabdulkader1@gmail.com
27	Ahmed Atallah Daoud	Ph.D	Lecturer	ahmedaldoury@tu.edu.iq
28	Nawar Bahaa Abdul Jabbar	Ph.D	Lecturer	nawar.a014@tu.edu.iq
29	Asaad Dhia Saber	Ph.D	Lecturer	asaad.dh.saber@tu.edu.iq
30	Saif Ekram Jassim	Ph.D	Lecturer	saiforg19@tu.edu.iq
31	Qais Mohammed	Ph.D	Lecturer	qais.m.abdulrahman@tu.edu.iq
32	Ahmed Nizar Ismail	Ph.D	Lecturer	ahmed.n.ismeal@tu.edu.iq
33	Muna Khalid khudhair	Ph.D	Lecturer	mona_2017@tu.edu.iq
34	Oday Khalaf Hamad	Ph.D	Lecturer	uday_alnasser@tu.edu.iq
35	Mohaeman abdAlsalam	Ph.D	Lecturer	mohaeman.a.m@tu.edu.iq
36	Aziz Hassan Saleh	Ph.D	Lecturer	azeez_agr@tu.edu.iq
37	Jassim Mohammed Baqer	Ph.D	Lecturer	Jasim.baq@tu.edu.iq
38	Sohaib Mahmood abd	M.Sc	Assistant teacher	sohaibmahmood1983@tu.edu.iq

39	Abdul Rahim Hallo Taha	M.Sc	Assistant teacher	abdulraheem.hallo@tu.edu.iq
40	Mohammed AbdulMajeed	M.Sc	Assistant teacher	Mohammed.a.majeed23@gmail.com
41	Suha Abdul Jabbar Khattab	M.Sc	Assistant teacher	Soha.abud.iq3@gmail.com
42	Alaa Basem Hamid	M.Sc	Assistant teacher	Alaaalahbaby97@gmail.com

Academic Program Description Form

1. Program Vision
Program vision is written here as stated in the university's catalogue and website.
Achieving quantitative and qualitative changes in scientific research to keep pace with the development of animal production in the world.
2. Program Mission
Program mission is written here as stated in the university's catalogue and website.
Spreading scientific awareness in society and providing it with graduates who are scientifically and practically qualified to manage and develop animal production according to scientific standards.
3. Program Objectives
General statements describing what the program or institution intends to achieve.
The department participates with state and community institutions in developing and solving problems of livestock projects based on scientific research
4. Program Accreditation
Does the program have program accreditation? And from which agency?
No
5. Other external influences
Is there a sponsor for the program?

6 Program Structure				
Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	**9**	**9**	**% 15.25**	
College Requirements	**13**	**31**	**% 22.03**	
	37	**107**	**% 62.71**	

Department Requirements				
Summer Training				
Other				

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

7. Program Description				
Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
1	0011101	analytical chemistry	2	3
	0C11102	Principles of soil science	2	3
	0C11103	Principles of plant protection	2	3
	0011104	Principles of animal production	2	3
	0011105	Space	1	3
	U011016	Computer applications 1	-	3
	U011017	Specialized English language1	1	-
	U011018	Human rights and public freedoms	1	-
	0C21101	organic chemistry	2	3
	0021102	Principles of field crops	2	3
	0C21103	Principles of statistics	2	3
	0021104	Principles of domestic birds	2	3
	0C21105	mathematics	2	-
	0021106	General animal	2	3
2	0011201	Biochemistry	2	3
	0011202	Hygiene of the animal products	2	3
	0011203	Principles of fish	2	3
	0C11204	Principles of horticulture	2	3
	0C11205	Agricultural guidance principles	2	-
	0011206	Principles of microbiology	-	3
	0011207	Animal production mechanization	2	3

	0021201	Genetics	2	3
	0021202	Fodder crops and pastures	2	3
	0021203	Breeding and production of fish	2	3
	0021204	General principles of dairy	2	3
	0021205	Principles of agricultural economy	2	-
	U021026	Freedom and democracy	1	-
	U021027	Computer applications 2	-	3
	U021028	Specialized English language2	1	-
3	0011301	Animal Physiology	2	3
	0011302	Hatching and hatchery management	2	3
	0011303	Animal nutrition	2	3
	0011304	Animal production economics	3	-
	0011305	Environment and behavior of animal	2	-
	0C11306	Design and analysis of experiments	2	3
	0C11307	Medical and veterinarian insects	2	3
	U011038	Specialized English language 3	1	-
	0021301	Poultry Physiology	2	3
	0021302	Poultry Technology	2	3
	0021303	Feed and feed	2	3
	0021304	Animal diseases	2	3
	0021305	Animal breeding	2	3
	0021306	Reproductive Physiology	2	3
	U021037	Computer applications 3	-	3
4	0011401	Poultry nutrition	2	3
	0011402	Poultry breeding	2	3
	0011403	Sheep and goat production	2	3
	0011404	Meat production	2	3
	0011405	poultry management	2	3

	06114C0	Pasture Management	2	3
	0C21407	Graduate research project	-	3
	0021401	poultry diseases	2	3
	0021402	Molecular science	2	3
	0021403	Production of dairy cattle	2	3
	0021404	Meat science	2	3
	0021405	Buffalo production	2	-
	021046U	Specialized English language 4	1	-
	0C21407	Seminars	1	-
	0C21408	Graduate research project	-	3

8. Expected learning outcomes of the program

Knowledge Learning Outco		
Skills		
Ethics		

9. Teaching and Learning Strategies

10.Evaluation methods

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Animal production	Fish ecology and biology			39	
Professor	Animal production	Poultry nutrition				
Professor	Animal production	Meat science and technology				
Professor	Animal production	Poultry Physiology				
Professor	Animal production	Poultry breeding				
Professor	Animal production	Poultry Management				
Professor	Animal production	Animal Management				
Professor	Animal production	Meat production				
Professor	Animal	Animal nutrition				

	production					
Professor	Animal production	Fish nutrition				
Professor	Animal production	Animal Physiology				
assistant professor	Animal production	Poultry breeding				
assistant professor	Animal production	Reproductive Physiology				
assistant professor	Animal production	Animal Physiology				
assistant professor	Animal production	Sheep and goat production				
assistant professor	Animal production	Meat production				
assistant professor	Animal production	Aquaculture and fish biology				
assistant professor	Animal production	Poultry technology				
assistant professor	Animal production	Poultry Physiology				
Lecturer	Animal production	Animal nutrition				
Lecturer	Animal production	Animal Physiology				
Lecturer	Animal production	Poultry Management				
Lecturer	Animal production	Poultry nutrition				
assistant Lecturer	Animal production	Poultry breeding				
assistant Lecturer	Animal production	Animal Physiology				
assistant Lecturer	Animal production	Meat production				

Mentoring new faculty members
Briefly describes the process used to mentor new, visiting, full—time, and part—time faculty at the institution and department level.
Professional development of faculty members
Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion
(Setting regulations related to enrollment in the college or institute, whether central admission or others)
central

13. The most important sources of information about the program
State briefly the sources of information about the program.
1. The college and university website 2. University guide 3. Central Library 4. The most important books and sources for the department 5. Internet

14. Program Development Plan

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
1	0011101	analytical chemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C11102	Principles of soil science	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C11103	Principles of plant protection	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011104	Principles of animal production	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011105	area	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U011016	Computer applications 1	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U011017	Specialized English language1	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U011018	Human rights and public freedoms	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C21101	organic chemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021102	Principles of field crops	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C21103	Principles of statistics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021104	Principles of domestic birds	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C21105	mathematics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021106	General animal	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011201	Biochemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011202	Hygiene of the animal products	Basic	*	*	*	*	*	*	*	*	*	*	*	*

2	0011203	Principles of fish	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C11204	Principles of horticulture	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C11205	Agricultural guidance principles	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011206	Principles of microbiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011207	Animal production mechanization	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021201	Genetics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021202	Fodder crops and pastures	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021203	Breeding and production of fish	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021204	General principles of dairy	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021205	Principles of agricultural economy	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U021026	Freedom and democracy	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U021027	Computer applications 2	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U021028	Specialized English language2	Basic	*	*	*	*	*	*	*	*	*	*	*	*
3	0011301	Animal Physiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011302	Hatching and hatchery management	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011303	Animal nutrition	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011304	Animal production economics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011305	Environment and behavior of animal	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C11306	Design and analysis of experiments	Basic	*	*	*	*	*	*	*	*	*	*	*	*

	0C11307	Medical and veterinarian insects	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U011038	Specialized English language 3	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021301	Poultry Physiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021302	Poultry Technology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021303	Feed and feed	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021304	Animal diseases	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021305	Animal breeding	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021306	Reproductive Physiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	U021037	Computer applications 3	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4	0011401	Poultry nutrition	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011402	Poultry breeding	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011403	Sheep and goat production	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011404	Meat production	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0011405	poultry management	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	06114C0	Pasture Management	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C21407	Graduate research project	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021401	poultry diseases	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021402	Molecular science	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021403	Production of dairy cattle	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0021404	Meat science	Basic	*	*	*	*	*	*	*	*	*	*	*	*

	0021405	Buffalo production	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	021046U	Specialized English language 4	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C21407	Seminars	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	0C21408	Graduate research project	Basic	*	*	*	*	*	*	*	*	*	*	*	*

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

Course Description Form

1. Course Name:
Space
2. Course Code:
0011105
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
60/2
7. Course administrator's name (mention all, if more than one name)
Name: Emad tariq Email:
8. Course Objectives

Course Objectives	..... • Get the basic information and data needed to prepare and map. ..... □□ The main means of carrying out land-related operations of settlement, division and reclamation □ Planning and construction of projects such as canals, dams and roads...
9. Teaching and Learning Strategies	
Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	4	Definition of space, types of surveys, requirements for good surveying, importance of space in agriculture.	Space	Explanation, model presentation and lecture	the exam
Second	4	Measurement systems and measurement units errors and errors.	Space	Explanation, model presentation and lecture	the exam
Third	4	Direct distance measurement and bar scanning, station selection conditions, field book, chain permitting methods	Space	Explanation, model presentation and lecture	the exam
Fourth	4	Direct distance measurement and bar scanning, station selection conditions, field book, chain permitting	Space	Explanation, model presentation and lecture	the exam

		methods			
Fifth	4	Indirect distance measurement, indirect measurement bases, indirect measuring devices and instruments, theodolite device.	Space	Explanation, model presentation and lecture	the exam
Sixth	4	Urban exam.	Space	Explanation, model presentation and lecture	the exam
seventh	4	The scale of the drawing its types and the factors of determining it	Space	Explanation, model presentation and lecture	the exam
Eighth	4	Spaces, regular and irregular shapes, spaces in coordinates	Space	Explanation, model presentation and lecture	the exam
Ninth	4	Lifting using tape	Space	Explanation, model presentation and lecture	the exam
Tenth	4	Lifting using flat panel	Space	Explanation, model presentation and lecture	the exam
Eleventh	4	Leveling and calculating points levels	Space	Explanation, model presentation and lecture	the exam
Twelveth	4	Longitudinal and transverse sections	Space	Explanation, model presentation and lecture	the exam
Thirteenth	4	Urban exam.	Space	Explanation, model presentation and lecture	the exam
Fourteenth	4	Finding drilling and depth of filling,	Space	Explanation, model presentation	the exam

		calculating cutting and filling areas		and lecture	
Fifteenth	4	Topographic maps and methods of representation	Space	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	
Main references (sources)	
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	

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Course Description Form....

1. Course Name:
mathematics
2. Course Code:
0C21105
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly

6. Number of Credit Hours (Total) / Number of Units (Total)
60/2

7. Course administrator's name (mention all, if more than one name)
Name: samawal sadi abdullah Email: samawalsadi@tu.edu.iq

8. Course Objectives	
Course Objectives	Provides an overview of the concepts and results in complex analysis that may be useful in the field of science and engineering. It also gives an introduction to functions and matrices, transforming ideas and results, and is intended for a number of applications.

9. Teaching and Learning Strategies	
Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes		Unit or subject name	Learning method	Evaluation method
First	2	Matrices	mathematics	Explanation, model presentation and lecture	the exam	
Second	2	Determinants	mathematics	Explanation, model presentation	the exam	

				and lecture	
Third	2	Cramer's base	mathematics	Explanation, model presentation and lecture	the exam
Fourth	2		mathematics	Explanation, model presentation and lecture	the exam
Fifth	2	Coordinates, slope	mathematics	Explanation, model presentation and lecture	the exam
Sixth	2	Straight line, conic sections	mathematics	Explanation, model presentation and lecture	the exam
seventh	2	Boundaries and continuity	mathematics	Explanation, model presentation and lecture	the exam
Eighth	2	Derivatives	mathematics	Explanation, model presentation and lecture	the exam
Ninth	2	Derivative applications	mathematics	Explanation, model presentation and lecture	the exam
Tenth	2	Integration (finite and infinite)	mathematics	Explanation, model presentation and lecture	the exam
Eleventh	2	Integration approach	mathematics	Explanation, model presentation and lecture	the exam
Twelveth	2		mathematics	Explanation, model presentation and lecture	the exam
Thirteenth	2	Integration by parts	mathematics	Explanation, model presentation and lecture	the exam

Fourteenth	2	Integration applications	mathematics	Explanation, model presentation and lecture	the exam
Fifteenth	2	Volume, curve length, surface area	mathematics	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Calculus :Thomas
Main references (sources)	
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	

Course Description Form

1. Course Name:
principles of agricultural economics
2. Course Code:
0021205
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
30/3
7. Course administrator's name (mention all, if more than one name)
Name: yasera baker tariq Email:
8. Course Objectives

Course Objectives	.....
	Identifying the concept of economics Identifying production, distribution and consumption, a function of costs in the short and long term, research methods in economic issues Identifying the economic problem, micro and macro economics, economic system .Course Outcomes and Methods of Teaching, Learning and Assessment
9. Teaching and Learning Strategies	

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	2	Concept of economics, definition of agricultural economics, and its branches, human needs, characteristics of human needs, economic problem, micro and macroeconomics, economic systems, concept of indicative planning process	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Second	2	Concept of economics, definition of agricultural economics, and its branches, human needs, characteristics of human needs, economic problem, micro and macroeconomics, economic systems, concept of indicative planning process	principles of agricultural economics	Explanation, model presentation and lecture	the exam

Third	2	Price system, change in demand, change in supply, basic elements of demand theory, consumer spending, demand function, demand for goods and prices, market demand curve, change in the demand curve for a commodity and income	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Fourth	2	Price system, change in demand, change in supply, basic elements of demand theory, consumer spending, demand function, demand for goods and prices, market demand curve, change in the demand curve for a commodity and income	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Fifth	2	Foundations of supply theory, supply function, change in supply curve, supply curve	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Sixth	2	Foundations of supply theory, supply function, change in supply curve, supply curve	principles of agricultural economics	Explanation, model presentation and lecture	the exam

seventh	2	The foundations of the market price theory, what are the factors affecting the market price, the change in the demand curve, supply and demand, the laws of supply and demand	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Eighth	2	The foundations of the market price theory, what are the factors affecting the market price, the change in the demand curve, supply and demand, the laws of supply and demand	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Ninth	2	Elasticity of supply and demand, price elasticity of demand, price elasticity of supply, cross elasticity, elasticity of change in the volume of revenue, income elasticity	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Tenth	2	Elasticity of supply and demand, price elasticity of demand, price elasticity of supply, cross elasticity,	principles of agricultural economics	Explanation, model presentation and lecture	the exam

		elasticity of change in the volume of revenue, income elasticity			
Eleventh	2	Price control, tax, some applications in price theory, prices and wages, the upper limits of permissible prices, the minimum limits of permissible prices, price fluctuations, the price extrapolation program	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Twelveth	2	Price control, tax, some applications in price theory, prices and wages, the upper limits of permissible prices, the minimum limits of permissible prices, price fluctuations, the price extrapolation program	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Thirteenth	2	Consumer behavior theory, budget line, on change in income, change in price, price relationship with opportunity costs, inflation and deflation	principles of agricultural economics	Explanation, model presentation and lecture	the exam
Fourteenth	2	Consumer behavior theory,	principles of agricultural	Explanation, model	the exam

		budget line, on change in income, change in price, price relationship with opportunity costs, inflation and deflation	economics	presentation and lecture	
Fifteenth	2	Production organization'ownership style'stages of production	principles of agricultural economics	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	educational psychology books
Main references (sources)	Internet
Recommended books and references (scientific journals, reports….	1. Providing modern books and references and adding new vocabulary appropriate to circumstances and events. 2-Delegating students, especially the first of them to their scientific departments, outside Iraq, especially in developed countries. 3. Scientific cooperation with international universities through the development of teaching staff to see the development in the scientific field of competence for the course
Electronic References, Websites	

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Course Description Form

1. Course Name:
General Dairy Principles
2. Course Code:

0021204

3. Semester / Year:

Semester

4. Description Preparation Date:

22- 1- 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: Email:

8. Course Objectives

Course Objectives	**Introducing students to the general principles of dairy and getting acquainted with the important developments in this industry** **Assisting students in dairy manufacturing - processes** **Overcoming the obstacles facing the - demand in the manufacturing process**

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	**Introduction to milk**	General Dairy Principles	Explanation, model	the exam

				presentation and lecture	
Second	5	**Introduction to milk**	General Dairy Principles	Explanation, model presentation and lecture	the exam
Third	5	**Introduction to milk**	General Dairy Principles	Explanation, model presentation and lecture	the exam
Fourth	5	Factors affecting milk production	General Dairy Principles	Explanation, model presentation and lecture	the exam
Fifth	5	steps in the industry	General Dairy Principles	Explanation, model presentation and lecture	the exam
Sixth	5	Milk Ingredients	General Dairy Principles	Explanation, model presentation and lecture	the exam
seventh	5	fat	General Dairy Principles	Explanation, model presentation and lecture	the exam
Eighth	5	lactose	General Dairy Principles	Explanation, model presentation and lecture	the exam
Ninth	5	lactose	General Dairy Principles	Explanation, model presentation and lecture	the exam
Tenth	5	Protein	General Dairy Principles	Explanation, model presentation and lecture	the exam
Eleventh	5	Milk microorganisms	General Dairy Principles	Explanation, model presentation and lecture	the exam
Twelveth	5	Milk microorganisms	General Dairy Principles	Explanation, model presentation and lecture	the exam

Thirteenth	5	Milk enzymes	General Dairy Principles	Explanation, model presentation and lecture	the exam
Fourteenth	5	Milk enzymes	General Dairy Principles	Explanation, model presentation and lecture	the exam
Fifteenth	5	Milk enzymes	General Dairy Principles	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Animal Physiology, Al-Hasani, Zia Hassan and Al-Hiti, Sadiq Muhammad Amin. (1990). Higher Education Press, University of Baghdad.
Main references (sources)	1- The Internet, the Internet
Recommended books and references (scientific journals, reports….	1- Veterinary Physiology (Mohy Al-Din, Khairallah and Yousef, Walid Hamad. (1987) Directorate of Dar Al-Kutub for Printing and Publishing - University of Mosul - Republic of Iraq. 2- Endocrine Physiology and Reproduction in Mammals and Birds "Mohieddin, Khair Al-Din and Youssef, Walid Hamid and Touhleh, Saad Hussein. (1990). Ministry of Higher Education and Scientific Research, House of Wisdom for Printing and Publishing, Mosul, Iraq. 3- The Internet
Electronic References, Websites	Iraqi academic scientific journals

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Course Description Form

1. Course Name:
Horticulture Principle
2. Course Code:

0C11204
3. Semester / Year:
Semester
4. Description Preparation Date:
22- 1- 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)
Name: Email:
8. Course Objectives

Course Objectives	• Identify the importance of horticulture and its various techniques in contributing to providing food, medicine, and a safe, healthy environment for the individual and society. □ Determine the most appropriate methods for propagating horticultural plants, their various divisions, and the agricultural processes necessary for their cultivation and growth. □ Classification of horticultural plants according to their different groups. □ Linking the relationship between different environmental conditions and the requirements for the growth, development and production of horticultural crops. □ Practice some applications in propagating and caring for horticultural plants. □ Demonstrating his skills in working within a single team in performing and completing the course's group tasks or assignments.

9. Teaching and Learning Strategies

Strategy	**Cognitive objectives: After studying this course, the student is expected to be able to:** A.1- Improve the ability to think, analyze and develop solutions to problems associated with various production processes of horticultural plants. A2- The ability to perform various agricultural operations and understand agricultural systems for horticultural plants. A3- Increase awareness and understanding of quality control methods for different horticultural plants and how to improve the quality of the final product. A4- Evaluate and analyze the performance of various methods to solve the problem of horticultural plants production in Iraq. A5- Criticism of the wrong procedures used in horticultural plants fields. A6- Familiarity with most of the most important environmental factors that affect the growth of horticultural plants under our local conditions. A7- Explaining to students the foundations of the strategy that must be used to overcome these environmental factors that may limit agricultural development in Iraq. **B - The skills objectives of the course.** Upon completion of the program, the graduate must be able to: B1- Plans and designs various programs to solve problems related to the production and improvement processes of horticultural plants. B2- Collects data and information related to increasing the productivity of horticultural plants in quantity and quality. B3- Evaluates the phenomena of decreased production of horticultural plants under the conditions of different regions. B4- Propose a plan to solve the problems in light of the data you obtain. B5- It links different scientific concepts to explain the phenomena that occur during the production of horticultural plants. B6- A program is proposed to improve production quantitatively and qualitatively, whether it is a genetic program (horticultural plants breeding) or a physiological program (nutrition, irrigation, etc.). B-7 Chooses safe ways to avoid risks that may occur during production operations. B-8 Takes the necessary professional decisions to solve urgent production problems.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Horticulture Principle	Introduction to horticulture Definition - The importance of horticulture - Branches of horticulture - Division Plants horticulturally – reality and ambition	Explanation, model presentation and lecture	the exam
Second	5	Horticulture Principle	Environmental factors And the floor Soil - climate factors affecting the growth and spread of horticultural plants - soil and terrain factors - agricultural operations	Explanation, model presentation and lecture	the exam
Third	5	Horticulture Principle	Nurseries, nursery components and supplies - types of nurseries - their importance	Explanation, model presentation and lecture	the exam
Fourth	5	Horticulture Principle	Propagation of horticultural plants. Sexual propagation - A sexual propagation	Explanation, model presentation and lecture	the exam
Fifth	5	Horticulture Principle	Establishing orchards Conditions - needs -	Explanation, model	the exam

			planning - pre-planting operations -Agriculture – care, service and maintenance of the orchard	presentation and lecture	
Sixth	5	Horticulture Principle	Types of pruning, methods and timing of the procedure.	Explanation, model presentation and lecture	the exam
seventh	5	Horticulture Principle	First semester test	Explanation, model presentation and lecture	the exam
Eighth	5	Horticulture Principle	Floriculture - ornamental plants, their types and classifications	Explanation, model presentation and lecture	the exam
Ninth	5	Horticulture Principle	Gardens - their types - their goals - their importance	Explanation, model presentation and lecture	the exam
Tenth	5	Horticulture Principle	Growth and development Horticultural plants The use of growth regulators in gardening and their role in the growth, propagation and flowering of horticultural plants	Explanation, model presentation and lecture	the exam
Eleventh	5	Horticulture Principle	Olericulture - its goals and importance	Explanation, model presentation and lecture	the exam
Twelveth	5	Horticulture Principle	Greenhouses - their importance and goals in the field of horticulture	Explanation, model presentation and lecture	the exam
Thirteenth	5	Horticulture Principle	Tissue culture - its definition - its steps - its importance	Explanation, model presentation and lecture	the exam
Fourteen	5	Horticulture	The second semester	Explanation,	the exam

th		Principle	theoretical exam	model presentation and lecture	
Fifteenth	5	Horticulture Principle	Post-harvest transactions - their definition - the order in which they are carried out - their importance - their objectives	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Principles of Gardening, written by Dr. Faisal Rashid Nasser Al-Kanani, 1988, University of Mosul. -
Main references (sources)	Principles of horticulture, Dr. Bahram Khorshid Muhammad Al-Daoudi, 1988, Saladin University
Recommended books and references (scientific journals, reports….	Principles of horticulture, Dr. Karim Saleh Abdul and Dr. Saad Zaghloul Al-Najjar, 1984, Saladin University. -
Electronic References, Websites	Horticulture, Janek, 1985, Arab House for Publishing and Distribution

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Course Description Form

1. Course Name:
Freedom and Democracy
2. Course Code:
U021026
3. Semester / Year:
Semester
4. Description Preparation Date:

22- 1- 2025

5. Available Attendance Forms:

Weekly

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

15/1

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

Name: Ibraheem Mohammad salih Email:

8. Course Objectives

Course Objectives	The goal of teaching the curriculum is that the goal of teaching the subject of freedom and democracy is a Greek word that means (rule by the people). The Greeks practiced direct democracy, meaning the participation of members of the people in several decisions. Does this mean that democracy is the best product? Not necessarily, as majority rule may lead to the selection of candidates of race, sect, or religion.

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First	1	Human rights in ancient civilizations	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Second	1	Human rights in	Freedom and	Explanation,	the exam

		Greek and Egyptian civilization	Democracy	model presentation and lecture	
Third	1	Human rights in Iraq's ancient civilizations	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Fourth	1	Human rights in Islam	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Fifth	1	Universal Declaration of Human Rights	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Sixth	1	Constitution of the Republic of Iraq of 2005	Freedom and Democracy	Explanation, model presentation and lecture	the exam
seventh	1	The concept of democracy. Development - definition - dimensions	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Eighth	1	Roots of the concept of democracy	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Ninth	1	Human rights in ancient civilizations	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Tenth	1	Human rights in Greek and Egyptian civilization	Freedom and Democracy	Explanation, model presentation and lecture	the exam
Eleventh	1	Human rights in Iraq's ancient civilizations	Freedom and Democracy	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Methodical Book 1- Human Rights, Children and Democracy (Prof. Dr. Maher Saleh Allawi), Chairman of the Authoring Committee. Prof. Dr. Raad Naji Al-Jeddah. Prof. Dr. Riyad Aziz Hadi. Prof. Dr. Kamel Abdel Ankoud (2009	Animal Physiology, Al-Hasani, Zia Hassan and Al-Hiti, Sadiq Muhammad Amin. (1990). Higher Education Press, University of Baghdad.

Course Description Form

1. Course Name:
Hygiene of the animal products
2. Course Code:
0011202 .....
3. Semester / Year:
Semester
4. Description Preparation Date:
22- 1- 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)

Name: Maysaloon Wail Ibraheem Email: maysaloon2019@tu.edu.iq
Name: Mohaeman abd Alsalam Mohammed Email: mohaeman.a.m@tu.edu.iq

8. Course Objectives

Course Objectives	• The student takes an idea about the health of animal products (milk, meat, eggs) • The student learns how to treat the animal before slaughter (rest, water, nutrition) • The student begins to learn how to examine the animal outwardly and estimate age through the teeth Explanation of the issue of bleeding and its effect on The quality of meat and the factors affecting it • The student learns the steps of the health examination After the animal is slaughtered • the student becomes aware of the changes that occur in the carcass (throwing stiffness) • Student's mastery of milk examination methods Explanation of eggs and their physical and chemical properties Egg contamination and transmission of infectious diseases

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Animal treatment during transportation	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Second	5	Slaughter shops	Hygiene of the animal products	Explanation, model presentation and lecture	the exam

Third	5	Slaughtering	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Fourth	5	Rigor mortis	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Fifth	5	Carrying meat	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Sixth	5	Conserving meat	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
seventh	5	Filling meat	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Eighth	5	Food label	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Ninth	5	Milk	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Tenth	5	Dairy specifications	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Eleventh	5	Milking method	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Twelveth	5	The egg	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Thirteenth	5	Egg specifications	Hygiene of the animal products	Explanation, model presentation and lecture	the exam
Fourteenth	5	Pollution of eggs	Hygiene of the animal products	Explanation, model	the exam

				presentation and lecture	
Fifteenth	5	Animal treatment during transportation	Hygiene of the animal products	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Animal Physiology, Al-Hasani, Zia Hassan and Al-Hiti, Sadiq Muhammad Amin. (1990). Higher Education Press, University of Baghdad.
Main references (sources)	1- The Internet, the Internet
Recommended books and references (scientific journals, reports….	4- Veterinary Physiology (Mohy Al-Din, Khairallah and Yousef, Walid Hamad. (1987) Directorate of Dar Al-Kutub for Printing and Publishing - University of Mosul - Republic of Iraq. 5- Endocrine Physiology and Reproduction in Mammals and Birds "Mohieddin, Khair Al-Din and Youssef, Walid Hamid and Touhleh, Saad Hussein. (1990). Ministry of Higher Education and Scientific Research, House of Wisdom for Printing and Publishing, Mosul, Iraq. 6- The Internet
Electronic References, Websites	Iraqi academic scientific journals

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Course Description Form

1. Course Name:
Biochemistry

2. Course Code:
0011201
3. Semester / Year:
Semester
4. Description Preparation Date:
22- 1- 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)
Name: Adel abdulrahmman Email:

8. Course Objectives	
Course Objectives	**• he student will master the knowledge of the chemical structures of living components and their functions in an efficient manner** **Distinguishing between acids Amino and nucleard th e role of each** **Distinguish between types of fats, their composition an functions**

9. Teaching and Learning Strategies	
Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	**Carbohydrates**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Second	5	**Reactions of sugars with non-oxidative acids**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Third	5	**Mulch revealed**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Fourth	5	**Silvanov revealed**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Fifth	5	**Biel revealed**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Sixth	5	**Aldehyde group reactions**	**Biochemistry**	Explanation, model presentation and lecture	the exam
seventh	5	**Benedict revealed**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Eighth	5	**Parvoid detection**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Ninth	5	**Fahlank revealed**	**Biochemistry**	Explanation, model	the exam

				presentation and lecture	
Tenth	5	**Detection of polysaccharides**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Eleventh	5	**Iodine detection**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Twelveth	5	**Hydrolysis of starch with mineral acids**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Thirteenth	5	**Xanthoprotective interaction proteins**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Fourteenth	5	**Biuret detection**	**Biochemistry**	Explanation, model presentation and lecture	the exam
Fifteenth	5	**Carbohydrates**	**Biochemistry**	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	,Biochemistry Biochemistry (Basil Kamel Dalali) .University of Mosul, edited by the professor Dr .Tariq Younis Ahmed and Assistant Professor Dr Louay Abdel Ali Al-Hilali
Main references (sources)	
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	

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Course Description Form .....

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1. Course Name:
Genetics
2. Course Code:
0021201
3. Semester / Year:
Semester
4. Description Preparation Date:
22- 1- 2025
5. Available Attendance Forms:
Weekly

6. Number of Credit Hours (Total) / Number of Units (Total)	
30/3	
7. Course administrator's name (mention all, if more than one name)	
Name: Haitham rajab manhee Email: Haithamalkaisi85@tu.edu.iq	
8. Course Objectives	
Course Objectives	To familiarize the student with the history and development of genetics Introducing the student to the importance of genetics and its relationship to other sciences, focusing on the farm of animal production . Introduce the student to the basics of the transmission of traits across generations according to Mendelian inheritance Introduce the student to the extensions of genetics after Mendelian genetics Introduce the student to what is genetic material and its repetition Introduce the student to the basics of gene expression and how to regulate gene expression
9. Teaching and Learning Strategies	

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	A brief history of genetics and its development, the relationship of genetics with other sciences, definition of genetic terms	Genetics	Explanation, model presentation and lecture	the exam
Second	5	Mendel's experiments on monohybrid, dihybrid, Mendel's first law, Mendel's second law, inheritance of traits affected by one or two pairs of genes, definition of genetic terms	Genetics	Explanation, model presentation and lecture	the exam
Third	5	Dominance degrees, genetic interaction	Genetics	Explanation, model presentation and lecture	the exam
Fourth	5	Genetic hypothesis and good-matching test (chi-square) with Mendelian ratios	Genetics	Explanation, model presentation and lecture	the exam
Fifth	5	Study of sex chromosomes, sex-determining systems in organisms, sex-linked inheritance, sex-determining inheritance, sex-influenced inheritance	Genetics	Explanation, model presentation and lecture	the exam
Sixth	5	Genetic Crossing Over, Genetic	Genetics	Explanation, model	the exam

		Linkage, Determination of Link Strength through New Conjugates, Multiple Crossing, Chromosomal Mapping		presentation and lecture	
seventh	5	Inheritance of multiple alleles, inheritance of ABO blood groups, inheritance of M, N blood groups, inheritance of Rh groups in human blood	Genetics	Explanation, model presentation and lecture	the exam
Eighth	5	Nuclear genetics and factors affecting it	Genetics	Explanation, model presentation and lecture	the exam
Ninth	5	Study of hereditary animal diseases, chromosomal abnormalities and their comparison with the normal condition	Genetics	Explanation, model presentation and lecture	the exam
Tenth	5	The stages of making DNA, protein and genetic code	Genetics	Explanation, model presentation and lecture	the exam
Eleventh	5	Virus inheritance	Genetics	Explanation, model presentation and lecture	the exam
Twelveth	5	Genotypic frequency and frequency genotypes, Hardy-Weinberg rule and balanced population	Genetics	Explanation, model presentation and lecture	the exam
Thirteenth	5	Evolution of species, factors affecting the evolution of species	Genetics	Explanation, model presentation and lecture	the exam
Fourteen	5	Extinction, periods of	Genetics	Explanation,	the exam

th		widespread extinction of species in the history of the globe, causes of extinction in the modern era		model presentation and lecture	
Fifteenth	5	Preserving biological diversity, natural reserves, freezing and preserving sperm, preserving embryos, genetic engineering techniques	Genetics	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	. Abd al-Latif Faleh al-Baldawi, Abd al-Razzaq Abd al-Hamid al-Rawi and Haitham Jassam Muhammad al-Ani (1987) Inheritance, Dar al-Kutub for Printing and Publishing - Mosul
Main references (sources)	----------
Recommended books and references (scientific journals, reports….	The Internet, the Internet, the Internet Iraqi academic scientific journals
Electronic References, Websites	Iraqi academic scientific journals

Course Description Form

1. Course Name:
Design and analysis of experiments
2. Course Code:
0C11306
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)
Name: Haitham rajab manhee Email: Haithamalkaisi85@tu.edu.iq
8. Course Objectives

Course Objectives	Examines the design and analysis of experiments Recognize the importance of conducting experiments and descriptive and statistical analysis of agricultural experiments Researching the importance of knowing the appropriate design for each experiment according to the number of observations and the studied factors.
9. Teaching and Learning Strategies	

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Introduction to the concept of statistics and statistical symbols	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Second	5	Measures of central tendency and measures of dispersion with application	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Third	5	Probability and binomial expansion with application and hypothesis testing	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Fourth	5	Normal distribution - Z-test, T-test and Chi-square test	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Fifth	5	Simple Regression and Correlation - Concept and Types with Applied Examples - Expectancy Equation	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Sixth	5	Regression and Multiple Correlation - With Application Examples	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
seventh	5	Concepts in the design and analysis of agricultural experiments (design - experiment - experimental unit - experimental error - degrees of freedom - level of significance - analysis of variance - mathematical model)	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Eighth	5	Complete random	Design and analysis	Explanation,	the exam

		design (CRD) in the case of equal replicates - importance - characteristics - determinants - mathematical model - analysis of variance table - practical examples	of experiments	model presentation and lecture	
Ninth	5	Complete random design (CRD) in case of unequal replications - significance - mathematical model - analysis table Contrast - Practical Examples	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Tenth	5	The stages of making DNA, protein and genetic code	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Eleventh	5	Virus inheritance	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Twelveth	5	Genotypic frequency and frequency genotypes, Hardy-Weinberg rule and balanced population	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Thirteenth	5	Evolution of species, factors affecting the evolution of species	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Fourteenth	5	Extinction, periods of widespread extinction of species in the history of the globe, causes of extinction in the modern era	Design and analysis of experiments	Explanation, model presentation and lecture	the exam
Fifteenth	5	Preserving biological diversity, natural reserves, freezing and preserving sperm, preserving embryos,	Design and analysis of experiments	Explanation, model presentation and lecture	the exam

		genetic engineering techniques			

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Design and analysis of agricultural experiments. Department of Animal Production, College of Agriculture. University of Al Mosul . 340 pages. Written by Prof. Khasha Mahmoud Al-Rawi and Dr. Abdul-Aziz Muhammad Al-Khashab 1981
Recommended books and references (scientific journals, reports….	Iraqi academic scientific journals

Course Description Form

1. Course Name:
Feed and diet
2. Course Code:
0021303
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)

75/3

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

Name: Abdullah isam noaman Email: Abdullah.noaman@tu.edu.iq
Name: Falah hasan salih Email: Falahhasan1984@tu.edu.iq

8. Course Objectives

Course Objectives	□ It examines the type of food used in the formation of diets □ It includes how to design and create nutritional diets □ Preparing the feed □ -Mixing relationships □ - Estimation of food components in the feed to prepare the diets □ - Estimation of the type of diet and nutritional supplements used according to the physiological condition of the animal

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	To familiarize the student with the classification of feed	Feed and diet	Explanation, model presentation and lecture	the exam
Second	5	To familiarize the student with the specifications of feed	Feed and diet	Explanation, model presentation and	the exam

				lecture	
Third	5	That the student knows how to measure the nutritional value of feed	Feed and diet	Explanation, model presentation and lecture	the exam
Fourth	5	To familiarize the student with the biological value of feed	Feed and diet	Explanation, model presentation and lecture	the exam
Fifth	5	To familiarize the student with the nutritional energy of forage	Feed and diet	Explanation, model presentation and lecture	the exam
Sixth	5	To familiarize the student with how to calculate energy and protein in the diet	Feed and diet	Explanation, model presentation and lecture	the exam
seventh	5	To familiarize the student with how to calculate the starch coefficient	Feed and diet	Explanation, model presentation and lecture	the exam
Eighth	5	To familiarize the student with the Scandinavian unit	Feed and diet	Explanation, model presentation and lecture	the exam
Ninth	5	To familiarize the student with the physical parameters of forage	Feed and diet	Explanation, model presentation and lecture	the exam
Tenth	5	To familiarize the student with the needs ,of sustainability growth and production	Feed and diet	Explanation, model presentation and lecture	the exam
Eleventh	5		Feed and diet	Explanation, model presentation and lecture	the exam
Twelveth	5	To familiarize the student with the usefulness of inorganic elements in nutrition	Feed and diet	Explanation, model presentation and lecture	the exam
Thirteenth	5	To familiarize the student with the importance of the	Feed and diet	Explanation, model presentation and	the exam

		lesson and its benefits		lecture	
Fourteenth	5	To familiarize the student with vitamins and their importance in nutrition	Feed and diet	Explanation, model presentation and lecture	the exam
Fifteenth	5	To familiarize the student with non-protein nitrogen compounds	Feed and diet	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Food and Nutrition of Field Animals Edited by Ali Abdul Karim and Farouk Habib Gharib - University of Basra 1986
Main references (sources)	1- Animal , nutrition translated by d. Ahmed Al-Haj Taha , 19 69 - Ministry of Higher Education and Scientific Research University of Mosul 2- Animal feeding Translated by Dr. Saad Abdel Hussein - Naji, 1985 Institute of Technical Institutes 3- Sheep and goats production, written by Dr. Zuhair Fakhri - Al-Jalili and Jalal Elia Al-Qas , 1990 College of Agriculture University of Baghdad 4- Cows production written by Dr. Yassin Al-Masri and Tawfiq Al-Dalla , 1998 8, Faculty of Agriculture - Damascus University 5- The Internet, the Internet
Recommended books and references (scientific journals, reports….	Iraqi academic scientific journals
Electronic References, Websites	ANIMALS NUTRITION

Course Description Form

1. Course Name:
The economics of agricultural production
2. Course Code:

0011304
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
45/3
7. Course administrator's name (mention all, if more than one name)
Name: ysera baker tareq Email:
8. Course Objectives

Course Objectives	Identify - the concept of the economics of agricultural production - the objectives of the economics of agricultural production - the nature of productive resources. Identifying preliminary principles in the economics of agricultural production Identify and determine the optimum size From a resource to a production function with a single variable resource - product profit maximization Learn about maximizing profits By determining the optimal size of production- Short-term balance The demand curve for the variable production component.

	Identify the supplier-based production function - Curves both production (equal production curves).

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	3	Preliminary principles in the economics of agricultural production - general concepts (fixed and variable elements - short and long term) - the concept of economics of agricultural production - goals of the economics of agricultural production - the nature of the first production materials	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Second	3	The relations between resources and agricultural production - the productive function and the first principles of selection. The principle of diminishing returns and rational production - production functions - forms of production functions - no production functions -	The economics of agricultural production	Explanation, model presentation and lecture	the exam

		economic wisdom of production functions			
Third	3	Determining the optimum size of the production resource for a production function with one variable resource - maximizing the profits of the product - maximizing profits by determining the optimal size of the resources - maximizing profits by determining the optimal volume of production - short-run equilibrium - the demand curve for the variable production factor	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Fourth	3	Production function with suppliers curves both production (equal production curves), characteristics of curves both production, curve shapes both production, flexible resource replacement	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Fifth	3	Price relations and selection indicators, introduction, price ratios between resources, the relationship between the value of productivity and achieving maximum revenues, obstacles to achieving maximum revenues in agricultural production projects	The economics of agricultural production	Explanation, model presentation and lecture	the exam

Sixth	3	The best combination of factors of production, factor prices and equal-cost lines, maximization of result about a fixed cost, cost about a certain level of production, and substitution between the factors of production.	The economics of agricultural production	Explanation, model presentation and lecture	the exam
seventh	3	Optimal supplier combination and cost reduction, Introduction, If the minimum replacement rate is stable, in the case of the minimum replacement rate, the expansion path of production, the effect of replacement by expanding the use of resources	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Eighth	3	Distribution of resources between different production projects, introduction, diversity and specialization in agricultural production, the curve of production potential and choice between agricultural products, related goods, competing, additional goods or projects, integrated projects, methods of determining the combination of the bulk outputs of the	The economics of agricultural production	Explanation, model presentation and lecture	the exam

		profits created when resources are limited			
Ninth	3	Production costs, introduction, belief concept of production costs, the principle of alternative costs, visible and invisible costs, costs from a time point of View, production costs in the short and long term	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Tenth	3	Agricultural production cost functions, introduction, economic derivatives of agricultural production cost functions, the relationship between production and cost functions in agricultural projects, and cost functions in both traditional and modified production theories	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Eleventh	3	Cost functions and agricultural production unit, introduction, cost functions and maximum profits for agricultural projects, cost functions and lowest loss of agricultural production projects	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Twelveth	3	Introduction, proportional relations and size of agricultural projects, oligarchy relations and size of agricultural production project	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Thirteenth	3	Economies of scale, long-term output,	The economics of agricultural production	Explanation, model	the exam

		long-term cost curves, the relationship between short-term cost curves and long-term costs, the relationship between long-term and short-term marginal costs		presentation and lecture	
Fourteenth	3	Capacity returns, introduction, increased capacity returns, stable capacity returns, decreased capacity returns, variable ratios law, technical progress, and production functions	The economics of agricultural production	Explanation, model presentation and lecture	the exam
Fifteenth	3	Preliminary principles in the economics of agricultural production - general concepts (fixed and variable elements - short and long term) - the concept of economics of agricultural production - goals of the economics of agricultural production - the nature of the first production materials	The economics of agricultural production	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	product economics books
Main references (sources)	Internet
Recommended books and references (scientific journals, reports….	Development Plan Rapporteur Study 1. Providing modern books and references and adding new vocabulary appropriate to circumstances and events. 2. Delegating students, especially the first among them, to their scientific departments outside Iraq, especially in developed countries, to develop skills according to their desire and the specializations in the Department of Economics and Agricultural Extension. 3. Scientific cooperation with international universities through the development of teaching staff to see the development in the scientific field of competence for the course
Electronic References, Websites	----------

Course Description Form

1. Course Name:
Animal Diseases
2. Course Code:

0021304

3. Semester / Year:

Semester

4. Description Preparation Date:

22 - 1 - 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: abdulkhaliq Ahmed Farhan Email: dr.abdulkhalid45@tu.edu.iq
Name: Ashraf Kamil Azeez Email: ashraf.kamil@tu.edu.iq

8. Course Objectives

Course Objectives	Animal pathology investigates how to diagnose disease through initial clinical signs and develop preventive and curative measures for it It includes how the pathogen works It studies how the pathogen is transmitted - Learn how to perform sterilization in animal strabismus Identifying the types of food used in animal nutrition that are related to metabolic diseases.

9. Teaching and Learning Strategies

Strategy	

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First	5	To learn about the relationship of animal diseases with livestock	animal diseases	Explanation, model presentation and lecture	the exam
Second	5	To learn the classification of diseases	animal diseases	Explanation, model presentation and lecture	the exam
Third	5	The student learns about infectious and non-communicable diseases	animal diseases	Explanation, model presentation and lecture	the exam
Fourth	5	The student learns about bacteria, viruses, fungi and protozoa	animal diseases	Explanation, model presentation and lecture	the exam
Fifth	5	To teach the student about internal and external parasites	animal diseases	Explanation, model presentation and lecture	the exam
Sixth	5	To teach the student about the ways of the causes of infection	animal diseases	Explanation, model presentation and lecture	the exam
seventh	5	That the student learns the body's defenses against the mother is satisfied	animal diseases	Explanation, model presentation and lecture	the exam
Eighth	5	To teach the student about an overview of vaccines	animal diseases	Explanation, model presentation and lecture	the exam
Ninth	5	To teach the student a general overview of infectious diseases that are transmitted from animals to humans	animal diseases	Explanation, model presentation and lecture	the exam
Tenth	5	To teach the student about the most important bacterial infectious diseases,	animal diseases	Explanation, model presentation and lecture	the exam

		their symptoms and ways to prevent them			
Eleventh	5	The student learns about the most important viral infectious diseases, their symptoms, and ways to prevent them	animal diseases	Explanation, model presentation and lecture	the exam
Twelveth	5	To teach the student about the most important blood parasites and their symptoms	animal diseases	Explanation, model presentation and lecture	the exam
Thirteenth	5	The student learns about the most important infectious diseases caused by internal parasites and their symptoms	animal diseases	Explanation, model presentation and lecture	the exam
Fourteenth	5	To teach the student about the most important infectious diseases caused by external parasites and their symptoms	animal diseases	Explanation, model presentation and lecture	the exam
Fifteenth	5	That the student learn about the most important infectious diseases caused by bacteria and viruses and their symptoms in sheep	animal diseases	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	1- Animal diseases (1990). Higher Education Press, University of Baghdad.
Main references (sources)	2- The Internet
Recommended books and references (scientific journals, reports….	Animal Diseases, General Institution for Technical Education and Vocational Training (2006), Kingdom of Saudi Arabia.
Electronic References, Websites	The Internet

Course Description Form

1. Course Name:
Environment and behavior of animal
2. Course Code:
0011305
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)

30/3

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

Name: Ahmed Taies Taha Email: dr.att@tu.edu.iq

8. Course Objectives

Course Objectives	□ Introduce the student to the concept of the environment and its relationship to animals □ Study the departments of ecology and their definitions □ Define the components of an ecosystem □ Study of environmental factors and their impact on the animal and the administrative aspect of the fields □ The relationship of behavior and the environment to animal reproduction and productivity □ Study of animal behavior in various stages of its life □

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

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

First	2	Introduction to behavior, its definition and types Behavior and evolution migration behavior in animals	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Second	2	Animal behavior, environment and group formation.	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Third	2	Communication behavior between animals genetics and its impact on animal behavior	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Fourth	2	ruminant behavior	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Fifth	2	poultry behavior	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Sixth	2	Abnormal behavior of farm animals	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
seventh	2	grazing animals	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Eighth	2	A general introduction and a brief history of ecology and its divisions	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Ninth	2	Convection, radiation, conduction, evaporation and ecosystem components	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Tenth	2	Animal distribution laws	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Eleventh	2	Heat sources in the animal body and the	**Environment and behavior of animal**	Explanation, model	the exam

		factors affecting them (heat stress)		presentation and lecture	
Twelveth	2	Heat and humidity and their effect on the animal	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Thirteenth	2	Wind and light and their effect on animals	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Fourteenth	2	Housing design and environmental specifications	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam
Fifteenth	2	Ventilation systems in different animal houses	**Environment and behavior of animal**	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	1- Animal behavior lectures. Dr. Ahmed Abdel Alaw 2- Agricultural Animal Environment Akram Thanoun (1992) 3- Fundamentals of animal ecology d. Muhammad Al-Naama and Muhammad Maher (2011)
Main references (sources)	، 1- The environment of agricultural animal Akram Thanoun 2- Animal Behavior John Paul Scott Translated by: Abdel Hamid Khalil - Abdel Hafez Helmy Mohamed
Recommended books and references (scientific journals, reports….	Academic scientific journals
Electronic References, Websites	----------

Course Description Form

1. Course Name:
Animal breeding
2. Course Code:
0021305
3. Semester / Year:
Semester
4. Description Preparation Date:

22 - 1 - 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: samawal sadi abdullah Email: samawalsadi@tu.edu.iq
Name: Haitham rajab manhee Email: Haithamalkaisi85@tu.edu.iq

8. Course Objectives

Course Objectives	
	Teaching and training students on the genetic principles of animal breeding and improvement programs Teaching students on traditional methods and modern trends used in improving animals Teaching students how to use genetic engineering in breeding and improving animals

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Introduction to the breeding and improvement of agricultural animals and the formation of breeds - the objectives of agricultural animal breeders - a review of variance, quantitative	Animal breeding	Explanation, model presentation and lecture	the exam

		and qualitative traits and critical traits - internal and external breeding			
Second	5	Basic rules in animal husbandry - kinship coefficient, internal breeding coefficient and hybrid vigor - the concept of exclusion and replacement - genetic parameters	Animal breeding	Explanation, model presentation and lecture	the exam
Third	5	The inheritance of quantitative traits - the concept of multiplication and gradation - the concept of generation range	Animal breeding	Explanation, model presentation and lecture	the exam
Fourth	5	Average effect of gene and gene replacement	Animal breeding	Explanation, model presentation and lecture	the exam
Fifth	5	Estimation of genetic parameters (genetic equivalent - genetic and phenotypic correlation - frequency coefficient) - heterogeneity	Animal breeding	Explanation, model presentation and lecture	the exam
Sixth	5	Estimation of educational values (BV), best linear prediction (BLUP) values, and true productivity	Animal breeding	Explanation, model presentation and lecture	the exam
seventh	5	The concept and types of election - Election for more than one adjective - Electoral evidence	Animal breeding	Explanation, model presentation and lecture	the exam
Eighth	5	Factors that increase the efficiency of selection - the effect of herd variance and intensity of selection on the amount of	Animal breeding	Explanation, model presentation and lecture	the exam

		genetic yield			
Ninth	5	Correction for genetic factors	Animal breeding	Explanation, model presentation and lecture	the exam
Tenth	5	Genetic improvement in the presence of overlap between the environment and heredity	Animal breeding	Explanation, model presentation and lecture	the exam
Eleventh	5	General and private compatibility ability	Animal breeding	Explanation, model presentation and lecture	the exam
Twelveth	5	Uses of educational values in improvement plans - an applied aspect	Animal breeding	Explanation, model presentation and lecture	the exam
Thirteenth	5	Components of genetic improvement plans at the national level	Animal breeding	Explanation, model presentation and lecture	the exam
Fourteenth	5	Fixed and Random Mathematical Models - Practical Examples	Animal breeding	Explanation, model presentation and lecture	the exam
Fifteenth	5	Appropriate sample size in scientific research - terms	Animal breeding	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	. Breeding and improving animal Dr. Tawfiq Naguib Ghazal Animal breeding by Dr. Salah Jalal and Dr. Hassan Karam
Recommended books and references (scientific journals, reports….	Iraqi academic scientific journals

Course Description Form

1. Course Name:
Animal nutrtion
2. Course Code:
0011303
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)

30/3

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

Name: Abdullah isam noaman Email: Abdullah.noaman@tu.edu.iq
Name: Falah hasan salih Email: Falahhasan1984@tu.edu.iq

8. Course Objectives

Course Objectives	
	☐ Science investigates how to manage and feed ruminants from birth to the end of production ☐ Ruminant nutrition includes how to design and create diets ☐ Identify the types of foodstuffs used in feeding ruminants and calculate their needs according to type, age, and production status ☐ Learn how to choose feed in hot and cold climates and know the optimal temperatures for rearing and the lighting and ventilation systems used in raising milk and meat cows. ☐

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	The student gets to know the most important feed materials for ruminants	Animal nutrtion	Explanation, model presentation and lecture	the exam
Second	5	Digestive processes in ruminants and	Animal nutrtion	Explanation, model	the exam

		monogastric animals		presentation and lecture	
Third	5	The student will be familiar with carbohydrates, their classification, and their importance	Animal nutrtion	Explanation, model presentation and lecture	the exam
Fourth	5	The student gets to know proteins, their types, and their importance	Animal nutrtion	Explanation, model presentation and lecture	the exam
Fifth	5	The student gets to know the most important materials related to fats and oils	Animal nutrtion	Explanation, model presentation and lecture	the exam
Sixth	5	For the student to know how to calculate the energy and protein in the diet	Animal nutrtion	Explanation, model presentation and lecture	the exam
seventh	5	The student gets to know food energy and its divisions	Animal nutrtion	Explanation, model presentation and lecture	the exam
Eighth	5	The student will learn about the digestion of carbohydrates	Animal nutrtion	Explanation, model presentation and lecture	the exam
Ninth	5	The student will learn about protein digestion	Animal nutrtion	Explanation, model presentation and lecture	the exam
Tenth	5	The student will learn about the digestion of fats	Animal nutrtion	Explanation, model presentation and lecture	the exam
Eleventh	5	For the student to get to know Types of diets and modern and ancient protein	Animal nutrtion	Explanation, model presentation and lecture	the exam

		systems			
Twelveth	5	The student will be familiar with the methods used to estimate digestibility	Animal nutrtion	Explanation, model presentation and lecture	the exam
Thirteenth	5	The student gets to know antibiotics and enzymes	Animal nutrtion	Explanation, model presentation and lecture	the exam
Fourteenth	5	The student gets to know the needs of sustainability and production	Animal nutrtion	Explanation, model presentation and lecture	the exam
Fifteenth	5	For the student to become familiar with the formation of scientific relationships to meet the needs of sustainability and production	Animal nutrtion	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	1- Animal Nutrition, Translated By Dr. Ahmed Al-Haj Taha Saleh, Dr. Atallah 2- Saeed, And Dr. Muhammad Ramzbi Energy 2- Animal Nutrition Mcdonald, Edwards, Greenhaigh 1981,2002 3 - International Information Network, The Internet
Main references (sources)	Iraqi academic scientific journals
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	Animal Nutrition

Course Description Form

1. Course Name:
Hatching and hatchery management

2. Course Code:
0011302
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
30/3
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Khalid Ahmed Email: AHMEDKHALID76700@tu.edu.iq Name: Sohaib Mahmood abd Email: sohaibmahmood1983@tu.ed u.iq
8. Course Objectives

Course Objectives	• The science of hatching and poultry production studies how to mana starting from the moment of collecting hatching eggs until hatching □ □ It includes how to design and create poultry halls □ Transfer the eggs from the hall to the hatchery and manage them □ Learn how to sterilize eggs and hatchers □ Identifying the types of food used in feeding poultry and calcul according to the type age, and production status □

	Learn how to manage the hatchery in hot and cold weather, and know th and humidity

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	History and development of natural and artificial hatching	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Second	5	Male reproductive system, male sexual maturity, fertility	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Third	5	Sexual maturity, ovulation and cutting of eggs, installation of eggs	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Fourth	5	Treatment of eggs before hatching (collection, selection, storage, heating eggs)	Hatching and hatchery management	Explanation, model presentation and lecture	the exam

Fifth	5	Fetal growth inside and outside the mother's body and its development	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Sixth	5	Anomalies of the fetus and their genetic and environmental causes	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
seventh	5	Vital stages during the	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Eighth	5	Test(1)	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Ninth	5	Building design and hatchery management	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Tenth	5	Scientific management of hatcheries and biosecurity	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Eleventh	5	Caring for the flock of mothers and sources of hatching eggs	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Twelveth	5	Nutrition, genetics and its relationship to hatching	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Thirteenth	5	Determining and dividing the quality of the hatched chicks and feeding them after hatching	Hatching and hatchery management	Explanation, model presentation and lecture	the exam
Fourteenth	5	Economic feasibility of hatcher	Hatching and hatchery management	Explanation, model presentation and lecture	the exam

Fifteenth	5	Test (20)	Hatching and hatchery management	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Hatching and management of hatcheries of the Ministry of Higher Education and Scientific Research - University of Baghdad The International Information Network, the Internet
Main references (sources)	Hatching and management of hatcheries of the Ministry of Higher Education and Scientific Research - University of Baghdad The International Information Network, the Internet
Recommended books and references (scientific journals, reports….	guest Lectures from other country or University, internship , field studies, Iraqi academic scientific journals
Electronic References, Websites	----------

Course Description Form

1. Course Name:
Poultry Products Technology
2. Course Code:
0021302
3. Semester / Year:
Semester
4. Description Preparation Date:

22 - 1 - 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: Maad Abdulkareem Albaddy Email: maadalbaddy@tu.edu.iq
Name: Mokhalad Oraibi Hasan Email: mokhalad082@tu.edu.iq

8. Course Objectives

Course Objectives	
	Poultry product technology studies everything related to the nutritional value of eggs and the chemical composition of poultry meat. It includes knowledge of the female reproductive system in poultry. The nutritional value of eggs - The chemical composition of the white of the egg parts Chemical composition of poultry meat Types of slaughterhouses and study of the by-products of poultry slaughterhouses.

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

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

First	5	egg production	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Second	5	The nutritional value of eggs	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Third	5	Egg qualitative measurements	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Fourth	5	The chemistry of eggs and their products	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Fifth	5	Egg microbiology	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Sixth	5	Egg storage and marketing	Poultry Products Technology	Explanation, model presentation and lecture	the exam
seventh	5	Poultry meat production	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Eighth	5	Chemical and nutritional properties of poultry meat	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Ninth	5	Processes of preparing poultry meat for consumption	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Tenth	5	Poultry meat quality and preservation methods	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Eleventh	5	Poultry meat storage	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Twelveth	5	Microbiology of poultry meat	Poultry Products Technology	Explanation, model	the exam

				presentation and lecture	
Thirteenth	5	The flavor and tenderness of poultry meat	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Fourteenth	5	Recognize the types of massacres	Poultry Products Technology	Explanation, model presentation and lecture	the exam
Fifteenth	5	Learn about table egg production projects	Poultry Products Technology	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	1- Poultry production by Dr. Suhaib Abdul Razzaq, 1985, Ministry of Higher Education and Scientific Research - University of Baghdad 2- Management of Broilers by Dr. Saad Abdul-Hussein Naji, 2006 College of Agriculture / University of Baghdad - Technical Bulletin of the Poultry Science Society 3- Poultry Products Technology 1986 Dr. Hamdi Abdel Aziz Al Fayyad and Saad Abdel Hussein Naji
Main references (sources)	1- Poultry production by Dr. Suhaib Abdul Razzaq, 1985, Ministry of Higher Education and Scientific Research - University of Baghdad 2- Management of Broilers by Dr. Saad Abdul-Hussein Naji, 2006 College of Agriculture / University of Baghdad - Technical Bulletin of the Poultry Science Society
Recommended books and references (scientific journals, reports….	Iraqi academic scientific journals
Electronic References, Websites	The Internet

Course Description Form

1. Course Name:
Reproductive physiology of farm animals
2. Course Code:

0021306

3. Semester / Year:

Semester

4. Description Preparation Date:

22 - 1 - 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: Aslam Saud Alwan Email: aslam.alwan@tu.edu.iq
Name: Ashraf Kamil Azeez Email: ashraf.kamil@tu.edu.iq

8. Course Objectives

Course Objectives	
	Introducing the field practice student to the use of methods of standardizing estrus for sheep and cows, as well as artificial insemination techniques. The student's knowledge of the use of synthetic hormones and their impact on achieving the highest rates of animal reproductive performance. Training students on how to make practical decisions in determining animal needs in a way that ensures proper production.

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Introducing the student to the male reproductive system	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Second	5	Introducing the student to the female reproductive system	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Third	5	Introduce students to reproductive hormones	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Fourth	5	Introducing the student to the stage of puberty about sexual animals	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Fifth	5	To know the stage of sexual maturity of animals	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Sixth	5	Identify the relationship of the breeding season during the year and its relationship to production	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
seventh	5	Introducing the student to the stages of sperm development in the testicle	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Eighth	5	Introducing the student to the growth of follicles and eggs in the ovaries	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Ninth	5	Introduce the student to the stages of the estrus cycle.	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Tenth	5	Introducing the student to the union of gametes in the fertilization process	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Eleventh	5	Introducing the student	Reproductive	Explanation,	the exam

		to the stages of pregnancy	physiology of farm animals	model presentation and lecture	
Twelveth	5	To get to know the student	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Thirteenth	5	The stage of pregnancy and beyond the inversion of the uterus after childbirth	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Fourteenth	5	Introduce the student to some diseases that affect reproductive performance	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam
Fifteenth	5	Introducing the student to the most important modern agricultural techniques	Reproductive physiology of farm animals	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	عدم وجود مصادر في الوصف المقرر يجب الاتصال باستاذ المادة لملئ الجدول .
Main references (sources)	
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	

Course Description Form

1. Course Name:
Animal Physiology
2. Course Code:
0011301
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)

75/3

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

Name: abdulkhaliq Ahmed Farhan Email: dr.abdulkhalid45@tu.edu.iq
Name: Ashraf Kamil Azeez Email: ashraf.kamil@tu.edu.iq

8. Course Objectives

Course Objectives	
	Animal physiology investigates how and studies the body's systems, starting from the cell, up to the various body systems, according to their complexity It includes how to conduct blood tests Blood transfusion, preservation, and examinations Learn how tissues work outside the body and know their electrical activity Identify the types of food entering the digestive system and how to maintain internal stability Recognize how the different organs of the body work by studying their details

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First	5	To learn about cell physiology and structure	animal physiology	Explanation, model presentation and lecture	the exam
Second	5	To learn the	animal physiology	Explanation,	the exam

		physiology and structure of the digestive system		model presentation and lecture	
Third	5	To teach the student how enzymes are attached to the digestive system	animal physiology	Explanation, model presentation and lecture	the exam
Fourth	5	The student learns about blood and body fluids	animal physiology	Explanation, model presentation and lecture	the exam
Fifth	5	The student learns about the rotation device and its installation	animal physiology	Explanation, model presentation and lecture	the exam
Sixth	5	To learn the student on the urinary system and its structure	animal physiology	Explanation, model presentation and lecture	the exam
seventh	5	The student learns muscle physiology	animal physiology	Explanation, model presentation and lecture	the exam
Eighth	5	The student learns about the central nervous system	animal physiology	Explanation, model presentation and lecture	the exam
Ninth	5	The student learns about the autonomic nervous system	animal physiology	Explanation, model presentation and lecture	the exam
Tenth	5	To learn about the respiratory system	animal physiology	Explanation, model presentation and lecture	the exam
Eleventh	5	The student learns about the tissues of the body and its types	animal physiology	Explanation, model presentation and lecture	the exam
Twelveth	5	The student learns about metabolism and energy release	animal physiology	Explanation, model presentation and lecture	the exam
Thirteenth	5	The student learns about the lymphatic system and its	animal physiology	Explanation, model presentation	the exam

		functions		and lecture	
Fourteenth	5	To teach the student about the endocrine glands and the way hormones work	animal physiology	Explanation, model presentation and lecture	the exam
Fifteenth	5	The student learns about the hormones of the pituitary gland and other glands	animal physiology	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Animal Physiology, Al-Hasani, Zia Hassan and Al-Hiti, Sadiq Muhammad Amin. (1990). Higher Education Press, University of Baghdad.
Main references (sources)	1- The Internet, the Internet
Recommended books and references (scientific journals, reports….	7- Veterinary Physiology (Mohy Al-Din, Khairallah and Yousef, Walid Hamad. (1987) Directorate of Dar Al-Kutub for Printing and Publishing - University of Mosul - Republic of Iraq. 8- Endocrine Physiology and Reproduction in Mammals and Birds "Mohieddin, Khair Al-Din and Youssef, Walid Hamid and Touhleh, Saad Hussein. (1990). Ministry of Higher Education and Scientific Research, House of Wisdom for Printing and Publishing, Mosul, Iraq. 9- The Internet
Electronic References, Websites	Iraqi academic scientific journals

Course Description Form

1. Course Name:
Poultry Physiology
2. Course Code:

0021301

3. Semester / Year:

Semester

4. Description Preparation Date:

22 - 1 - 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: Ahmed Taies Taha Email: dr.att@tu.edu.iq

Name: Samah Maiser Raouf Email: samahmaiser@tu.edu.iq

8. Course Objectives

Course Objectives	
	It studies physiology and ways to benefit from it in order to reach the best production It includes the anatomy of the vital organs in the bird's body Determining the functions of organs and their vital importance - Learn how to diagnose and identify the bird's body parts and vital functions Learn how to collect blood from different bird species Learn the methods of semen collection and artificial insemination in domestic birds

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	General description of organ physiology	Poultry Physiology	Explanation, model presentation and lecture	the exam
Second	5	animal cell structure	Poultry Physiology	Explanation, model presentation and lecture	the exam
Third	5	blood and body fluids	Poultry Physiology	Explanation, model presentation and lecture	the exam
Fourth	5	Heart and circulatory system	Poultry Physiology	Explanation, model presentation and lecture	the exam
Fifth	5	Reproductive systems	Poultry Physiology	Explanation, model presentation and lecture	the exam
Sixth	5	Breeding in poultry	Poultry Physiology	Explanation, model presentation and lecture	the exam
seventh	5	Urinary system	Poultry Physiology	Explanation, model presentation and lecture	the exam
Eighth	5	Digestive system	Poultry Physiology	Explanation, model presentation and lecture	the exam
Ninth	5	Respiratory system	Poultry Physiology	Explanation, model presentation and lecture	the exam

Tenth	5	Nervous system	Poultry Physiology	Explanation, model presentation and lecture	the exam
Eleventh	5	Endocrine	Poultry Physiology	Explanation, model presentation and lecture	the exam
Twelveth	5	Lymphatic and immune system	Poultry Physiology	Explanation, model presentation and lecture	the exam
Thirteenth	5	thermoregulatory system	Poultry Physiology	Explanation, model presentation and lecture	the exam
Fourteenth	5	Hatching physiology and embryonic respiration	Poultry Physiology	Explanation, model presentation and lecture	the exam
Fifteenth	5	Stresses and their impact on the relative stability of the internal environment	Poultry Physiology	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	1- Avian Hematology. Al-Daraji,Hazim j (2008) Ministry of Higher Education and Scientific Research,Univ Of Baghdad,college of Agriculture. 2- Sturkie's Avian Physiology2015 ،Colin G. Scanes Academic Press is an imprint of Elsevier
Main references (sources)	،2015 Colin G. Sturkie's Avian Physiology Scanes Academic Press is an imprint of Elsevier Avian Physiology .4 thd edn, 1986. Sturkie .P.D. Springer Verlag .New York.
Recommended books and references (scientific journals, reports….	Poultry Science journal British Poultry Science journal ROSS COM. GUIADE
Electronic References, Websites	poultry Science Avian hematology and cytology

Course Description Form

1. Course Name:
computer
2. Course Code:
U021037

3. Semester / Year:
Second Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Mandatory
6. Number of Credit Hours (Total) / Number of Units (Total)
35 / 1.5
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed attallah dawood Email: Ahmedaldoury@tu.edu.iq
8. Course Objectives

Course Objectives	•. The student's understanding of the material. 2. The ability to analyze and apply what you have learned practically on a Computer. 3. Presenting the material to the students in the computer laboratory and then applying it. 4. Direct questions and answers about previous material and brainstorming. 5. Showing educational films specific to the subject to consolidate the ability to learn. • •
9. Teaching and Learning Strategies	
Strategy	. The method of explaining the material theoretically is by displaying the material on the smart screen in the form of diagrams and pictures,

	as well as displaying videos, to attract the student's attention and help him not feel bored. . The practical method is to apply what the student has learned on the computer and conduct quizzes and monthly exams. . Urging students to use the Internet, work as a team, and visit the library by asking them to prepare scientific reports on the topics given to them within the course.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Chapter One: Operating Ex 2010, file and the main window	Excel 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
2	3	Main Windov	Excel 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
3	3	Create Table	Excel 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
4	3	Create Series	Excel 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination

5	3	Create Funct	Excel 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
6	3	Save Docume	Excel 2010	Theoretical + Practical	Attendees, Quizzes, and Monthly examination
7	3	1st-month examination	Excel 2010	Theoretical + Practical	Attendees, Quizzes, and Monthly examination
8	3	Printing Settings	Excel 2010	Theoretical + Practical	Attendees, Quizzes, and Monthly examination
9	3	Data Management	Excel 2010	Theoretical + Practical	Attendees, Quizzes, and Monthly examination
10	3	Objects Management	Excel 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination

11	3		Introduction and U Interface PowerPoint	PowerPoint 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
12	3		Preparing Sli and Cust Animation	PowerPoint 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
13	3		Document s modules prepare mu project slides	PowerPoint 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
14	3		Interactive Show prepare ph album	PowerPoint 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination
15	3		2nd-month examination	PowerPoint 2010	Theoretical + Practical	Attendees, Quiz, and Monthly examination

11. Course evaluation
- The score for the second exam is (15) points. - The degree of daily attendance and participation is (5) degrees. - Report score (5) degrees. - The final grade of the course is (40) marks.

12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	
Main references (sources)	
Recommended books and references (scientific journals, reports….	- Explanation of the PowerPoint 2010 program, the book is in Arabic, a complete explanation of the program in the English interface, with a practical exercise on creating presentations. Written by: Eng/ Muhammad Abu Al-Ala - http://download-internet-pdf-ebooks.com/12082-
Electronic References, Websites	https://www.dcc.vccs.edu/TLTR/Blackboard9 http://www.stanford.edu/services/network/

Course Description Form

1. Course Name:
poultry management
2. Course Code:
0011405
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)
Name: Tareq Khalaf Hasan Email: tariq.aljomaily@tu.edu.iq Name: Mokhalad Oraibi Hasan Email: mokhalad082@tu.edu.iq
8. Course Objectives

Course Objectives	• Poultry management and production studies how to manage chicks from the moment of hatching to the end of production. ..... • It includes how to design and create poultry halls • Transferring chicks from the hatchery to the hall and managing them • Learn how to sterilize the production halls • Identifying the types of food used in feeding poultry and calculating its needs according to type, age and production status • Learn how to manage chicks and laying hens in hot and cold climates and know the optimum temperatures for breeding and lighting and ventilation systems

9. Teaching and Learning Strategies

Strategy	1- Explanation and clarification 2- The method of the lecture 3- Student groups 4- Practical lessons in agricultural fields 5- Scientific trips to follow up on poultry feeding projects in Iraq

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	To familiarize the student with the concept of poultry project management	poultry management	Explanation, model presentation and lecture	the exam
Second	5	To familiarize the student with the requirements for establishing poultry houses	poultry management	Explanation, model presentation and lecture	the exam
Third	5	To familiarize the student with the environmental factors affecting poultry farming and production	poultry management	Explanation, model presentation and lecture	the exam
Fourth	5	The student knows how to prepare the hall to receive the chicks	poultry management	Explanation, model presentation and lecture	the exam
Fifth	5	To familiarize the student with the requirements and furniture of poultry halls	poultry management	Explanation, model presentation and lecture	the exam
Sixth	5	To familiarize the student with the components of natural and artificial hatching	poultry management	Explanation, model presentation and lecture	the exam
seventh	5	To familiarize the student with how to calculate the productive performance of broilers	poultry management	Explanation, model presentation and lecture	the exam

Eighth	5	That the student knows the management and breeding of broiler camels	poultry management	Explanation, model presentation and lecture	the exam
Ninth	5	To familiarize the student with the management and care of laying hens	poultry management	Explanation, model presentation and lecture	the exam
Tenth	5	To familiarize the student with how to manage laying hens during the productive period	poultry management	Explanation, model presentation and lecture	the exam
Eleventh	5	To familiarize the student with the management of mothers of meat and eggs	poultry management	Explanation, model presentation and lecture	the exam
Twelveth	5	To familiarize the student with the concept of lashing, its types, and the elements for its success	poultry management	Explanation, model presentation and lecture	the exam
Thirteenth	5	To familiarize the student with the health management of poultry birds	poultry management	Explanation, model presentation and lecture	the exam
Fourteenth	5	To familiarize the student with the biological and preventive security of poultry projects	poultry management	Explanation, model presentation and lecture	the exam
Fifteenth	5	To familiarize the student with the management of nutrition and the health of the digestive system of birds	poultry management	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	1- Poultry production by Dr. Suhaib Abdul Razzaq, 1985, Ministry of Higher Education and Scientific Research - University of Baghdad 2- Management of Broilers by Dr. Saad Abdul-Hussein Naji, 2006 College of Agriculture / University of Baghdad - Technical Bulletin of the Poultry Science Society 3- Management of laying hens, authored by Dr. Saad Abdul-Hussein Naji, 2007 College of Agriculture - University of Baghdad - Technical Bulletin of the Poultry Science Society 4- Management of Broiler Mothers Written by Dr. Saad Abdul-Hussein Naji, 2008 College of Agriculture - University of Baghdad - Technical Bulletin of the Poultry Science Society 5 - Ahmed, Iyad Shehab and others. 2021. Management and production of poultry. University of Kufa
Main references (sources)	1- Poultry production by Dr. Suhaib Abdul Razzaq, 1985, Ministry of Higher Education and Scientific Research - University of Baghdad 2- Al-Zajji, Reda Jawad and Ismail Khalil Ibrahim 1981. Hatching and hatchery management. First edition, University of Baghdad. 3- Al-Yassin, Ali Abdul-Khaleq and Muhammad Hassan Abdul-Abbas. 2010. Poultry Feeding, University of Baghdad 4- Management of Broilers by Dr. Saad Abdul-Hussein Naji, 2006 College of Agriculture / University of Baghdad - Technical Bulletin of the Poultry Science Society 5- Management of laying hens, authored by Dr. Saad Abdul-Hussein Naji, 2007 College of Agriculture - University of Baghdad - Technical Bulletin of the Poultry Science Society

	6- Management of Broiler Mothers by Dr. Saad Abdul-Hussein Naji, 2008 College of Agriculture - University of Baghdad - Technical Bulletin of the Poultry Science Society 7- Guide to Biosecurity in Poultry Breeding in the Middle East and North Africa
Recommended books and references (scientific journals, reports….	Iraqi academic scientific journals The sources are Naji, Saad Abdel Hussein, Hanna, Aziz Kabru. 1999 . Broiler Breeding Guide, Arab Food Organization Broiler Breeding Guide, Hyalin Company, https://www.hyline.com/userdocs/pages/BRN_COM_ARB.pdf Broiler Breeding Guide, Aviagen Inc., http://en.aviagen.com/brands/ross/products/ros Le Mans Guide to Layering Broilers, http://www.ltz.de/en/downloads/management
Electronic References, Websites	1- Sending students, especially the first ones, to their scientific departments outside Iraq, especially in developed countries, to develop skills, each according to his desire and according to the specializations in the scientific department 2- Cooperation between Iraqi universities and international universities by sending teachers to international universities. 3- Developing the idea of the visiting professor to provide the young universities with expertise and the latest scientific findings in the agricultural fields. 4- Cooperation between Iraqi universities and private universities through discussing postgraduate students. 5- The interaction of the university and college with the community through the departments of agriculture and veterinary and identifying problems and finding solutions to them.

Course Description Form

1. Course Name:
Avian disease
2. Course Code:
0021401
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)
Name: Akeel Abd Al Mjbel Email: Akeelabd78@tu.edu.iq Name: Muna Khalid khudhair Email: mona_2017@tu.edu.iq
8. Course Objectives

Course Objectives	**The student will be familiar with the concept of poultry diseases and the most important accompanying anatomical signs.**
9. Teaching and Learning Strategies	
Strategy	1-Explanation and clarification. 2- Lecture method. 3- Practical lessons in the field. 4- Scientific trips to follow up on animal production projects
10. Course Structure	

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

First	5	The student rns the nature of illness and sical balance.	Avian disease	Explanation, model presentation and lecture	the exam
Second	5	e student will learn the assification of diseases.	Avian disease	Explanation, model presentation and lecture	the exam
Third	5	The student gets to know the types of pathogens (bacteria and viruses).	Avian disease	Explanation, model presentation and lecture	the exam
Fourth	5	The student will be familiar with the types of pathogens (mycoplasma, clostridial, and protozoa).	Avian disease	Explanation, model presentation and lecture	the exam
Fifth	5	The student gets to know the immune system of poultry.	Avian disease	Explanation, model presentation and lecture	the exam
Sixth	5	The student gets to know the ways and causes of infection transmission.	Avian disease	Explanation, model presentation and lecture	the exam
seventh	5	The student gets to know a general overview of how vaccines work.	Avian disease	Explanation, model presentation and lecture	the exam
Eighth	5	The student gets to know the most important infectious diseases caused by viruses, their symptoms in	Avian disease	Explanation, model presentation and lecture	the exam

		poultry, and methods of prevention.			
Ninth	5	The student will be familiar with the most important bacterial infectious diseases, their symptoms, and methods of preventing them	Avian disease	Explanation, model presentation and lecture	the exam
Tenth	5	The student will be familiar with the most important mycoplasma diseases, their symptoms, and ways to prevent them.	Avian disease	Explanation, model presentation and lecture	the exam
Eleventh	5	The student will be familiar with the most important clostridial diseases, symptoms and methods of prevention	Avian disease	Explanation, model presentation and lecture	the exam
Twelveth	5	The student gets to know the most important infectious diseases caused by internal parasites and their symptoms.	Avian disease	Explanation, model presentation and lecture	the exam
Thirteenth	5	The student gets to know the most important diseases caused by external parasites and their symptoms.	Avian disease	Explanation, model presentation and lecture	the exam
Fourteen	5	The student will	Avian disease	Explanation,	the exam

th		learn to choose the appropriate vaccination program.		model presentation and lecture	
Fifteenth	5	The student will be familiar with preventive security procedures in the fields.	Avian disease	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	AL Shikly Ammar 1990.Avian Disease. Mosul University. Ministry of Higher Education and scientific Resarch1990.
Main references (sources)	Poultry and Avian Diseases.2014. A.J. Chaves Hernández
Recommended books and references (scientific journals, reports….	Andreasen C.B. Staphylococcosis. In: Swayne D.E., editor. *Diseases of Poultry.* John Wiley and Sons, Inc; Iowa, IA: 2013.
Electronic References, Websites	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7152037/

Course Description Form .....

1. Course Name:
Production of sheep and goats
2. Course Code:
0011403
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)

75/3

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

Name: Afraah Mustafa Mohammad Email: afrah_mustafa@tu.edu.iq
Name: Ashraf Kamil Azeez Email: ashraf.kamil@tu.edu.iq

8. Course Objectives

Course Objectives	• Research The production of sheep and goats and the importance of sheep and goats and their classification □□ Methods of breeding, breeding, and feeding □□□ Meat production patterns □□ Production of milk, wool, and hair □□ Some field operations for sheep and goats

9. Teaching and Learning Strategies

Strategy	1- Explanation and clarification 2- The method of the lecture 3- Student groups 4- Practical lessons in the field 5- The self-learning method

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	The student should know the importance of sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Second	5	The student should	Production of sheep	Explanation,	the exam

		get acquainted with the types and varieties of sheep and goats in the Arab and international world	and goats	model presentation and lecture	
Third	5	The student should be acquainted with the methods of raising sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Fourth	5	The student should get acquainted with the nutrition of sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Fifth	5	The student should recognize reproduction in sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Sixth	5	The student should get acquainted with the improvement of sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
seventh	5	The student should get acquainted with the production of milk in sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Eighth	5	The student should be acquainted with the production of wool in sheep	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Ninth	5	The student should get acquainted with the production of hair in goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Tenth	5	The student should be introduced to the secondary products	Production of sheep and goats	Explanation, model presentation and lecture	the exam

		of sheep and goats			
Eleventh	5	The student should get to know Construction of barns and dwellings for sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Twelveth	5	The student should be acquainted with the field operations of sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Thirteenth	5	The student should be acquainted with modern techniques for the production of sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Fourteenth	5	The student should be acquainted with grazing in the production of sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam
Fifteenth	5	The student should be acquainted with the intensive production of sheep and goats	Production of sheep and goats	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Basics of sheep and goat production and breeding Dr. Jalal Elia AlQos. Dr. Zuhair Fakhri Al-Jalili Dr. Daib Ishaq Aziz
Main references (sources)	1- Production of sheep and goats Dr. Zuhair Fakhri Al-Jalili. Dr. Jalal Elia AlQos. 2 - Production of sheep and wool Dr. Najib Tawfiq Ghazal Dr. Muzaffar Nafi Al-Sayegh
Recommended books and references (scientific journals, reports….	Iraqi Academic Scientific Journals
Electronic References, Websites	Animal Science Journal

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Course Description Form

1. Course Name:
Meat production
2. Course Code:
0011404
3. Semester / Year:

Semester

4. Description Preparation Date:

22 - 1 - 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: Mahfoodh Khaleel Abdullah Email: mafo@tu.edu.iq
Name: Maysaloon Wail Ibraheem Email: maysaloon2019@tu.edu.iq

8. Course Objectives

Course Objectives	• The student takes an idea about the reality of red meat production and consumption and learns how to capitalize on the production efficiency of meat animals as well as the composition of recipes for meat carcass □ . also be aware of the rate of filtration and factors that affect it, and study the growth and development of the meat animals and knowing about slaughters, slaughter, study the animal transportation and animal marketing

9. Teaching and Learning Strategies

Strategy	1- Explanation and clarification 2- The method of the lecture 3- Student groups 4- Practical lessons in agricultural fields 5- Scientific trips to follow up on poultry feeding projects in Iraq

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Resource of red meat	Meat production	Explanation, model presentation and lecture	the exam
Second	5	Economic Importance of red meat	Meat production	Explanation, model presentation and lecture	the exam
Third	5	Introduction of meat in Iraq and Arab homeland	Meat production	Explanation, model presentation and lecture	the exam
Fourth	5	Meanings of meat production	Meat production	Explanation, model presentation and lecture	the exam
Fifth	5	Biological axis of meat and how to express it	Meat production	Explanation, model presentation and lecture	the exam
Sixth	5	Styles of Red meat production and factors effect it	Meat production	Explanation, model presentation and lecture	the exam
seventh	5	Growth and development of meat animal	Meat production	Explanation, model presentation and lecture	the exam
Eighth	5	Factors affecting on growth and development	Meat production	Explanation, model presentation and lecture	the exam
Ninth	5	Exam	Meat production	Explanation, model presentation and lecture	the exam
Tenth	5	Efficiency of meat production	Meat production	Explanation, model presentation and lecture	the exam
Eleventh	5	Optimal investment for	Meat production	Explanation, model	the exam

		meat production efficiency		presentation and lecture	
Twelveth	5	Carcass composition, dressing percentage factors affecting	Meat production	Explanation, model presentation and lecture	the exam
Thirteenth	5	Carcass and animal transporting and marketing	Meat production	Explanation, model presentation and lecture	the exam
Fourteenth	5	Marketing	Meat production	Explanation, model presentation and lecture	the exam
Fifteenth	5	exam	Meat production	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Main : Abdulkareem; Fouad Abdullatif. meat production. Book
Main references (sources)	Tahir; Muharib Abdulhameed .(1983). Priciples of meat science.
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	

Course Description Form

1. Course Name:
dairy cattle production
2. Course Code:
0021403
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:

Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)
Name: Emad Ghaib Abdelrahman Email: Dr.emadghaib@tu.edu.iq Name: Falah hasan salih Email: Falahhasan1984@tu.edu.iq
8. Course Objectives

Course Objectives	□□ The student gets to know the concept of dairy cattle production □ He learns to classify cows on the basis of breed and purpose n production □ □□ That the student keeps pace with the management of milk cows in the modern era and the difference in management programs between the past and the present □ The student should know the requirements for producing dairy cattle □□ The student learns how to set up barns for cows according to the appropriate geographical area for breeding, such as temperature, humidity, lighting and ventilation

9. Teaching and Learning Strategies	
Strategy	1- Explanation and clarification 2- The method of the lecture 3- Student groups 4- Practical lessons in agricultural fields 5- Scientific trips to follow up on poultry feeding projects in Iraq

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First	5	Required learning outcomes	dairy cattle production	Explanation, model presentation and lecture	the exam
Second	5	The economic importance of dairy cattle	dairy cattle production	Explanation, model presentation and lecture	the exam
Third	5	Methods of studying and feeding livestock	dairy cattle production	Explanation, model presentation and lecture	the exam
Fourth	5	Feeding baby calves	dairy cattle production	Explanation, model presentation and lecture	the exam
Fifth	5	Breastfeeding methods	dairy cattle production	Explanation, model presentation and lecture	the exam
Sixth	5	Breeding growing wheels	dairy cattle production	Explanation, model presentation and lecture	the exam
seventh	5	Milk production and manufacture of its components	dairy cattle production	Explanation, model presentation and lecture	the exam
Eighth	5	Physiology and installation of the udder	dairy cattle production	Explanation, model presentation and lecture	the exam
Ninth	5	Hormones affecting the growth and development of the udder	dairy cattle production	Explanation, model presentation and lecture	the exam
Tenth	5	Milk production, management and sterilization of milk	dairy cattle production	Explanation, model presentation and lecture	the exam

		production			
Eleventh	5	Factors affecting the production of fat in milk	dairy cattle production	Explanation, model presentation and lecture	the exam
Twelveth	5	Factors affecting milk production	dairy cattle production	Explanation, model presentation and lecture	the exam
Thirteenth	5	Fetal development and maturation in dairy cattle	dairy cattle production	Explanation, model presentation and lecture	the exam
Fourteenth	5	Factors affecting fertility in cows and bulls	dairy cattle production	Explanation, model presentation and lecture	the exam
Fifteenth	5	Breeding and caring for buffaloes and fertility index	dairy cattle production	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Dairy cattle production. Department of Livestock, College of Agriculture. Baghdad University . 340 pages. Written by Prof. Dr. Natiq Hamid Al-Qudsi and Gil Victor Elia
Main references (sources)	Iraqi academic scientific journals
Recommended books and references (scientific journals, reports….	Dairy Sci. J.
Electronic References, Websites	--------

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Course Description Form .....

1. Course Name:
Poultry breeding
2. Course Code:
0011402
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:

Weekly

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

75/3

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

Name: samawal sadi abdullah Email: samawalsadi@tu.edu.iq
Name: Haitham rajab manhee Email: Haithamalkaisi85@tu.edu.iq

8. Course Objectives

Course Objectives	• Teaching and training students on the genetic principles of breeding and improvement programs for domestic birds • Teaching students on traditional methods and modern trends used in improving poultry • Teaching students how to use genetic engineering in raising and improving poultry

9. Teaching and Learning Strategies

Strategy	1- Explanation and clarification 2- The method of the lecture 3- Student groups 4- Practical lessons in the field 5- The self-learning method

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	The origin of chickens, the development of the	Poultry breeding	Explanation, model	the exam

		science of breeding and improving poultry birds, the formation of breeds, factors affecting the replication of genes.		presentation and lecture	
Second	5	General principles of heredity, chromosomes in birds, sex determination, sex-linked inheritance, self-naturalization.	Poultry breeding	Explanation, model presentation and lecture	the exam
Third	5	Definition of qualitative traits, inheritance of feather distribution, inheritance of feather length, inheritance of feather texture, inheritance of feather color, inheritance of skin color, inheritance of comb shape.	Poultry breeding	Explanation, model presentation and lecture	the exam
Fourth	5	Definition of quantitative traits, heritability, genetic variance, phenotypic variance, overlap between environment and heredity, similarity between relatives, calculating the degree of kinship.	Poultry breeding	Explanation, model presentation and lecture	the exam
Fifth	5	Estimation of genetic parameters, genetic equivalent, its importance and methods of estimating it, genetic correlation, its importance and methods for its estimation.	Poultry breeding	Explanation, model presentation and lecture	the exam
Sixth	5	Genetic selection, selection for qualitative and quantitative traits, types of selection, methods of selection, electoral yield, intensity of selection, response accompanying selection.	Poultry breeding	Explanation, model presentation and lecture	the exam
seventh	5	Mating systems, internal	Poultry	Explanation,	the exam

		breeding, estimation of the internal breeding coefficient, the change in the internal watering factor of the herd, the harmful effects of internal breeding.	breeding	model presentation and lecture	
Eighth	5	External education, its types, general and specific harmonic ability, hybrid strength.	Poultry breeding	Explanation, model presentation and lecture	the exam
Ninth	5	Breeding and improving chickens for meat production, breeding and improvement programs used for broiler production, target traits for selection in pure lines of breeding, problems associated with selection to increase growth rate.	Poultry breeding	Explanation, model presentation and lecture	the exam
Tenth	5	Breeding and improving chickens for egg production, targeted traits by selection to increase egg production.	Poultry breeding	Explanation, model presentation and lecture	the exam
Eleventh	5	Genetic diseases, their description and method of inheritance in chickens.	Poultry breeding	Explanation, model presentation and lecture	the exam
Twelveth	5	Inheritance of semen and fertility traits in roosters and their effect on productive traits.	Poultry breeding	Explanation, model presentation and lecture	the exam
Thirteenth	5	Conservation of genetic resources in domestic birds	Poultry breeding	Explanation, model presentation and lecture	the exam
Fourteenth	5	Genetic engineering and its applications in poultry	Poultry breeding	Explanation, model presentation and lecture	the exam

Fifteenth	5	Genetic markers, their types and use as aids in selection.	Poultry breeding	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	1- Diab, Raad Saadoun (1988) Poultry Breeding and Improvement. Higher Education Press. 2- Hussein, Talal Hamid and Nahil Muhammad Ali (1990) Poultry Breeding and Improvement, Dar Al-Hikma for Printing and Publishing.
Main references (sources)	Iraqi academic scientific journals Animal sciences International Information Network the Internet
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	

Course Description Form

1. Course Name:
Poultry Nutrition
2. Course Code:
0011401
3. Semester / Year:

Semester

4. Description Preparation Date:

22 - 1 - 2025

5. Available Attendance Forms:

Weekly

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

75/3

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

Name: Maad Abdulkareem Albaddy Email: maadalbaddy@tu.edu.iq
Name: Muna Khalid khudhair Email: mona_2017@tu.edu.iq

8. Course Objectives

Course Objectives	1- Poultry nutrition studies how to feed chicks from the moment of hatching to the end of production 2- It includes how the digestive system of poultry works 3- Components of poultry diets and their sources. 4- Learn how to manufacture poultry feed. 5- Identifying the types of food used in feeding poultry and calculating its needs according to type, age and production status 6- The use of modern technologies in the manufacture of poultry feed.

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation

		Outcomes			method
First	5	Essential nutrients	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Second	5	Digestion and absorption	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Third	5	Energy and Poultry needs	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Fourth	5	Protein (Protein classification, Protein biological Value)	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Fifth	5	Factors affecting poultry needs for protein and amino acid	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Sixth	5	Mineral elements (their importance, functions and distribution in the birds body)	Poultry Nutrition	Explanation, model presentation and lecture	the exam
seventh	5	The content of the egg of minerals, major minerals and trace minerals	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Eighth	5	Vitamins	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Ninth	5	Brids need water	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Tenth	5	Non – traditional feed materials in Poultry feed	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Eleventh	5	Formation of forage rations	Poultry Nutrition	Explanation, model presentation	the exam

				and lecture	
Twelveth	5	Formation of forage rations	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Thirteenth	5	Getting to Know the feed mills	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Fourteenth	5	Modern technology in the manufacture of suspensions	Poultry Nutrition	Explanation, model presentation and lecture	the exam
Fifteenth	5	Poultry Feed Management	Poultry Nutrition	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
1- Required prescribed books	Poultry feed 2010 d. Ali Abdel-Khaleq Al-Yasin and d. Muhammad Hassan Abd al-Abbas
2 main references (sources)	1- Poultry production by Dr. Suhaib Abdul Razzaq, 1985, Ministry of Education and Higher Education - University of Baghdad 2- Scientific nutrition of poultry 1981 d. Atallah Saeed
Recommended books and references (scientific journals, reports, education guides)	Iraqi academic scientific journals poultry Science

Course Description Form

1. Course Name:
molecular biology
2. Course Code:
0021402
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:

Weekly

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

75/3

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

Name: Ahmed Khalid Ahmed Email: AHMEDKHALID76700@tu.edu.iq
Name: Sohaib Mahmood abd Email: sohaibmahmood1983@tu.ed u.iq

8. Course Objectives

Course Objectives	•

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
First	5	Instructions and guidelines that must be followed in the molecular biology laboratory.	molecular biology	Explanation, model presentation and lecture	the exam
Second	5	Instructions and guidelines that must be followed in the molecular biology laboratory	molecular biology	Explanation, model presentation and lecture	the exam
Third	5	Principles of DNA extraction	molecular biology	Explanation, model presentation and lecture	the exam
Fourth	5	DNA extraction	molecular biology	Explanation, model presentation	the exam

				and lecture	
Fifth	5	Mechanism of electrophoresis and separation of products.	molecular biology	Explanation, model presentation and lecture	the exam
Sixth	5	Fundamentals of polymer and colloid chemistry.	molecular biology	Explanation, model presentation and lecture	the exam
seventh	5	Ex vivo PCR reactions	molecular biology	Explanation, model presentation and lecture	the exam
Eighth	5	Uses of the PCR device	molecular biology	Explanation, model presentation and lecture	the exam
Ninth	5	Basics of PCR reactions.	molecular biology	Explanation, model presentation and lecture	the exam
Tenth	5	Materials used in PCR.	molecular biology	Explanation, model presentation and lecture	the exam
Eleventh	5	Types and modifications of PCR reactions	molecular biology	Explanation, model presentation and lecture	the exam
Twelveth	5	Types of PCR	molecular biology	Explanation, model presentation and lecture	the exam
Thirteenth	5	The beginnings, factors and circumstances surrounding them.	molecular biology	Explanation, model presentation and lecture	the exam
Fourteenth	5	RT_PCR device	molecular biology	Explanation, model presentation and lecture	the exam
Fifteenth	5	Methods of preserving genetic material	molecular biology	Explanation, model presentation and lecture	the exam

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

12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	
Main references (sources)	
Recommended books and references (scientific journals, reports….	
Electronic References, Websites	

Course Description Form

1. Course Name:
meat science
2. Course Code:
0021404
3. Semester / Year:
Semester
4. Description Preparation Date:
22 - 1 - 2025
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
75/3
7. Course administrator's name (mention all, if more than one name)

Name: Mahfoodh Khaleel Abdullah Email: mafo@tu.edu.iq
Name: Ahmed Ramadan Muhammed Email: ahmed.ramadhan@tu.edu.iq

8. Course Objectives

Course Objectives	□□ That the student knows the sources of red meat production □□ To be able to understand the economic and nutritional importance of red meat production □ To be able to know how to exploit the productive efficiency of a meat animal. □ To get acquainted with the netting ratio and identify the factors affecting it. He should be familiar with the methods used for transporting and marketing animals and carcasses

9. Teaching and Learning Strategies

Strategy	1- Explanation and clarification 2- The method of the lecture 3- Student groups 4- Practical lessons in agricultural fields 5- Scientific trips to follow up on poultry feeding projects in Iraq

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	5	Introduce the student to the sources of red meat production and its specifications	**meat science**	Explanation, model presentation and lecture	the exam
Second	5	Introduce the student to the economic and nutritional	**meat science**	Explanation, model presentation and lecture	the exam

		importance of red meat production			
Third	5	Introducing the student to the reality of red meat production and consumption in Iraq, the Arab world and the world	**meat science**	Explanation, model presentation and lecture	the exam
Fourth	5	Introduce the student to the concepts of meat production	**meat science**	Explanation, model presentation and lecture	the exam
Fifth	5	Introduce the student to the biological axes of meat production and how to express them	**meat science**	Explanation, model presentation and lecture	the exam
Sixth	5	Introduce the student to red meat production patterns and the factors affecting them	**meat science**	Explanation, model presentation and lecture	the exam
seventh	5	Introduce the student to the growth and development of a meat animal	**meat science**	Explanation, model presentation and lecture	the exam
Eighth	5	Familiarize students with the factors affecting growth and development	**meat science**	Explanation, model presentation and lecture	the exam
Ninth	5	first semester exam	**meat science**	Explanation, model presentation and lecture	the exam
Tenth	5	Introduce the	**meat science**	Explanation,	the exam

		student to the efficiency of meat production		model presentation and lecture	
Eleventh	5	Introduce the student to the optimal investment in the efficiency of meat production	**meat science**	Explanation, model presentation and lecture	the exam
Twelveth	5	Introducing the student to the composition of carcasses, the percentage of dressing and the factors affecting them	**meat science**	Explanation, model presentation and lecture	the exam
Thirteenth	5	Introduce the student to the transportation and marketing of animals and carcasses	**meat science**	Explanation, model presentation and lecture	the exam
Fourteenth	5	Introduce the student to the marketing category	**meat science**	Explanation, model presentation and lecture	the exam
Fifteenth	5	second semester exam	**meat science**	Explanation, model presentation and lecture	the exam

11. Course evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.	
12. Learning and Teaching Resources	
Required textbooks(curricular books, if any	Production and marketing of beef cattle Dr. Atallah Saeed, Hatem Hassoun, Muhammad Taha Alwan
Main references (sources)	1- Meat cattle production, Dr. Fouad Abdel Latif Abdel Karim 2-The basics of meat science, translated by Dr. Muhareb Abdel Hamid Taher 1983 3- Meat Science, Dr. Muhareb Abdel Hamid Taher 1990 world wide web
Recommended books and references (scientific journals, reports….	Iraqi academic scientific journals
Electronic References, Websites	Electronic references, websites

University Name: **Tikrit University**

Scientific Department: Horticulture and Landscape

Name of Academic or Professional Program: Horticulture and Landscape Engineering

Study System: Semester System (Courses)

Description Preparation Date: 25\1\2025

File Filling Date: 25\1\2025

Signature: :

Name of Head of Department:. Dr. Angham Ayad Kamal El-Din

Signature

Name of S. Assistant of dean : Dr. Muhammad Salih Muhammad

Document Reviewed:

Name of Director of Quality Assurance and University Performance Division:

Date:

Signature:

Approval of the Dean

Teaching staff

No.	Full name	Degree	Academic Title	specialty	
				major	minor
1	Thamer Abdullah Zahwan Khalifa	PhD	Professor	Agriculture - Horticulture	Medicinal and aromatic plants
2	Ammar Fakhri Khader Shaaban	PhD	Professor	Agriculture - Horticulture	Plant ecology and environmental pollution
3	Adeeb Jassim Abbas	PhD	Professor	Agriculture - Horticulture	Plant tissue culture
4	Harith Burhanuddin Abdul Rahman	PhD	Professor	Agriculture - Horticulture	Vegetables
5	Ziad Khalaf Saleh Ali	PhD	Professor	Agriculture - Horticulture	Ornamental plants
6	Ehsan Fadel Saleh Othman	PhD	Professor	Agriculture - Horticulture	Fruit production
7	Mustafa Rashid Majeed Qaddouri	PhD	Professor	Agriculture - Horticulture	Biotechnologies
8	Mohammed Abdullah Ahmed Musa	PhD	Professor	Agriculture - Horticulture	Plant physiology
9	Rabi Abdul Abdullah	PhD	Professor	Agriculture - Horticulture	Forest insects
10	Ghassan Jaid Zidane	PhD	Professor	Agriculture - Horticulture	Vegetable production
11	Mahmoud Fadel Latif	PhD	Professor	Agriculture - Horticulture	Fruit production
12	Taha Shihab Ahmed Othman	PhD	Professor	Agriculture - Horticulture	Medicinal and aromatic plants
13	Ammar Hashim Saeed Omar	PhD	Professor	Agriculture - Horticulture	Vegetable breeding
14	Khaled Naji Abdul Asal	PhD	Professor	Agriculture - Horticulture	Harvesting and storage of horticultural crops
15	Qutaiba Yasser Ayed Majeed	PhD	Professor	Agriculture - Horticulture	Vegetable production - protected cultivation
16	Nazim Salem Ghanem Suleiman	PhD	Professor	Agriculture - Horticulture	Plant tissue culture

17	Anas Munir Tawfiq Najm	PhD	Professor	Agriculture - Horticulture	Plant physiology
18	Riyadh Manaa Mohsen	PhD	Professor	Agriculture - Horticulture	Ornamental and garden engineering
19	Ashjan Nizar Kamel Farhan	PhD	Lecturer	Agriculture - Horticulture	Ornamental plants
20	Ibrar Aqeel Nasser Ahmed	PhD	Lecturer	Agriculture - Horticulture	Vegetables
21	Biram Suleiman Ismail	PhD	Lecturer	Agriculture - Horticulture	Agricultural plant technologies
22	Sabreen Mohammed Latif	PhD	Lecturer	Agriculture - Horticulture	Harvesting and storing horticultural produce
23	Angham Ayad Kamal El-Din Ali	PhD	Lecturer	Agriculture - Horticulture	Ornamental plants
24	Marwa Noman Hussein	PhD	Lecturer	Agriculture - Horticulture	Fruit
25	Maha Ali Suleiman	PhD	Lecturer	Agriculture - Horticulture	Fruit
26	Ammar Walid Taha	PhD	Lecturer	Agriculture - Horticulture	Fruit
27	Samir Hussein Alwan	Msc	Lecturer	Agriculture - Horticulture	Horticulture and landscaping
28	Mazen Amer Awin Jumaa	Msc	Lecturer	Agriculture - Horticulture	Horticulture and landscaping
29	Reem Tariq Ibrahim Hamad	Msc	Assist. lect.	Agriculture - Horticulture	Horticulture and landscaping
30	Omar Arshad Omar	Msc	Assist. lect	Agriculture - Horticulture	Horticulture and landscaping
31	Maysar Awad Abdullah Matar	Msc	Assist. lect	Agriculture - Horticulture	Horticulture and landscaping
32	Mahmoud Jassim Mohammed Houri	Msc	Assist. lect	Agriculture - Horticulture	Horticulture and landscaping
33	Nasr Shukri Darar	Msc	Assist. lect	Agriculture - Horticulture	Horticulture and landscaping
34	Rawa Abdul Bashir	Msc	Assist. lect	Agriculture - Horticulture	Horticulture and landscaping
35	Sara Hamid Bahr	Msc	Assist. lect	Agriculture - Horticulture	Ornamental plants

About the Department:

The Department of Horticulture and Landscape Engineering was established in the academic year 2003-2004 with the aim of preparing agricultural engineers in the field of horticulture and landscape engineering who are able to work in state institutions or the private sector in the field of horticultural sciences specialized in producing the agricultural products that society needs, such as fruits, vegetables, ornamental plants, and designing, coordinating and implementing public and private gardens in a way that achieves food provision and adds aesthetic values and environmental benefits. Therefore, the curricula of the Department of Horticulture and Landscape Engineering included three main directions: fruits, vegetables and ornamental plants, and then a new direction emerged regarding the production of medicinal plants. The academic program of the department takes four years (eight semesters), after which the graduate is awarded a Bachelor's degree in Horticulture and Landscape Engineering. The department also receives many postgraduate students at the levels of higher diploma, master's and doctorate.

Academic Program of the Department:

The department grants a Bachelor's degree in Agricultural Sciences / Horticulture and Landscape Engineering

Second: The main criteria for program accreditation for colleges of agriculture:

Department Vision

1- The vision was formulated by qualified professors specializing in horticulture and landscape engineering.

2- The vision was discussed with the beneficiaries represented by the Directorate of Agriculture in the governorate, the Agricultural Research Department, and some private companies present in the private sector, as well as distinguished farmers and other agricultural cadres inside and outside the college.

3- The final formulation of the vision was discussed in the Department Council and the College Council.

4- A questionnaire was directed to the beneficiaries and stakeholders from faculty, students and graduates about the clarity of the vision.

Department Message:

1- The department's message was formulated by a group of department professors to be consistent with the college's message.

2- The message was discussed with the beneficiaries represented by the Salah al-Din Agriculture Directorate, the Agricultural Research Department, a representative of agricultural associations, and representatives of parties related to the agricultural and environmental sector.

3- The previous message of the department was reviewed.

4- A questionnaire was directed to beneficiaries and stakeholders from faculty, students and graduates about the clarity of the message.

5- Discussions of reformulating the message were announced on the college website.

6- Priorities for this element.

Department objectives:

1- The program objectives are divided into general and annual objectives and are announced on the college's official website.

2- The program objectives are consistent with the college's objectives.

3- The program objectives were reviewed and discussed with the beneficiaries.

4- A questionnaire was directed to beneficiaries and stakeholders from faculty, students and graduates about the clarity of the program objectives.

Admission Policy:

A- Admission of students to the college is centralized according to the instructions stated in the Student Guide for Central Admission Dalel20232024.pdf (mohesr.gov.iq) and the admission policy is determined by the Ministry of Higher Education and Scientific Research and we have no role in the admission policy.

B- Admission to the department is according to

 The student's average in preparatory studies.

 The student's desire.

 The department's capacity.

Number of students: The department always plans to accept about 50 students, but the number of students we get gradually decreases every year due to the great expansion in opening private universities and colleges, which leads to students' reluctance to apply to this department, in addition to the lack of job opportunities for graduate students.

Academic Guidance:

1- The program includes visits and scientific trips, and guidance sessions are held for new students every year, but unfortunately we did not document these activities.

2- The department has an educational supervision committee distributed among the number of students to help the student socially and psychologically and work to solve the problems they face.

3- There is a form submitted to students annually to take their opinions called the Student Opinion Questionnaire about the educational institution and the student's satisfaction with the instructor and it is distributed to all stages and is included in the annual evaluation of the instructor.

Student Services:

Many student services are available to university students in general and students of the College of Agriculture in particular. As for the services designated for students of the Horticulture Department, we are working hard to raise the level of services provided to students within the capabilities available to us. The most important of these services are:

1. Student services are available represented by the student center (restaurant) and health services represented by the health center, football field and college library.

2. There is a financial support program (student grant), but according to special controls and instructions.

3. A (Student Reception Committee) is formed annually by the college, for the purpose of receiving and guiding new students.

4. Extracurricular activities are held annually (whether sports, artistic or cultural).

5. There is a counseling and psychological guidance unit in the college and it has a committee in each department whose tasks include awareness and guidance.

6. Many scientific visits are held for students accompanied by the teaching staff.

7. There are laws and instructions for student discipline, dismissal, postponement, failure due to cheating, absence, and annual tuition fees for evening studies.

Graduation requirements:

1- Third-year students are subject to summer training in agricultural departments and institutions related to agricultural and environmental work. This training is one of the graduation requirements, as the trainee is sent with an official letter and then returned with an official letter and an evaluation form confirming that the trainee has successfully completed the training period.

2- The students' grades obtained during the years of study are kept in a special record (master sheet) in several copies kept in the department, the registration department, and the office of the assistant dean for academic affairs.

Learning Outcomes:

1- The curricula for students of the Horticulture Department, especially in the field of micro-specialization, are designed to provide the student with appropriate information and knowledge through the theoretical part, while the practical part aims to train the student and provide him with the applied skills that will serve him in field work later.

2- The student's acquired knowledge is evaluated and measured through theoretical semester and final tests, as is known, while the students' skills are evaluated through field and laboratory tests conducted in practical lessons.

3- The program is designed to provide the student with knowledge and skills and link him to the community and workers in the agricultural field through field visits and annual scientific trips.

4- The summer training, which is one of the graduation requirements, aims to integrate the student into the reality of agricultural work, and through this practice he builds his connections with the community of farmers or specialists in this field, whether employees or citizens. This practice may also teach some of the trainees something about management processes and writing practices, depending on the entity in which the student is trained.

5- Developing the academic program of the department to provide the student with scientific skills in the field of diagnosing problems and finding scientific solutions by conducting field experiments, recording data, analyzing it statistically, and then interpreting it to reach the appropriate recommendation. All of this is done through graduation research conducted by the student in the final stage under the supervision of specialists from the department’s professors.

Curricula:

1- The department relies on curricula approved by the sector committee or the deans' committee and approved by the Ministry of Higher Education and Scientific Research according to detailed terms of the number of hours, units, theoretical and practical, as shown in Table (4).

2- A course description is prepared annually for all program courses that includes the cognitive, skill and emotional objectives for each subject in line with the department and college objectives. This description is approved by the head of the department, the assistant dean of science, and the quality department in the college.

3- The student is evaluated through the grades he obtains in oral and written tests and reports.

4- All available and diverse modern educational methods are used.

5- There is a university calendar issued by the Ministry and circulated to all universities, which includes the start and end times of the program.

Academic Program Evaluation

1- General information about the academic department

University Name Tikrit
Administration Name Phone Mobile Phone Email
Dean Waad Mahmoud Raouf
Head of Department Dr. Angham Ayad Kamal El-Din / 07739638581
Quality Officer Dr. Aslam Saud Alwan / 07717415743
College: Agriculture
Department: Horticulture and Landscape Engineering
Number of Branches in the Department (None)
Date of Establishment of the Department: 2003
Name of the Academic Program: Horticulture and Landscape Engineering, Date of Start of Study: 2003-2004
Teaching System Followed: Semester
Number of Credit Hours for the Academic Program: (hour)
Website Address on the Internet: https://cagr.tu.edu.iq/index.php/alaqsam-al-lmyt/qsm-albstnt-whndst-alhdayq

2- Department buildings

Department Buildings Number Average Area (m2) Average Number of Users Average Hours of Operation or Use
Library 1 300 / 6

Classrooms 5 50 17 6
Research Laboratories 2 70 17 10
Computer Laboratories / / / /
Machinery and Equipment / / / /
Centers (Educational Technologies, Tests and Measurements (/ / / /
Technical Workshops / / / /
Administrators' Offices 3 25 1 6
Faculty Members' Offices 22 30 4 6

3- The department that offers the academic program and its specialized programs.

Department Name	(General Program) Branch Name
(Specialized Program) Date of Establishment Number of Undergraduate Students Number of Postgraduate Students Number of Faculty Members (Masters) Number of Faculty Members (PhD)	Horticulture and Landscape Architecture / 2003 60 33 9 26

4- Administrative employees in the department according to academic qualifications.

Academic qualifications of administrative employees Number of employees on permanent staff Number of employees on contracts
Master’s or higher 35 /
Higher diploma / /
Bachelor’s 2 /
Technical diploma / /
High school / /
Below high school 7\

5- Library: It is affiliated with the college, not the department:

Academic Program Materials Number
Paper Books
E-Books

Encyclopedias and Dictionaries
Periodicals
Electronic Databases
Devices for Research
Seats for Reading
Total Staff in the Library

Community Service

1- Most of the field experiments and research conducted by faculty members or graduate students aim to serve the agricultural sector, which is the cornerstone of providing food and community security.

2- In recent years, the department has been working to improve the environment through studies and experiments that identify plants capable of purifying the air and getting rid of air and soil pollutants.

3- A number of graduate students have conducted their experiments in private fields in the governorates of Salah al-Din, Kirkuk and Sulaymaniyah, which provides an opportunity for farm owners to learn about research activity and benefit from its results to develop their farms.

4- The college's consulting office provides various community services such as technical consultations and feasibility studies in establishing orchards, agriculture, protected areas and other fields of horticulture and landscape engineering.

5- The department coordinates through the college with other state institutions in cooperation with scientific research for graduate students and employing its results in applied fields related to the current agricultural reality.

6- The department organizes open scientific seminars in the fields of horticulture.

7- The department cooperates with civil society organizations in organizing training courses, seminars and agricultural exhibitions.

8- The department benefits from social media services to communicate with community members and publish useful information on its official page. 9- There are statistics for research published in reputable journals with an impact factor, and there are statistics on scientific development, programs, and a database. Letters of thanks are granted by the Dean and the President of the University, appreciating the efforts of researchers who keep pace with the scientific research movement.

Learning Outcomes:

1- Helping instructors reformulate the program outcomes and educational objectives of the subjects they teach with the help of quality assurance committees.

2- Communicating with graduates in their workplaces to find out their need for continuing education through seminars, workshops or field days that help them develop their skills, and working on that.

3- Preparing a database for the number of graduates employed and the entity in which they were employed.

Continuous improvement of the academic program

1- Conducting a program evaluation process every three years.

2- Developing clearer quality indicators and following up on them.

3- Holding periodic meetings on the quality of quality assurance management processes.

4- Increasing communication with students and graduates about the quality of the program.

5- Hiring experts from relevant sectors to review the program's vocabulary and plans.

Curricula:

1- Seeking to update the curricula in cooperation with the sectoral committee in the ministry.

2- Update the curriculum vocabulary annually according to the requirements of the labor market.

3- Increasing interest in practical training in the field and laboratory and providing its requirements.

4- Forming annual committees for the task of planning or evaluating the department's programs and developing them.

5- Participating students in evaluating curricula through questionnaires.

Faculty members and supporting staff

1- Seeking to obtain financial support for faculty members to attend international conferences.

2- Increasing the number of administrators on the department's staff to reduce the administrative burden on faculty members.

3- Paying attention to the quality of training courses for the department's staff to increase their knowledge and skills.

4- Seeking to activate the annual staff settlement system previously in effect.

5- Educational, professional and academic qualification for new instructors.

Resources and learning environment:

1- Seeking to obtain funding that meets the needs of the department.

2- Working to provide sufficient rooms and offices for instructors to achieve appropriate privacy.

3- Activating the role of the department's specialized staff in the agricultural advisory office.

4- Conducting field days and seminars with relevant parties and beneficiaries of the program in the private sector.

5- Building strong relationships with the local community through various agricultural activities.

Leadership and Institutional Organization:

1- Clearly and accurately define the powers of those in charge of the program without ambiguity or interference.

2- Involve students in making decisions related to the educational process.

3- Work to activate the role of the department in selecting faculty members.

4- Work to activate the college's website.

5- Develop and enhance the technical and professional skills and capabilities of administrative cadres.

Community Service:

1- Cooperation with professional unions associated with the program, especially the Syndicate of Agricultural Engineers and agricultural associations.

2- Communicate with beneficiaries to identify their related problems and try to find appropriate solutions through research projects of faculty members and graduate students.

3- Provide training programs and activities concerned with the needs of society and sustainable development.

4- Prepare informational brochures about the program and publish the department's activities on official social media sites.

5- Continue conducting studies and surveys to learn the community's views on the program.

Dr. Engham Ayad Kamal El-Din

Head of the Department

/01/2025

Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: College of Agriculture

Scientific Department: Plant Protection Department

Academic or Professional Program Name: Bachelor of Agricultural Sciences/ Plant Protection

Final Certificate Name: Bachelor of Agricultural Sciences/ Plant Protection

Academic System: Season

Description Preparation Date: 1/10/2024

File Completion Date: 1/10/2024

Signature:

Head of Department Name:
assistant professor: Khaldoon Faris Saead

Date: : 1/10/2024

Signature:

Scientific Associate Name:
assistant professor Mohammed saleh Mohammed

Date: : 1/10/2024

The file is checked by:

Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Assistant professor Aslam Saud Alwan

Date: : 1/10/2024

Signature:

Approval of the Dean

Academic staff

email	Specialization		S.Name	dgree	Name	ت
	Special	General				
arabdullah.has67@tu.edu.iq	Fungi	biology	Prof	pHD	Abdullah a. Hasan	.1
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khalaf20017vi@gmail.com	Plant desease	PLANT PROTECTION	A. Prof	pHD	Kalaf A. Mohammed	.8
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awad_jasim@yahoo.com	insects	PLANT PROTECTION	Lec	pHD	Awad J. Mohammed	.10
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Othman.h.ali4455@tu.edu.iq	insects	PLANT PROTECTION	Lec	pHD	Othman.h.ali	.13
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Basma2020@tu.edu.iq	Plant desease	PLANT PROTECTION	Lec	Phd	Basma D.Aeyed	.16
Omarali@tu.edu.iq	insects	PLANT PROTECTION	A.Lec	MSC	Omar ali	.17
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nahda68774@gmail.com	Biology	biology	A.Lec	MSC	Nahda .g Madhlom	.19
kefaa_amer@tu.edu.iq	Plant desease	PLANT PROTECTION	A.Lec	MSC	kefaa_amer	.20
Ashwaqt@tu.edu.iq	Plant desease	PLANT PROTECTION	A.Lec	MSC	Ashwaq t. Mohammed	.21
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Reema.Rajih@tu.edu.iq	insects	PLANT PROTECTION	A.Lec	MSC	Rwman J. kadhum	.25

Program Vision

Program vision is written here as stated in the university's catalogue and website.

Achieving quantitative and qualitative changes in scientific research to keep pace with the development of plant protectionin the world.

2. Program Mission

Program mission is written here as stated in the university's catalogue and website.

Spreading scientific awareness in society and providing it with graduates who are scientifically and practically qualified to manage and develop plant protectionaccording to scientific standards.

3. Program Objectives

General statements describing what the program or institution intends to achieve.

The department participates with state and community institutions in developing and solving problems of livestock projects based on scientific research

4. Program Accreditation

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

No

5. Other external influences

Is there a sponsor for the program?

6 Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements	**9**	**9**	**% 15.25**	
College Requirements	**13**	**31**	**% 22.03**	
	37	**107**	**% 62.71**	

Department Requirements				
Summer Training				
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	Practical
1	PPD-1101	Entomology	2	3
	AGR-1102	Horticulture principles	2	3
	PPD-1103	General Zoology	2	3
	AGR -1104	Agricultural economy	2	
	UNI-1105	Human Rights and Democracy	2	
	UNI-1106	English Language 1	2	
	UNI-1107	Computer Science 1	2	-
	AGR-1201	General Botany	2	3
	AGR-1202	Non-Organic Chemistry	2	3
	PPD-1203	Basics of plant protection	2	3
	AGR -1204	Basics of soil and water resources	2	3
	AGR -1205	General Mathematics	2	
	UNI-1206	Baath Party crimes	2	
	UNI-1207	Arbic Language	2	
2	PPD-2301	Microbiology	2	3
	PPD-2302	Statistics	2	3
	PPD-2303	Plant physiology	2	3
	PPD-2304	Plant Taxonomy	2	3
	AGR2305-	Machines and protective equipment	2	3
	AGR2306-	Agricultural guidance	2	
	AGR2401-	Principles of field crops	2	3
	PPD-2402	Plant nutrition	2	3
	PPD-2403	Classification of insects	2	3
	UNI-2404	Computer Science 2	2	3
	PPD-2405	Analytical chemistry	2	3
	PPD-2406	Medical and veterinary insects	2	3
	UNI-2407	English Language 2	2	-

3	PPD-3501	Genetics and plant Breeding	2	3
	PPD-3502	Design and analysis of experiments	2	3
	PPD-3503	Insects physiology	2	3
	PPD-3504	Nematode	2	3
	PPD-3505	Mycology 1	2	3
	PPD-3506	Ecology	2	3
	PPD-3601	**Plant diseases**	2	3
	PPD-3602	**Weeds and methods of control them**	1	-
	PPD-3603	Biochemistry	2	3
	PPD-3604	Mycology 2	2	3
	PPD-3605	Beekeeping	2	3
	PPD-3606	Bio Techniques	2	3
4	PPD-4701	**Pesticides**	2	3
	PPD-4702	**Insects ecology**	2	3
	PPD-4703	Field crop diseases	2	3
	PPD-4704	Vegetable crop diseases	2	3
	PPD-4705	Agriculture Mite	2	3
	PPD-4706	Field crop insects	2	3
	PPD-4707	seminars	1	
	PPD-4801	Fruit diseases	2	3
	PPD-4802	Storages pests	2	3
	PPD-4803	Horticulture Insects	2	3
	PPD-4804	Biological control	2	3
	PPD-4805	Integrated pest management	2	-
	PPD-4806	Viruses	2	3
	PPD-4807	Research Project	1	-

8. Expected learning outcomes of the program		
Knowledge Learning Outco		
Skills		
Ethics		
11. Teaching and Learning Strategies		
12.Evaluation methods		

11. Faculty		
Faculty Members		

Mentoring new faculty members
Briefly describes the process used to mentor new, visiting, full—time, and part—time faculty at the institution and department level.
Professional development of faculty members
Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion
(Setting regulations related to enrollment in the college or institute, whether central admission or others)
Central

13. The most important sources of information about the program
State briefly the sources of information about the program.
1. The college and university website 2. University guide 3. Central Library 4. The most important books and sources for the department 5. Internet

14. Program Development Plan

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
1	PPD-1101	Entomology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR-1102	Horticulture principles	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-1103	General Zoology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR -1104	Agricultural economy	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-1105	Human Rights and Democracy	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-1106	English Language 1	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-1107	Computer Science 1	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR-1201	General Botany	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR-1202	Non-Organic Chemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-1203	Basics of plant protection	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR -1204	Basics of soil and water resources	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR -1205	General Mathematics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-1206	Baath Party crimes	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-1207	Arbic Language	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2301	Microbiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2302	Statistics	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2303	Plant physiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2304	Plant Taxonomy	Basic	*	*	*	*	*	*	*	*	*	*	*	*

2	AGR2305-	Machines and protective equipment	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	AGR2306-	Agricultural guidance	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	AGR2401-	Principles of field crops	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2402	Plant nutrition	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2403	Classification of insects	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-2404	Computer Science 2	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2405	Analytical chemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-2406	Medical and veterinary insects	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-2407	English Language 2	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
3	PPD-3501	Genetics and plant Breeding	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3502	Design and analysis of experiments	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3503	Insects physiology	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3504	Nematode	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3505	Mycology 1	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3506	Ecology	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3601	**Plant diseases**	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3602	**Weeds and methods of control them**	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3603	Biochemistry	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3604	Mycology 2	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3605	Beekeeping	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-3606	Bio Techniques	Basic	*	*	*	*	*	*	*	*	*	*	*	*	*

	PPD-4701	**Pesticides**	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4702	**Insects ecology**	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4703	Field crop diseases	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4704	Vegetable crop diseases	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4705	Agriculture Mite	Basic	*	*	*	*	*	*	*	*	*	*	*	*
4	**PPD-4706**	Field crop insects	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4707	seminars	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4801	Fruit diseases	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4802	Storages pests	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4803	Horticulture Insects	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4804	Biological control	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4805	Integrated pest management	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4806	Viruses	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-4807	Research Project	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-1101	Entomology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR-1102	Horticulture principles	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	PPD-1103	General Zoology	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	AGR -1104	Agricultural economy	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-1105	Human Rights and Democracy	Basic	*	*	*	*	*	*	*	*	*	*	*	*
	UNI-1106	English Language 1	Basic	*	*	*	*	*	*	*	*	*	*	*	*

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

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Basics of plant protection** **أساسيات وقاية النبات**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PPD-1203**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Plant protection		**College**	Agriculture	
Module Leader	Name		**e-mail**	Awfabd91@tu.edu.iq	
Module Leader's Acad. Title	Assistante professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Awf A.Ahmed		**e-mail**		
Peer Reviewer Name	Aya M.Mohsin		**e-mail**		
Scientific Committee Approval Date	1/10/2024		**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 أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Understand the scope and importance of plant pests and their economic damage.

	• To make students open and curious, we do our best to foster and develop scientific attitude. • Introducing students to the most important diseases and insect pests spread in Iraq. • Make them skilled in practical work, experiments, laboratory equipment and correct interpretation of biological materials and data Developing students' ability to change society by moving away from non-tactile methods of pest control. • Introducing students to the methods used in pest control. • Critical thinking: It includes creative thinking, innovation, investigation, analysis and evaluation • Synthesis of information
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Mention the most important diseases and pests and explain the direct and indirect damage caused by pests 2. Description of the most important symptoms and signs of the disease 3. Identify the most important diseases and the means of their spread and control 4. Knowing the means through which plants can resist pathogens 5. Broad outlines of insect science and their most important harms 6. Know the most important insect pests, classify them, and control them 1.
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The subject is structured around several modes of delivery including a series of illustrated lectures with experts from the field coupled with workshop/tutorial discussions, and individual site visits with practical exercises. Assignment submissions may include verbal presentation and physical documents for the 2

	assignments. Feedback will be verbal throughout the semester. It is the student's responsibility to make notes of any feedback given in these sessions. Supplemental written feedback will also be provided for each of the 2 assignments with the assessment. FEEDBACK: The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback given in these sessions. 2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Seminar	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
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)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Harmful factors and the damage they cause
Week 2	plant disease symptoms
Week 3	What are plant diseases?
Week 4	Plant pathogens
Week 5	Plant defense
Week 6	Plant disease resistance
Week 7	Special damages and benefits of insect
Week 8	Seminar
Week 9	Anti-environmental agent by pesticide
Week 10	Insect reproduction
Week 11	Anti-feeding in insects
Week 12	Classification of insect
Week 13	Insect control methods

Week 14	**Metamorphosis in insect**
Week 15	**Feed back**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Laboratory Syllabus) المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered
Week 1	**Harmful factors and the damage they cause**
Week 2	**plant disease symptoms**
Week 3	**Define plant diseases?**
Week 4	**Diagnosis Plant pathogens**
Week 5	**Plant defense type**
Week 6	**Plant disease resistance methods**
Week 7	**Special damages and benefits of insect**
Week 8	**Seminar**
Week 9	**Anti-environmental agent by pesticide**
Week 10	**Insect reproduction**
Week 11	**Anti-feeding repellent insects**
Week 12	**Classification of insect**
Week 13	**Insect control methods**
Week 14	**Metamorphosis in insect**
Week 15	**Feed back**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Basics of pest control Book on Chemical Pesticides in Plant Protection, Arab Plant Protection Journal	Yes

Websites	Scientific websites, scientific researcher, research gate

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.

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**Zoology**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PPD-1103			
ECTS Credits	**6**			
SWL (hr/sem)	**79**			
Module Level	1	**Semester of Delivery**	1	
Administering Department	plant protection	**College**	Agriculture	

Module Leader	Name	**e-mail**	E-mail
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Dr. Waleed Khalid Ahmed	**e-mail**	Waleed.khalid@tu.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	17/09/2024	**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

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	• Introducing the student to the basics of zoology and its relationship to other sciences such as agricultural sciences and veterinary. • To imbibe love and curiosity towards nature including zoology . • To make students open-minded and curious, we try our best to enhance and develop a scientific attitude. • To make the students exposed to the diverse life forms. • To make them skilled in practical work, experiments, laboratory equipment and to interpret correctly on biological materials and data. • To encourage the students to do research in related disciplines. • To develop the ability of the students to transform the society through their education. • To acquaint the students about the methods used in the maintenance of different natural resources. • Critical Thinking: to include creative thinking, innovation, inquiry and analysis, evaluation • and synthesis of information. • Topics include the study of animal form, function and reproduction, and an overview of animals • diversity including , Vertebrata, Invertebrata, Unicellular, and Multicellular.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	2. list the main steps of the scientific method and explain how science differs from other human endeavors 3. describe the functions of a animal cell and its organelles, and summarize the differences between animal and plant cells 4. identify and illustrate animal structure, growth and reproduction 5. summarize some of the evidence for evolution from fossils and living species, and give several examples of how animal structure relates to its function

	6. outline the general principles of animal taxonomy by scientist Carl Linnaeus
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The subject is structured around several modes of delivery including a series of illustrated lectures with experts from the field coupled with workshop/tutorial discussions, and individual site visits with practical exercises. Assignment submissions may include verbal presentation and physical documents for the 2 assignments. Feedback will be verbal throughout the semester. It is the student's responsibility to make notes of any feedback given in these sessions. Supplemental written feedback will also be provided for each of the 2 assignments with the assessment. FEEDBACK: The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback given in these sessions. 2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem)		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	

الحمل الدراسي غير المنتظم للطالب خلال الفصل			
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	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, #8 and #10
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)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction of zoology**
Week 2	**Main theories about the origin of life on Earth**
Week 3	**Animal Kingdom**
Week 4	**Animal Cells**
Week 5	**Animal Tissues**
Week 6	**Cytoplasm**
Week 7	**Nemathelminthes**
Week 8	**Protozo**
Week 9	**Chardata**

Week 10	**Platyhelminthes**
Week 11	**Mastigophora:**
Week 12	**Annelida**
Week 13	**Preparatory week before the final Exam**

Delivery Plan (Weekly Laboratory Syllabus) المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered
Week 1	**The Optical Microscope, Its Components, and How to Use It.**
Week 2	**Introduction in Zoology –Terms and concepts.**
Week 3	**Animal cell**
Week 4	**Animal Tissues and its Types.**
Week 5	**Animal cell cycle**
Week 6	**Protoplasmic components**
Week 7	**Non-Protoplasmic components**
Week 8	**Animal body development**
Week 9	**Animal Organs**
Week 10	**Different between animal and plant cells**
Week 11	**Respiration**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Textbook: General Zoology Textbook: Zoology and agricultural animal pests. Dr. Abdel-Alim Saad Suleiman ASHOK KUMAR, RASTOGI PUBLICATIONS SHIVAJI ROAD. MEERUT-250 002: INDIA. • An illustrated checklist of the flora of the University of Canterbury Cass Mountain Research Area:	Yes

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
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Microbiology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)	**150**				
Module Level		1	**Semester of Delivery**		1
Administering Department		Plant Protection	**College**	Agriculture	
Module Leader	Dr. Abdullah Abdulkareem Hassan		**e-mail**	Drabdullah.has67@tu.edu.iq	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	Dr. Abdullah Abdulkareem Hassan		**e-mail**	Drabdullah.has67@tu.edu.iq	

Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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 أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The student learns about all the taxonomic levels of microorganisms and the importance and harms of each one.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive objectives Introduce the student to the development of microbiology and everything related to it Introduce the student to all the taxonomic levels of microorganisms Introduce the student to the importance of microorganisms in terms of harms and benefits and at the environmental level Introduce the student to the importance of studying microorganisms and their relationship to plant diseases Enabling the student to know the methods of controlling microorganisms The relationship of microorganisms to diseases and the genetics of microorganisms B- Course specific skill objectives. B1 - Training students to study some families and genera B2 - Bacteria Introduce the student to the morphological properties of bacteria B3 - Bacterial dissection B4 - Bacterial growth
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The subject is structured around several modes of delivery including a series of illustrated lectures with experts from the field coupled with workshop/tutorial discussions, and individual site visits with practical exercises. Assignment submissions may include verbal presentation and physical documents for the 2 assignments. Feedback will be verbal throughout the semester. It is the student's responsibility to make notes of any feedback given in these sessions. Supplemental written feedback will also be provided for each of the 2 assignments with the assessment. Teaching and learning methods • Providing students with the basics and lectures related to the subject. • Using point Power presentation methods to convey information well and clearly to the student. • Encouraging students to go to the library when they are asked to submit scientific reports on the topics given to them from the study material. • Using some software that simulates the shapes and dissection of some types of microorganisms Evaluation methods Daily and monthly tests through questions about the subject of the study material Grades on student participation in research and scientific reports Student activities through making posters and illustrations about what pertains to the study material. C- Emotional and value objectives Putting deductive questions to students Finding solutions to problems and obstacles that students encounter in the practical part of the subject and finding solutions for them Enabling students to conduct the largest possible number of exercises and

	applications on the topics Teaching and learning methods Developing teaching programs in coordination with higher departments Developing teaching curricula by the department similar to the work environment Sending students to departments and directorates for the purpose of conducting summer application Assigning students to conduct research and reports Assigning students to go to the library and collect sources on the subject Evaluation methods Conducting daily and monthly tests through questions on the subject of the study material to determine the extent of their comprehension of the subject Giving grades for students' participation in scientific research and reports Discussing research and reports and presenting them to students and giving grades on them Writing reports after the end of the application period to determine the extent to which students are able to diagnose problems and how to find solutions for them. D- General and transferable qualification skills (other skills related to employability and personal development). Training the student on how to use permanent information sources and develop his basic information. Developing the student’s method of transferring information to the workplace Training the student to conduct scientific research to solve problems at work and develop his methods. FEEDBACK:

	The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback given in these sessions. 2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuou	All

				s	
	Report	1	10% (10)	13	LO #5, #8 and #10
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) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Microbiology
Week 2	The position of microorganisms among living organisms (classification)
Week 3	The structure of bacteria and the functions of their parts
Week 4	Nutrition of microorganisms.
Week 5	Growth and reproduction of bacteria. And bacterial enzymes.
Week 6	Mycoplasma, phytoplasma, rickettsia.
Week 7	First monthly exam
Week 8	Genetics of microorganisms.
Week 9	Viruses, viroids and prions
Week 10	Fungi.
Week 11	Algae
Week 12	Protozoa
Week 13	Microorganisms in soil, food and water
Week 14	-Control of microorganisms.
Week 15	Introduction to Microbiology
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Laboratory Syllabus) المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered

Week 1	General laboratory instructions and identification of laboratory devices and equipment
Week 2	Cultivation media and how to prepare and sterilize them.
Week 3	Isolation and purification of microorganisms - isolation methods
Week 4	Purification of bacteria and study of the characteristics of bacterial colonies
Week 5	Study of the pathogenicity of microorganisms isolated from infected plants
Week 6	Staining bacteria
Week 7	Counting bacteria
Week 8	First monthly exam
Week 9	Yeasts and molds
Week 10	-The effect of some physical factors on the growth of microorganisms
Week 11	The effect of some chemical pesticides and antibiotics on the growth of microorganisms
Week 12	-Examination of microorganisms in milk and other processed foods
Week 13	Continuation of the previous laboratory
Week 14	Examination of samples of heavy water - Testing for the presence of viruses and bacteria.
Week 15	Continuation of the previous laboratory

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Principles of Microbiology Author: Faiz Aziz Al-Ani and Amin Suleiman Badawi - 1990 Bacteria / Written by Nizam Al-Haidari and others Microbiology, Trtoro et al., 2009	Yes
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

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**Mycology-1**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code				
ECTS Credits				
SWL (hr/sem)	**150**			
Module Level	1	**Semester of Delivery**	1	
Administering Department	Plant Protection	**College**	Agriculture	
Module Leader	Dr. Abdullah Abdulkareem Hassan	**e-mail**	Drabdullah.has67@tu.edu.iq	

Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Dr. Abdullah Abdulkareem Hassan	**e-mail**	Drabdullah.has67@tu.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**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

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The student learns about all the taxonomic levels of fungi and the importance and harms of each one.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive objectives Introduce the student to the development of fungi and everything related to it Introduce the student to all the taxonomic levels of fungi Introduce the student to the importance of fungi in terms of harms and benefits and at the environmental level Introduce the student to the importance of studying fungi and their relationship to plant diseases Enabling the student to know the methods of controlling fungi , The relationship of fungi to diseases and the genetics of fungi B- Course specific skill objectives. B1 - Training students to study **part one** of the families and genera B2 - Introduce the student to the morphological properties of fungi B3 - Fungal dissection B4 – fungal growth
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The subject is structured around several modes of delivery including a series of illustrated lectures with experts from the field coupled with workshop/tutorial discussions, and individual site visits with practical exercises. Assignment submissions may include verbal presentation and physical documents for the 2 assignments. Feedback will be verbal throughout the semester. It is the student's responsibility to make notes of any feedback given in these sessions. Supplemental written feedback will also be provided for each of the 2 assignments with the assessment. Teaching and learning methods • Providing students with the basics and lectures related to the subject. • Using point Power presentation methods to convey information well and clearly to the student. • Encouraging students to go to the library when they are asked to submit scientific reports on the topics given to them from the study material. • Using some software that simulates the shapes and dissection of some types of fungi Evaluation methods Daily and monthly tests through questions about the subject of the study material Grades on student participation in research and scientific reports Student activities through making posters and illustrations about what pertains to the study material. C- Emotional and value objectives Putting deductive questions to students Finding solutions to problems and obstacles that students encounter in the

	practical part of the subject and finding solutions for them Enabling students to conduct the largest possible number of exercises and applications on the topics Teaching and learning methods Developing teaching programs in coordination with higher departments Developing teaching curricula by the department similar to the work environment Sending students to departments and directorates for the purpose of conducting summer application Assigning students to conduct research and reports Assigning students to go to the library and collect sources on the subject Evaluation methods Conducting daily and monthly tests through questions on the subject of the study material to determine the extent of their comprehension of the subject Giving grades for students' participation in scientific research and reports Discussing research and reports and presenting them to students and giving grades on them Writing reports after the end of the application period to determine the extent to which students are able to diagnose problems and how to find solutions for them. D- General and transferable qualification skills (other skills related to employability and personal development). Training the student on how to use permanent information sources and develop his basic information. Developing the student’s method of transferring information to the workplace Training the student to conduct scientific research to solve problems at work

	and develop his methods. FEEDBACK: The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback given in these sessions. 2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**

Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	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, #8 and #10
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)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Mycology
Week 2	Definitions and Terminology
Week 3	Historical Overview of the Development of this Science + Importance of Studying Mycology
Week 4	The Foundations Relied upon in Modern Classification Based on Molecular Genetic Evolutionary Origin
Week 5	The Position of Fungi Among Living Organisms, the Foundations Relied upon in Traditional Classification
Week 6	Fungal Nutrition Levels
Week 7	Fungal Body Structure
Week 8	Growth in Fungi
Week 9	Methods of Reproduction
Week 10	
Week 11	Division of Naked Fungi: Classification, Structure, Importance, Life Cycle
Week 12	Study Under the Sections of Acrasiogymnomycotina
Week 13	
Week 14	Division of Naked Fungi: Classification, Structure, Importance, Life Cycle
Week 15	Study Under the Sections of

Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Laboratory Syllabus) المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered
Week 1	Explanation of laboratory instructions and scientific equipment for the study of fungi
Week 2	Laboratory instructions, nutritional media (environments): their types and preparation
Week 3	Laboratory instructions, nutritional media (environments): their types and preparation
Week 4	Isolation of fungi from soil, air, infected plants and water
Week 5	Isolation of fungi from soil, air, infected plants and water
Week 6	Purification of colonies,
Week 7	Counting colonies,
Week 8	Growth estimation
Week 9	Preparation of slides and use of the microscope
Week 10	Study of models available from the Department of Gymnosperms
Week 11	Study of models available from the Department of Gymnosperms
Week 12	Study of models available from the Department of Flagellated Fungi such as Chytridiomycota
Week 13	Study of models available from the Department of Flagellated Fungi such as Chytridiomycota
Week 14	Study of models available from the Department of Flagellated Fungi such as Oomycota
Week 15	Study of models available from the Department of Flagellated Fungi such as Oomycota

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Introductory mycology. By Axopoulus,C. J., Mims,C. W. and Blackwell,M. 1996.	Yes

	Introduction to fungi by Webster,J. and Weber, R. 2000	
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
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	**Mycology-2**	**Module Delivery**
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code		
ECTS Credits		
SWL (hr/sem)	**150**	

Module Level	1	**Semester of Delivery**	1
Administering Department	Plant Protection	**College**	Agriculture
Module Leader	Dr. Abdullah Abdulkareem Hassan	**e-mail**	Drabdullah.has67@tu.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Dr. Abdullah Abdulkareem Hassan	**e-mail**	Drabdullah.has67@tu.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**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

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The student learns about all the taxonomic levels of fungi and the importance and harms of each one.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive objectives Introduce the student to the development of fungi and everything related to it Introduce the student to all the taxonomic levels of fungi Introduce the student to the importance of fungi in terms of harms and benefits and at the environmental level Introduce the student to the importance of studying fungi and their relationship to plant diseases Enabling the student to know the methods of controlling fungi , The relationship of fungi to diseases and the genetics of fungi B- Course specific skill objectives. B1 - Training students to study **part two** of the families and genera B2 - Introduce the student to the morphological properties of fungi

	B3 - Fungal dissection B4 – fungal growth
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The subject is structured around several modes of delivery including a series of illustrated lectures with experts from the field coupled with workshop/tutorial discussions, and individual site visits with practical exercises. Assignment submissions may include verbal presentation and physical documents for the 2 assignments. Feedback will be verbal throughout the semester. It is the student's responsibility to make notes of any feedback given in these sessions. Supplemental written feedback will also be provided for each of the 2 assignments with the assessment. Teaching and learning methods • Providing students with the basics and lectures related to the subject. • Using point Power presentation methods to convey information well and clearly to the student. • Encouraging students to go to the library when they are asked to submit scientific reports on the topics given to them from the study material. • Using some software that simulates the shapes and dissection of some types of fungi Evaluation methods Daily and monthly tests through questions about the subject of the study material Grades on student participation in research and scientific reports Student activities through making posters and illustrations about what pertains to the study material. C- Emotional and value objectives

	Putting deductive questions to students Finding solutions to problems and obstacles that students encounter in the practical part of the subject and finding solutions for them Enabling students to conduct the largest possible number of exercises and applications on the topics Teaching and learning methods Developing teaching programs in coordination with higher departments Developing teaching curricula by the department similar to the work environment Sending students to departments and directorates for the purpose of conducting summer application Assigning students to conduct research and reports Assigning students to go to the library and collect sources on the subject Evaluation methods Conducting daily and monthly tests through questions on the subject of the study material to determine the extent of their comprehension of the subject Giving grades for students' participation in scientific research and reports Discussing research and reports and presenting them to students and giving grades on them Writing reports after the end of the application period to determine the extent to which students are able to diagnose problems and how to find solutions for them. D- General and transferable qualification skills (other skills related to employability and personal development). Training the student on how to use permanent information sources and develop his basic information.

	Developing the student's method of transferring information to the workplace Training the student to conduct scientific research to solve problems at work and develop his methods. FEEDBACK: The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback given in these sessions. 2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10,

assessment					#11
	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, #8 and #10
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)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Non-flagellated fungi division: classification, structure, importance, life cycle
Week 2	Study under the division
Week 3	Zygomycotina
Week 4	Non-flagellated fungi division: study under the division
Week 5	Ascomycotina
Week 6	Class:Ascomycetes
Week 7	Non-flagellated fungi division: study under the division
Week 8	Ascomycotina
Week 9	Class:Ascomycetes
Week 10	Subclass:Hemiascomyceti
Week 11	Non-flagellated fungi division: study under the division
Week 12	Ascomycotina
Week 13	Class:Ascomycetes
Week 14	Subclass:Plectomycetidae
Week 15	Non-flagellated fungi division: study under the division
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Laboratory Syllabus)

المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered
Week 1	Study of the available models from the fungal division of the zygotic fungi
Week 2	Study of the available models from the non-flagellated fungi division such as fungi that do not form a fruiting body such as yeasts
Week 3	Study of the available models from the non-flagellated fungi division such as fungi that do not form a fruiting body such as yeasts and those that form a closed fruiting body
Week 4	Study of the available models from the non-flagellated fungi division of the fungi that form fruiting bodies
Week 5	Study of the available models from the non-flagellated fungi division of the fungi that form flask fruiting bodies
Week 6	Study of the available models from the non-flagellated fungi division of the fungi that form flask fruiting bodies
Week 7	Study of the available models from the non-flagellated fungi division of the basidiomycete fungi that form fruiting bodies such as truffles and truffles
Week 8	Study of the available models from the non-flagellated fungi division of Basidiomycetes that do not form fruiting bodies (echoes)
Week 9	Study of the available models of the non-flagellated fungi section of basidiomycetes that do not form fruiting bodies (and smuts)
Week 10	Study of the available models of imperfect fungi
Week 11	Study of the available models of imperfect fungi
Week 12	Study of the models of mycorrhizae
Week 13	Study of the models of lichens
Week 14	Study of the available models from the fungal division of the zygotic fungi
Week 15	Study of the available models from the non-flagellated fungi division such as fungi that do not form a fruiting body such as yeasts

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Introductory mycology. By Axopoulus,C. J., Mims,C. W.	Yes

	and Blackwell,M. 1996. Introduction to fungi by Webster,J. and Weber, R. 2000	
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
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**Agriculture mites (phytophagous mites)**			**Module Delivery**
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	PPD-4705			
ECTS Credits	**5**			
SWL (hr/sem)	**75**			
Module Level	4	**Semester of Delivery**	7	
Administering Department	Plant Protection	**College**	Agriculture	

Module Leader	Name	**e-mail**	E-mail
Module Leader's Acad. Title	Assistant professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Dr. Ziyad Sh. Ahmed	**e-mail**	zayidsh@tu.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	1/09/2024	**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

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1-Know the economic importance of arthropod pests for crop production 2- Recognize the major morphological features of insect and mite pests 3- Define the different species of plant-damaging insects and mites 4- Recognize the biology and metmorphosis of different insects and mites 5- Describe the type of damage caused by plant-damaging insects and mites 6- Detect the infestation of insects and mites on different crops in Egypt 7- Manage the orchards or field against these pests before their outbreaks 8- Review different approaches to control and minimize their impact on yield 9- Determine the basic principles of Integrated Pest Management (IPM)
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Knowledge and Understanding On successful completion of this course, the student should be able to 1. Mention the different species of insects and mites and their host plants 2. Understand the development and life cycle of insects and mite pests 3. Know the behavior and feeding habits of these pests 4. Recognize the damage types caused by these pests on different crops 5. Lists the different methods used to manage these pests - Intellectual Skills By the end of this course, the student should be able to

	1. Conclude the factors affecting the population status of insect and mite pests 2. Evaluate the appreciate conditions for the factors causing infestation with different insect and mites on agricultural crops 3. Employs the information on life cycles of these pests in how to combat each species 4. Assess the using of integrated pest control program -Practical and Professional Skills By the end of this course, the student should be able to 1. Distinguish between the symptoms of various insect pests and determine the time of their occurrence 2. Determine the seasons of outbreak of pests and how to reduce their damage 3. Utilize standard laboratory procedures and techniques in experimental applications in applied entomology and acarology 4. Plans programs to manage insect and mite pests on agricultural crops
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The subject is structured around several modes of delivery including a series of illustrated lectures with experts from the field coupled with workshop/tutorial discussions, and individual site visits with practical exercises. Assignment submissions may include verbal presentation and physical documents for the 2 assignments. Feedback will be verbal throughout the semester. It is the student's responsibility to make notes of any feedback given in these sessions. Supplemental written feedback will also be provided for each of the 2 assignments with the assessment. FEEDBACK: The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback given in these sessions.

	2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	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, #8 and #10
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) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	What is Acarology, Working subjects, Acarology in the World, Acarology through Plant Protection and Encountered İmportant Problems, Literature ragarding to Acarology.
Week 2	Arthropoda Phylum, Acarina, Discriminating Features Between Mites and Insects, General Morphological Features and Mounting Slides.
Week 3	Respiration, Digestion, Circulatory, Nervous and Reproductive Systems of Acari.
Week 4	General Knowledge About Opilioacariformes, Parasitiformes and Acariformes
Week 5	**EXAM 1**
Week 6	Recognizing Important Mite Groups at Family Level for Plant Protection with the Aid of Key. Some Economical and Biological Aspects of Tetranychidae
Week 7	Biology and Damage Types of Important Species in Tetranychidae Family.
Week 8	Biology and Damage Types of Important Species in Tenuipalpidae family.
Week 9	Biology and Damage Types of Important Species in Eriophyidae Family
Week 10	**EXAM 2**
Week 11	Acaricides
Week 12	Biology and Damage Types of Important Species in Tarsonemidae Family.
Week 13	Biology and Damage Types of Important Species in Acaridae Family.
Week 14	Biology of the Important Species of the Phytoseiidae Family (Predatoy Mites) and Examples Regarding Their Usage As Biological Control Agent.
Week 15	Succesfull Examples About Biological Control Applications Used Against Mites in Field and Greenhouse Conditions II
Week 16	**EXAM 3**

Delivery Plan (Weekly Laboratory Syllabus) المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered
Week 1	Identify the similarities and differences between insects and Mites
Week 2	General characteristics of the class of arachnids, mites and ticks,

Week 3	Body areas Agricultural mites, members Sensation in a mite.
Week 4	respiratory system, Digestive, reproductive, circulation, fecal, glandular, Nervous system, reproduction and stages, The growth and development of a mite.
Week 5	EXAM 1
Week 6	The Taxonomic position of a Mites
Week 7	Types of Reproduction in Mites
Week 8	Damage Types of Important Species in Tetranychidae Family, The most important ways to controal it
Week 9	Damage Types of Important Species in Tenuipalpidae Family, The most important ways to controal it
Week 10	EXAM 2
Week 11	Damage Types of Important Species in Eriophyidae Family, The most important ways to controal it
Week 12	Phytoseiidae family, Life cycle, habits Nutrition, needs Food and its sources for Mite predator.
Week 13	Damage Types of Important Species in Tarsonemidae Family, The most important ways to controal it
Week 14	Beetle mite, life cycle The Mite, the importance Economics of the beetle Mite.
Week 15	Damage Types of Important Species in Acaridae Family, The most important ways to controal it

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Wylie, F. R., & Speight, M. R. (2012). Insect pests in tropical forestry. CABI. 2- Paull, R. E., & Armstrong, J. W. (1994). Insect pests and fresh horticultural products. Treatments and responses. 3- Horowitz, A. R., & Ishaaya, I. (2004). Insect	

	pest management: field and protected crops. Springer Science & Business Media.	
Websites	agro-lib.site/2019/12/blog-post_855.html	

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
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Physiology of insects**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PPD- 3503		
ECTS Credits	75		
SWL (hr/sem)	50		
Module Level	3	**Semester of Delivery**	1

Administering Department	plant protection	**College**	Science
Module Leader	Name	**e-mail**	E-mail
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Dr. Mohammed shaker mansor	**e-mail**	mshmansor@tu.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	20/09/2024	**Version Number**	

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

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives

أهداف المادة الدراسية

The main objective of this course is to provide students with knowledge related to (insect physiology). Internal and external anatomy, identification of all organs of the insect's body, determination of the function of each vital part or organ inside the insect's body. Through the following.

- Knowledge of the nutritional needs of the insect and explanation of the resistance of some plant species to pests.
- Interpretation of some of the results obtained from environmental, life, behavioral and other studies, where the interpretation is often related to the available physiological information about the insect studied.
- Develop students ' ability to know how pesticides affect (mode of action), especially on the nervous systems.
- The study of the organs of sense organs led to their use in chemical and optical traps.
- The study of insect hormones led to the development of a new generation of pesticides (IGR)and the determination of the methods of their impact on pests.
- The study of insect hormones led to the development of a new generation of

	pesticides (IGR)and the determination of the methods of their impact on pests.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Knowledge and understanding. • Identify the functions of insect organs. • Identification of the structure of organs. • Find out which means are flexible, easy, least expensive and effortless in the fight against insects . • Tests of the methods by which chemical resistance methods affect the life of insect pests . • Knowledge of the use of tools or devices that are used in the anatomy of insects. • Training the student on insect anatomy and the use of anatomy tools. • Identification of the internal organs of the insect for the purpose of conducting comparative tests between natural And affected. • Preparation of reports on the results of the autopsy.
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in the presentation of this course is to encourage students ' participation in the exercises and at the same time expand and improve the skills of insect anatomy as well as collecting samples of insect species that are of interest to the student in conducting experiments . Train the student on how to use information sources to sustain and develop their basic information and gain confidence to express and put forward solutions to the problems posed,while developing the student's method of transferring the information and experience gained to the work Center.And train the student to conduct scientific research to solve the problems faced at work, develop his methods and exploit the available possibilities to come up with appropriate solutions. Feedback: The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback

	given in these sessions. 2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	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, #8 and #10
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)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**The Integument (Exoskeleton)**

Week 2	Digestive System/" Alimentary Canal"
Week 3	Physiology of digestion & absorption
Week 4	Development & Endocrine Glands
Week 5	The Nervous System & Sense Organs
Week 6	Sympathetic or Visceral Nervous System
Week 7	First month exam
Week 8	The Sensory organs
Week 9	Excretion and Excretory Organs
Week 10	Tracheal System
Week 11	Circulatory System
Week 12	The Female Reproductive System
Week 13	Second month exam
Week 14	The male Reproductive System
Week 15	The Muscles
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Laboratory Syllabus) المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered
Week 1	Instructions and directions for the laboratory
Week 2	The parts and appendages that connect to the wall of the insect's body (exoskeleton)
Week 3	Specimen collection and anatomy of the American cockroach
Week 4	Anatomy of the American cockroach and training on the detection of the gastrointestinal tract.
Week 5	Detection of enzymes.

Week 6	**First month exam**
Week 7	**Anatomy and detection of the nervous system " abdominal nerve cord: for the American cockroach**
Week 8	**Train students on the anatomy of the American cockroach to extract the "abdominal nerve cord" and distinguish nerve nodes and axons .**
Week 9	**Anatomy of the circulatory system**
Week 10	**Anatomy and Identification of the female reproductive system**
Week 11	**Anatomy and identification of the male reproductive system**
Week 12	**Second month exam**
Week 13	**Calculation of the number of heartbeats**
Week 14	**The effect of damaging the brain and nerve nodes**
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Textbook: The Dirksli Thabet (1990), a book on Insect Physiology	Yes
Websites	https://www.sciencedirect.com/journal/journal-of-insect-physiology https://link.springer.com/book/10.1007/978-94-009-5973-6	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors

(50 - 100)	**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

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant physiology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PPD-2303				
ECTS Credits	**5**				
SWL (hr/sem)	**75**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Plant Protection		**College**	Agriculture	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Assistant professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Ziyad Sh. Ahmed		**e-mail**	zayidsh@tu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/09/204		**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 أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	w1: The student knows and understands the physiological processes taking place at the level of the cell, organ and the whole plant, and recognizes the influence of environmental factors on the functioning of plant organisms. W2: Student knows and understands professional terms and terminology used in natural sciences and uses them together with mathematical and statistical methods to describe and interpret physiological processes. W3: Student knows and understands the relationship of plant physiology with other natural sciences, and gives examples of modification of physiological processes with the use of biotechnological tools.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	7. Basic issues related to water management: water intake, transport, transpiration. 8. Mineral nutrition: the role of macro- and microelements, element uptake and short- and longdistance transport, mechanism of nitrogen fixation and assimilative reduction of nitrates, examples of symbiosis in the uptake of mineral substances by plants. 9. Photosynthesis: photosynthetic pigments, light and dark phases reactions, assimilation of CO2 in C3 and C4, CAM plants. 10. Respiration: stages of aerobic respiration and their course, mechanism of oxidative and substrate phosphorylation. 11. Plant growth and development: growth phases, growth location, development stages, seed dormancy, germination, vegetative and generative development, flowering induction, role of phytochrome in physiological processes. 12. Plant hormones, activators and inhibitors, their roles. 13. Plant movements, types, mechanisms, examples.
Indicative Contents المحتويات الإرشادية	No Indicative Contents available

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم	
Strategies	The subject is structured around several modes of delivery including a series of illustrated lectures with experts from the field coupled with workshop/tutorial discussions, and individual site visits with practical exercises. Assignment submissions may include verbal presentation and physical documents for the 2 assignments. Feedback will be verbal throughout the semester. It is the student's responsibility to make notes of any feedback given in these sessions. Supplemental written feedback will also be provided for each of the 2 assignments with the assessment. FEEDBACK: The class structure provides several opportunities for feedback: 1. Throughout the semester verbal feedback will be provided by tutor(s) and peer-peer in the tutorial and workshop sessions for in-class presentations and work sessions. It is the student's responsibility to bring sufficient work for feedback (in line with the required timeline) and to make notes of any feedback given in these sessions. 2. All assignments are graded in *ReView*, where the tutor(s) will give formal feedback and indicative grades. This site also allows students to self-assess. 3. The online forum will allow students to engage with the work of their peers and the tutor(s) and can be seen as a further opportunity for informal feedback.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	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, #8 and #10
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)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	What is Plant Physiology? Botany Review
Week 2	Water Potential, Water Balance and Transport in Plants
Week 3	Membrane Potential and Solute Transport
Week 4	Loss of Water, Transpiration, Guttation, secretion, bleeding
Week 5	EXAM 1
Week 6	Water Absorption, Xylem Transport
Week 7	Photosynthesis: The light reactions
Week 8	Photosynthesis: The light reactions
Week 9	Biochemistry and Metabolism, Respiration

Week 10	**EXAM 2**
Week 11	**Phloem Transport**
Week 12	**Hormones Auxins, Gibberellins, Cytokinins, Ethylene, Abscisic Acid, Phytochrome**
Week 13	**Mineral Nutrition**
Week 14	**Growth and Development, Growth, development, and differentiation**
Week 15	**Plant movements, types, mechanisms, examples.**
Week 16	**EXAM 3**

Delivery Plan (Weekly Laboratory Syllabus) المنهاج الأسبوعي للمختبر (العملي)	
	Material Covered
Week 1	**Lab Introduction; Plant Propagation.**
Week 2	**Plant Water Potential Plant Pressure Bomb; Transpiration.**
Week 3	**Amylase induction during Seed Germination**
Week 4	**Analysis of α-amylase by glucose accumulation**
Week 5	**EXAM 1**
Week 6	**Learn about theories Water Absorption, Xylem Transport**
Week 7	**Measurement and characterization of Photosynthesis**
Week 8	**Measurement of the CO2 dependence of photosynthesis**
Week 9	**Measurement of Photorespiration in C3 and C4 plants.**
Week 10	**EXAM 2**
Week 11	**Learn about theories Phloem Transport**
Week 12	**Analysis of Mineral Nutrition and Hormonal induction during seed germination or independent lab.**
Week 13	**Start Mineral Nutrition; discuss and design independent projects,**

	Mineral Nutrition
Week 14	**SDS-PAGE and Electroblotting of proteins**
Week 15	**EXAM 3**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	-Jain, V. K. (2017). Fundamentals of plant physiology. S. Chand Publishing. - Bhatla, S. C., & Lal, M. A. (2018). Plant physiology, development and metabolism. Springer. - Clemens, S. (Ed.). (2019). Plant physiology and function. Springer New York.	
Websites	https://academic.oup.com/plphys?utm_campaign =14218855676719861 24&utm_source=google%2 0&utm_medium=ppc&utm_content=text+only&u tm_term=	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
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