Wasit University

جامعة واسط

First Cycle – Bachelor's Degree (B.Sc.) – Field Crop Science

بكالوريوس – علوم محاصيل حقلية

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1. Mission & Vision Statement

Vision Statement

Leading the way to promote sustainable agriculture and agricultural innovation, by graduating qualified cadres capable of leading change in the agricultural sector, achieving food security, and preserving natural resources for future generations..

Mission Statement

• Providing high-quality education that equips students with the scientific knowledge and practical skills necessary for field work in field crop cultivation, management, and production, research, and public service.

• Promoting scientific research in the areas of environmental safety and agricultural sustainability to address current and future challenges in field crop cultivation and production.

• Enhancing collaboration with industry, government, and communities to ensure sustainable agricultural development.

• Promoting innovation, critical thinking, and lifelong learning among students and professionals in field crop science.

2. Program Specification

Program code:	BSc-FS	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

The Department of Field Crops in the College of Agriculture is a vital department that focuses on the study of strategic crops such as grains, legumes, oil crops, and fibers, with the aim of achieving food security and sustainable agricultural development. This specialization is linked to many agricultural and environmental sciences such as soil science, genetics, physiology, prevention, and agricultural economics, in addition to modern technologies such as smart agriculture and genetic engineering. The department is

based on solid scientific foundations that include the study of plant morphology and physiology, genetically improving crops, increasing their productivity and tolerance to environmental stresses, as well as managing agricultural systems such as crop rotation and conservation agriculture. It aims to prepare qualified cadres capable of developing the agricultural sector, increasing productivity and crop quality to meet the needs of the local and global market, and promoting sustainable agriculture to preserve natural resources. It also contributes to scientific research concerned with solving problems in the agricultural sector. The societal motivation to engage in this specialization stems from its direct connection to food security, addressing the challenges of population growth, providing job opportunities in the agricultural and research sectors, contributing to rural development, and increasing farmers' income. In the early stages, students study the basics of botany, soil science, genetics, and plant production methods, while in the advanced stages, they delve into crop management. They will also gain practical skills in agricultural project management, the use of modern technologies, and data analysis to improve production. This will qualify graduates to work in ministries of agriculture, research centers, agricultural companies, and international food organizations, or to establish private agricultural projects. They will also pursue postgraduate studies in the fields of biotechnology, climate change, and agricultural economics, thus becoming active players in achieving food and economic stability.

3. Program Objectives

1. Enhancing Scientific Knowledge:

• Providing students with theoretical and practical knowledge in agricultural sciences and agricultural engineering.

• Enhancing students' understanding of the environmental and economic challenges in the agricultural sector.

2. Developing Practical Skills:

• Developing students' skills in using modern technologies and managing agricultural resources.

• Enhancing the ability to design and implement sustainable agricultural projects.

3. Promoting Ethical and Professional Values:

• Instilling values of sustainability and social responsibility in students.

• Enhancing commitment to professional ethics in agricultural research and practice.

4. Promoting Scientific Research and Innovation:

• Encouraging students to participate in scientific research that contributes to solving agricultural problems.

• Supporting innovation in the field of agriculture by providing a stimulating learning environment.

5. Community Service:

• Preparing graduates capable of contributing to improving the quality of life in rural communities.

• Enhancing cooperation with the public and private sectors to achieve food security.

6. Continuous Development of Academic Programs:

• Updating curricula to keep pace with recent developments in agricultural sciences.

Ensuring the quality of academic programs through continuous evaluation and improvement.

4. Student Learning Outcomes

The learning outcomes of the Department of Crop Sciences in the College of Agriculture focus on equipping students with the knowledge and skills necessary to understand and apply the concepts of field crop cultivation and production, and to analyze and evaluate the quality and safety of agricultural products. This is achieved through:

1. Enhancing Scientific Knowledge:

• Providing students with theoretical and practical knowledge in agricultural sciences and agricultural engineering.

• Enhancing students' understanding of the environmental and economic challenges in the agricultural sector.

2. Developing Practical Skills:

• Developing students' skills in using modern technologies and managing agricultural resources.

• Enhancing their ability to design and implement sustainable agricultural projects.

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• Instilling values of sustainability and social responsibility in students.

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• Enhancing cooperation with the public and private sectors to achieve food security.

6. Continuous development of academic programs:

• Updating curricula to keep pace with recent developments in agricultural sciences.

Ensuring the quality of academic programs through continuous evaluation and improvement.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Wasit University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

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:				

Number 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.

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

   CGPA of a 4-year B.Sc. degree:

   CGPA = [(1st ^{m}odule score x ECTS) + (2nd ^{m}odule score x ECTS) + ……] / 240

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
WU01	Arabic Language	33	17	2	B	
WU04	Democracy and human rights	32	18	2	B	
CS1315	Botany	78	97	7	B	
CS2330	Principle of animal production	78	97	7	C	
AGR131	Statistics	78	47	5	S	
CS1302	Principle of soil science	78	97	7	c	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CS1311	Principles of field crop	79	96	7	C	
AGR1351	Agricultural Economics	34	66	4	B	
WU03	English Language	33	17	2	B	
WOU02	Computer	50	25	3	B	
CSLV2340	Aria and soil leveling	79	96	7	C	
AGR2391	Bio Chemistry	79	96	7	S	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

8. Contact

Program Manager:
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Program Coordinator:
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جامعة واسط

First Cycle – Bachelor's Degree (B.Sc.) – Food Science

بكالوريوس – علوم المحاصيل الحقلية

Table of Contents

1. Overview

This catalogue is about the courses (modules) given by the program of Field crops Science to gain the Bachelor of Science degree. The program delivers (48) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظرة عامة

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج علوم المحاصيل الحقلية للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (48) مادة دراسية، مع (6000) إجمالي ساعات حمل الطالب و240 إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2024-2025

Module 1

Code	Course/Module Title	ECTS	Semester
WU01	Arabic Language	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	33	17
Description			
This course aims to strengthen students' skills in the **Arabic language**, focusing on improving their abilities in **reading, writing, grammar, and comprehension**. It provides a foundation in **classical and modern standard Arabic**, with attention to **sentence structure, correct usage, punctuation**, and **writing techniques**. The course also introduces students to selected texts from **Arabic literature, culture, and heritage**, enhancing their appreciation for the richness and depth of the Arabic language. Students will practice writing essays, analyzing texts, and applying grammatical rules accurately, enabling them to communicate effectively in academic and professional contexts.			

MODULE DESCRIPTION FORM

Module Information				
Module Title	Arabic Language		**Module Delivery**	
Module Type	Basic		☐**Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	WU01			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1	**Semester of Delivery**	2	
Administering Department	Field crop Dept.	**College**	College of Agriculture	
Module Leader	Zena Abdulla Khamees	**e-mail**	zabdula@uowasit.edu.iq	
Module Leader's Acad. Title	Assist. Lecturer	**Module Leader's Qualification**	Master degree	
Module Tutor		**e-mail**		
Peer Reviewer Name	Name	**e-mail**	E-mail	

Scientific Committee Approval Date	15/11/2025	**Version Number**	1.0

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. To develop the basic language skills of the student: listening, speaking, reading, and writing. 2. To enhance the ability to express orally and in writing using correct and proper Arabic. 3. To expand the student's vocabulary through the study of new words and structures. 4. To improve reading comprehension and literary analysis skills across various text types (narrative, poetic, and expository). 5. To familiarize students with essential grammar and spelling rules and apply them accurately. 6. To foster a sense of belonging and appreciation for the Arabic language as a language of religion, culture, and identity. 7. To train students in critical and analytical thinking skills through text discussions and interpretation. 8. To expose students to examples of classical and modern Arabic literature to appreciate the beauty and history of the language.
Module Learning Outcomes	1. The student will distinguish between different types of literary and linguistic texts. 2. The student will correctly apply grammar and spelling rules in writing and speaking. 3. The student will analyze written texts from both linguistic and literary perspectives. 4. The student will compose coherent and grammatically correct paragraphs or essays in Arabic.

	5. The student will read texts aloud with proper pronunciation and expression. 6. The student will express opinions and ideas orally using clear and correct language. 7. The student will relate what they learn in Arabic to their daily life or academic specialization. 8. The student will demonstrate appreciation for the role of the Arabic language in shaping cultural and religious identity.
Indicative Contents	1. Introduction to the importance and status of the Arabic language. 2. Types of texts: narrative, descriptive, expository, persuasive, poetic. 3. Reading skills and reading comprehension. 4. Writing skills: paragraph writing, essay writing, letter writing. 5. Grammar and morphology: nominal and verbal sentences, subjects and objects, diptotes. 6. Spelling rules and punctuation marks. 7. Oral expression and public speaking skills. 8. Literary analysis of poetry and prose texts. 9. Introduction to key figures in classical and modern Arabic literature. 10. Practical activities: discussions – oral presentations – written exercises.

Learning and Teaching Strategies	
Strategies	1. Interactive lectures to explain linguistic and literary concepts. 2. Group work through class discussions and collaborative activities. 3. Written exercises to develop writing and grammar skills. 4. Oral presentations to enhance speaking abilities and self-confidence. 5. Analytical reading of various texts to understand deeper meanings. 6. Project-based learning to apply knowledge in real-world contexts. 7. Brainstorming for idea generation and creative expression. 8. Self-assessment and feedback for performance improvement and continuous learning. 9. Field visits or meetings with writers to connect content with real life (if applicable). 10. Use of multimedia tools such as educational videos and presentations to enrich the content.

Student Workload (SWL)			
Structured SWL (h/sem)	30	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1

Total SWL (h/sem)	50

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	15	LO #1 - #14
	Onset assignments	1	10% (10)	14	LO #8 - #13
	Online assignments	1	10% (10)	6	LO #1 - #5
	Reports	1	10% (10)	5	LO #1 - #4
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Getting acquainted with the history of the Arabic language, and its sections: first: grammar: explaining the payments from the Beginner, the news, the name of Kan and her sisters, and the participation of students in applying it
Week 2	Complete the explanation of the payments from the news of Kan, her sisters and the actor The actor's deputy will activate the practical application
Week 3	Explanation of the postulates of the effect and absolute effect
Week 4	Complete the explanation of the positions of effect and effect for him and for him
Week 5	The use of competition and the spirit of the group in explaining the subject of the case and raising some questions about the subject of the exception
Week 6	Using the question-and-answer method by presenting the topic of discrimination and continuing to present the subject of the caller
Week 7	Getting into the topic of prepositions: explaining the importance of prepositions from the genitive by preposition and genitive by annexation
Week 8	Explanation of the topic of minions, from participle, emphasis and substitution
Week 9	Complete the explanation of the Minions of the kindness of the pattern

Week 10	Entering a new topic, namely the number, and knowing its provisions
Week 11	Second: to identify the exchange science and the exchange balance by applying it in practice
Week 12	Explain the subject of the correct verb and the difference between it and the verb The sufferer
Week 13	Touch on the subject of abstract verbs and more, explain the subject of verb attribution
Week 14	Third: spelling: explain the topic of punctuation marks and find out their importance in writing research and University theses
Week 15	Recognize the importance of drawing the Hamza, writing the TA and applying

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Arabic language book, Dr. Rafid Sabah Altimimy	Yes
Recommended Texts	Journals and reports, online references, internet.	No

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 6

Code	Course/Module Title	ECTS	Semester
WU04	Democracy and human rights	2	1

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17

Description

This course introduces students to the core concepts, principles, and practices of **democracy and human rights** at the national and international levels. It explores the **development of democratic systems**, the **rule of law**, **citizenship**, **civil liberties**, **political participation**, and the **protection of individual and collective rights**. Students will study major human rights declarations and conventions, such as the **Universal Declaration of Human Rights**, and the roles of international organizations in promoting justice and equality.
Through discussions, case studies, and interactive activities, the course aims to strengthen students' awareness of their **rights and responsibilities** as citizens and to encourage **active participation** in democratic processes.

MODULE DESCRIPTION FORM

Module Information

Module Title	Democracy and human rights		**Module Delivery**	
Module Type	S		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	WU04			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1		**Semester of Delivery**	1
Administering Department	Field crop Science Dept.		**College**	College of Agriculture
Module Leader	Dr. Amir Kareem Hadhal		**e-mail**	akareem@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.
Module Tutor			**e-mail**	
Peer Reviewer Name	Name		**e-mail**	E-mail
Scientific Committee Approval Date	15/11/2025		**Version Number**	1.0

Relation with other Modules

Prerequisite module	None	**Semester**	

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. **Introduce students to the concept of democracy**, its historical development, various forms, and mechanisms of implementation in modern political systems. 2. **Enhance students' awareness of human rights**, including their definition, types (civil, political, economic, social, cultural), and the international and local sources that protect these rights. 3. **Promote a culture of tolerance and active citizenship** among students, and encourage respect for others' opinions and political and cultural pluralism. 4. **Enable students to distinguish between democratic and non-democratic systems**, analyze their characteristics, and assess their impact on societies. 5. **Highlight the role of national and international institutions** in the protection and promotion of human rights. 6. **Introduce students to international human rights declarations and conventions**, such as the Universal Declaration of Human Rights and the two International Covenants. 7. **Encourage students to participate in public life** and practice their political and civil rights with awareness and responsibility. 8. **Develop students' critical thinking** regarding contemporary issues related to freedom, justice, equality, and the rights of vulnerable and marginalized groups.
Module Learning Outcomes	1. **Explain the basic concepts of democracy and human rights**, and distinguish them from similar or overlapping concepts. 2. **Analyze the development of democratic thought throughout history**, and identify its forms and contemporary applications. 3. **Identify the types of human rights** (civil, political, economic, social, cultural) and their international and local legal sources. 4. **Evaluate the role of national and international organizations** in the protection and promotion of human rights, such as the United Nations, international courts, and civil society organizations. 5. **Compare democratic and non-democratic systems** in terms of structure, function, and their impact on public freedoms. 6. **Apply democratic principles in university and community life**, through respect for others' opinions, teamwork, and active participation. 7. **Recognize human rights violations** in various contexts and be able to propose humanitarian and legal solutions or alternatives. 8. **Demonstrate ethical and humanitarian commitment** to issues related to equality, justice, and the rights of vulnerable and marginalized groups in society.

Indicative Contents	1. **Introduction to Democracy and Human Rights** o Basic concepts o Importance and objectives 2. **Origin and Development of Democracy** o Historical roots o Contemporary models of democracy 3. **Forms of Democracy** o Direct democracy o Representative democracy 4. **Human Rights: Concept and Characteristics** o Classifications (civil, political, economic...) o Fundamental principles (dignity, equality, freedom) 5. **International Human Rights Instruments** o The Universal Declaration of Human Rights o The International Covenant on Civil and Political Rights o The International Covenant on Economic, Social and Cultural Rights 6. **Mechanisms for the Protection of Human Rights** o Nationally (constitution, judiciary) o Internationally (United Nations, international organizations) 7. **Democracy and Human Rights in the Arab Context** o Challenges and opportunities o Positive and negative examples 8. **The Role of Citizens in a Democratic System** o Political participation o Social responsibility 9. **Contemporary Human Rights Issues** o Women's rights o Children's rights o Freedom of expression 10. **Conclusion and General Evaluation** o Comprehensive review o Open discussions and practical applications

Learning and Teaching Strategies	
Strategies	• **Interactive lectures**: To present basic concepts and theories in a simplified and clear manner. • **Brainstorming and classroom discussions**: To stimulate critical thinking and promote the exchange of ideas. • **Case studies**: To analyze real-life situations related to human rights and democracy. • **Group work**: To develop a spirit of cooperation and dialogue among students. • **Student presentations**: To enhance communication and research skills. • **Field visits or meetings with human rights organizations (if possible)**: To

	connect theory with practical application. • **Use of multimedia**: Such as videos and documents to showcase examples of the struggle for democracy and human rights. • **Short reports and research papers**: To encourage self-learning and deepen understanding.

Student Workload (SWL)			
Structured SWL (h/sem)	33	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Tests**	1	10% (10)	7	LO #1 - #6
	Projects	1	10% (10)	15	LO #1 -#15
	Lab	1	10% (10)	8	LO #1 - #7
	Reports	1	10% (10)	15	LO #1 - #14
Summative assessment	**Mid Exam**	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Definition of Human Rights
Week 2	Origin and Development of the Concept of Human Rights
Week 3	Overview of Human Rights in Ancient Civilizations (Mesopotamia, Nile Valley)
Week 4	Human Rights in Divine Religions
Week 5	Human Rights and Their Relation to Other Variables
Week 6	Relationship Between Rights and Law

Week 7	Relationship Between Rights and Duties
Week 8	Key Fundamental Human Rights
Week 9	Impact of Globalization on Human Rights
Week 10	Major International Declarations and Conventions on Human Rights
Week 11	Universal Declaration of Human Rights (1948)
Week 12	Cairo Declaration on Human Rights in Islam
Week 13	Human Rights in International Charters and Laws
Week 14	International Covenant on Civil and Political Rights
Week 15	Financial and Administrative Corruption

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Theory and practical lectures	Yes
Recommended Texts	Human rights Book	Yes
Websites		

Grading Scheme

Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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Module 3

Code	Course/Module Title	ECTS	Semester
CS1315	Botany	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Botany			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**CS1315**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	UGx11 1		**Semester of Delivery**	1	
Administering Department	Field Crops Department		**College**	College of Agriculture	

Module Leader	Dr. Ahmed Shaker Muhsin	**e-mail**	ahshaker@uowasit.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	PhD
Module Tutor	Nada Mohammed Saadoun	**e-mail**	
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	15/11/2024	**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. **Definition, History, Importance, and Branches of Botany:** Understanding botany as a broad scientific field, tracing its historical development, recognizing its significance, and exploring its various branches such as anatomy, physiology, taxonomy, ecology, and plant genetics. 2. **Plant Cell Structure and Tissue Types:** Comprehending the structure and components of plant cells, and identifying the different types of plant tissues and their functions. 3. **Morphological and Anatomical Structure of Plant Organs:** Recognizing the morphological and anatomical structures of major plant parts including roots, stems, leaves, flowers, fruits, and seeds. 4. **Fundamental Plant Physiological Processes:** Recognizing the essential physiological processes occurring in plants, such as photosynthesis, respiration,

	absorption, transport, growth, and reproduction, along with the role of hormones and environmental factors in these processes. 5. **Principles of Plant Classification and Modern Taxonomy:** Understanding the foundations of plant classification, identifying different plant species and their evolutionary relationships, and becoming familiar with modern classification systems. 6. **Plant-Environment Interactions and Biogeochemical Cycles:** Comprehending the interactions between plants and their environment, their role in biogeochemical cycles (such as the carbon cycle), and the impact of environmental factors on plant growth and distribution.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Understanding Plant Structure and Function**: Recognize the structure of plant cells, plant tissues, and the different plant organs (root, stem, leaf, flower, fruit, seed). Comprehend the function of each part and how they work together. 2. **Recognizing Plant Diversity and Classification**: Appreciate the vast diversity within the plant kingdom, understand the principles of plant classification, and be able to distinguish major plant groups (such as algae, fungi, non-vascular plants, ferns, gymnosperms, and angiosperms). 3. **Grasping Plant Physiological Processes**: Understand the essential physiological processes that occur in plants, such as photosynthesis, respiration, nutrition, water and nutrient absorption, transport, and growth regulation by plant hormones. 4. **Comprehending Plant Evolution and Ecology**: Understand the origin and evolution of plant groups throughout the ages. Recognize the relationship between plants and their environment, their role in ecosystems, and the impact of various environmental factors on plant growth and distribution. 5. **Knowing the Economic and Ecological Importance of Plants**: Be aware of the economic importance of plants as a source of food, medicine, fibers, and more. Understand their role in maintaining ecological balance and protecting natural resources.
Indicative Contents المحتويات الإرشادية	1. **Nature of Botany:** Historical overview, importance of plants to humans, relationship of botany with other sciences, forms and types of plants. 2. **Plant Body:** Primary plant body, secondary plant body, plant cell, cell wall, steps of cell wall formation. 3. **Chemical Composition of the Cell Wall:** Cellulose, hemicellulose, pectin, gums and mucilage, lignin, lipids, fine structure of the cell wall. 4. **Plant Tissues:** Meristematic tissues – classification based on origin and position in the plant. 5. **Permanent Tissues:** Parenchyma tissue, collenchyma tissue, sclerenchyma tissue. First Monthly Exam. 6. **Secretory Tissues:** External secretory tissues, internal secretory tissues. Dermal tissues:

	epidermis, stomata, trichomes and epidermal outgrowths, functions of the epidermis. 7. **Complex Permanent Tissues:** Xylem tissue (vessels, tracheids, xylem parenchyma, fibers), phloem tissue (sieve tubes, companion cells, phloem parenchyma and fibers). 8. **Root System:** Types of root systems (taproot and fibrous), economic benefits of roots, functions of roots, types of adventitious roots. 9. **Stem:** Functions of the stem, classification of stems based on their ability to stand erect, external morphology of the stem. 10. **Types of Stem Branching:** Stem modifications. Second Monthly Exam. 11. **Leaf:** Origin of the leaf, arrangement of leaves on the stem, leaf venation. External appearance of monocot and dicot leaves. 12. **Leaf Modifications:** Leaf abscission, economic importance of leaves. 13. **Flowers:** Definition, floral parts (calyx, corolla, stamens, pistil), types of flowers. 14. **Fruits:** Definition, types (simple fruits, aggregate fruits, multiple fruits). 15. **Environmental Impact on Plant Morphology and Anatomy:** Aquatic, desert, and halophyte plants.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1. Interactive Lectures** • **Multimedia-Enhanced Lectures:** Utilize presentations rich with high-quality images, diagrams, videos, and 3D animations to explain complex plant structures and physiological processes. This helps in visualizing abstract concepts. • **Guided Discussions:** Pose open-ended questions during lectures to encourage students to think and participate, connecting theoretical concepts to real-world applications. • **Q&A Sessions:** Allocate time for students to ask questions and receive immediate answers, fostering understanding and resolving any confusion. • **Brainstorming:** At the beginning or end of each topic, conduct brainstorming sessions to generate ideas and activate students' prior knowledge. **2. Practical and Laboratory Learning** The laboratory is a cornerstone of botany education, providing direct experience with plants.

- **Laboratory Experiments:** Conduct experiments on plant physiology (e.g., photosynthesis, transpiration, water absorption), plant anatomy (preparing and viewing sections under the microscope), and tissue culture.
- **Specimen Identification:** Provide real plant specimens (live or preserved) for studying external and internal structures and identifying different species.
- **Microscope Usage:** Train students on the effective use of light microscopes to observe cellular and tissue details.
- **Diagrammatic Drawings:** Encourage students to draw what they observe under the microscope or from specimens, which enhances meticulous observation and understanding.

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3. Project-Based Learning (PBL)

This strategy encourages active learning and the development of problem-solving skills.

- **Group or Individual Projects:** Assign students research or practical projects such as:
    - Studying a specific plant in detail (its classification, anatomy, physiology, economic importance).
    - Designing and conducting a simple experiment to study the effect of an environmental factor on plant growth.
    - Building a small garden or greenhouse within the college (or a miniature model).
    - Preparing reports or presentations on environmental issues related to plants (e.g., deforestation, endangered plants).
- **Problem-Based Learning:** Present real-world scenarios or problems (e.g., a disease affecting an agricultural crop) and task students with researching solutions based on botanical knowledge.

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4. Field Trips and Scientific Excursions

- **Local Botanical Gardens:** Visit local botanical gardens to learn about plant diversity in their natural or semi-natural environments and apply classification concepts.
- **Nature Reserves:** Explore different plant ecosystems and the role of plants within them.
- **Farms or Nurseries:** Learn about the agricultural applications of botany and production processes.

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5. Use of Technology and Distance Learning

- **Simulation Software:** Utilize simulation programs to study physiological processes or structures that are difficult to observe in the laboratory.
- **Virtual Reality (VR) and Augmented Reality (AR):** Explore the potential for 3D

	visualization of plant structures or simulating different plant environments. • **Online Learning Resources:** Guide students to botanical databases, scientific journals, and reliable educational websites. • **Flipped Classroom:** Students watch lectures and theoretical materials at home, and class time is dedicated to discussions, problem-solving, and practical activities. **6. Collaborative Learning** • **Study Groups:** Encourage students to work in small groups to discuss concepts, solve assignments, or prepare for projects. • **Peer Review:** Students can review each other's work (e.g., lab reports) to enhance understanding and develop constructive criticism skills. **7. Continuous and Diverse Assessment** • **Quizzes and Assignments:** To regularly assess understanding of the material. • **Lab Reports:** To assess practical and analytical skills. • **Presentations:** To assess communication and information presentation skills. • **Research Projects:** To assess research and critical thinking skills.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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**	1	10% (10)	15	LO #1 - #14
	Assignments	1	10% (10)	6	LO #1 - #5
	Projects / Lab.	1	10% (10)	7	LO #1 - #6
	Report	1	10% (10)	15	LO #1 - #14
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	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	**Nature of Botany:** A historical overview, the importance of plants to humans, the relationship of botany with other sciences, forms and types of plants.
Week 2	**The Plant Body:** The primary plant body, the secondary plant body, the plant cell, the cell wall, steps in cell wall formation.
Week 3	**Chemical Composition of the Cell Wall:** Cellulose, hemicellulose, pectin, gums and mucilages, lignin, lipids, fine structure of the cell wall.
Week 4	**Plant Tissues:** Meristematic tissues – their classification based on origin and location on

	the plant.
Week 5	**Permanent Tissues:** Parenchyma tissue, collenchyma tissue, sclerenchyma tissue. First Monthly Exam.
Week 6	**Secretory Tissues:** External secretory tissues, internal secretory tissues – dermal tissues, epidermis, stomata, trichomes and epidermal outgrowths, functions of the epidermis.
Week 7	**Complex Permanent Tissues:** Xylem tissue – vessels, tracheids, xylem parenchyma, fibers. Phloem tissue – sieve tubes, companion cells, phloem parenchyma and fibers.
Week 8	**The Root System:** Types of root systems – taproot and fibrous root systems, economic benefits of roots, functions of roots, types of adventitious roots.
Week 9	**The Stem:** Functions of the stem, classification of stems based on their ability to stand erect, morphological appearance of the stem.
Week 10	**Types of Stem Branching:** Stem modifications. Second Monthly Exam.
Week 11	**The Leaf:** Origin of the leaf, arrangement of leaves on the stem, leaf venation. External appearance of monocot and dicot leaves.
Week 12	**Leaf Modifications:** Leaf abscission, economic importance of leaves.
Week 13	**Flowers:** Definition, floral parts – calyx, corolla, stamens, pistil, types of flowers.
Week 14	**Fruits:** Definition, types (simple fruits, aggregate fruits, multiple fruits).
Week 15	**Environmental Impact on Plant Morphology and Anatomy:** Aquatic, desert, and halophytic plants.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Slide Preparation Methods** - Microscope - Types of Microscopes - Microtome and its Types.
Week 2	**The Plant Cell** - Cytoplasmic Organelles - Plasma Membrane - Nucleus.
Week 3	**Cell Wall Structure** - Primary Wall - Secondary Wall - Middle Lamella - Types of Pits.

Week 4	**Cell Division** - Its Types - Cell Cycle - Mitosis.
Week 5	**Meiosis** - First Monthly Exam.
Week 6	**Meristematic Tissues** - Apical Tissues - Intercalary Tissues - Cambial Tissues.
Week 7	**Simple and Complex Permanent Tissues** - Vascular Bundles.
Week 8	**Internal Structure of Roots** - Root Zones.
Week 9	**Internal Structure of the Stem**.
Week 10	**Shoot Apical Meristem** - Second Monthly Exam.
Week 11	**Internal Structure of Monocot and Dicot Leaves**.
Week 12	**Leaf Shapes** - Leaf Margin - Leaf Base.
Week 13	**Flower Structure (Flower Parts)** - External Appearance of Flower Types.
Week 14	**Fruit Structure** - Identification of Some Fruit Types.
Week 15	**Identification of Some Aquatic, Halophytic, and Desert Plant Types**.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Al-Nabat Al-Aam (General Botany). (Vol. 1). Shawqi, Ahmed, Badri Al-Ani, Ibrahim Al-Suhaili, Abbas Ahmed Al-Saleh, Abdul Hadi Saleh, and Majeed Al-Hilli. Al-Musawi, Abdullah Hamad and Hussein Ali Al-Saadi. 1980. Practical General Botany. Ministry of Higher Education. University of Basra. 2. Fundamentals of General Botany. 2009. Mahmoud Mohamed Gabr, Ismail Mohamed Kamel, and Effat Fahmy Shabana. Dar Al-Fikr Al-Arabi. Cairo. 3. Fundamentals of Plant Anatomy. 1988. Dr. Badri Owaid Al-Ani and Qaisar Najeeb Saleh. University of Mosul Press.	نعم

Recommended Texts	Reliable Scientific Journals Scientific Reports	كلا
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	**Grade**	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail (In Progress)	(45-49)	More work required but credit awarded
	F – Fail	Fai	(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 4

Code	Course/Module Title	ECTS	Semester
CS2330	Principles of Animal Production	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
This course aims to provide students with the fundamental concepts of animal production, including the breeding and care of economically important livestock such as cattle, sheep, and poultry. It focuses on			

teaching students the factors affecting animal productivity, such as nutrition, health management, genetic improvement, and farm operations. Additionally, the course seeks to familiarize students with the significance of animal production in meeting society's protein needs and ensuring food security. Finally, it prepares graduates to apply modern breeding and production techniques to enhance economic efficiency and environmental sustainability.

MODULE DESCRIPTION FORM

Module Information					
Module Title	**Principles of Animal Production**			**Module Delivery**	
Module Type	C			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	CS2330				
ECTS Credits	6				
SWL (hr/sem)	125				
Module Level		1	**Semester of Delivery**		1
Administering Department		Field crop Dept.	**College**	College of Agriculture	
Module Leader	Dr. Mohammed Abdullah Khamees		**e-mail**	moabdalah@uowasit.edu.iq	
Module Leader's Acad. Title		Assist. Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor			**e-mail**		
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		15/11/2024	**Version Number**		1.0

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1. • Introduce students to the economic importance of livestock and its products.** **2. • Identify the different breeds of cattle, buffalo, sheep, and goats, and their classifications according to production.** **3. • Gain a basic understanding of the basics of reproduction and reproduction in ruminants.** **4. • Provide students with practical skills in calf care and basic ruminant nutrition.** **5. • Identify milk production methods and the factors affecting it.** **6. • Understand the daily, weekly, and seasonal field operations necessary to manage livestock production pens.** 7. **• Introduce students to the importance of field records and how to use them to improve production efficiency.**
Module Learning Outcomes	**0. A- Cognitive Objectives** **1 - Introduce the student to the economic importance of livestock and its role in food security.** **2 - Identify the different breeds of cattle, buffalo, sheep, and goats, and classify them according to their production type.** **3 - Clarify the basic concepts of ruminant animal nutrition.** **4 - Explain the basics of reproduction in cattle and other ruminants.** **5 - Identify the principles and types of animal housing design.** **6 - Explain the field operations and production records used in herd management.** **B - Course Skill Objectives** **1 - Distinguish between different breeds based on morphological and**

	production characteristics. **2 - Be able to assess the needs of young calves and provide appropriate care for them.** **3 - Analyze production data using field records.** **4 - Apply theoretical concepts to real-life or environmental situations, such as analyzing an animal housing system or feeding plan.**
Indicative Contents	**1- Explain the economic and productive importance of livestock in supporting food security and agricultural development.** **2- Classify major animal breeds according to their production purpose and identify their general characteristics.** **3- Explain the basic concepts of reproduction, health care, and nutrition for ruminants.** **4- Explain the general principles of animal nutrition, milk production, and the factors affecting it.** **5- Describe daily, weekly, and seasonal field operations and the use of production records.** **6- Identify animal housing types and requirements, and identify the environmental and production characteristics of various animals, such as buffalo, sheep, and goats.**

Learning and Teaching Strategies	
	1-Lectures and Presentations Core theoretical knowledge will be delivered through interactive lectures supported by multimedia presentations, diagrams, and real-life examples from the animal production sector. **2-Field Visits and Practical Demonstrations** Students will participate in scheduled visits to the animal farm (first and second visits), where they will observe and engage in basic field operations, animal handling, housing systems, and feeding practices.

Strategies	**3-Hands-on Training** Direct involvement in animal care tasks such as calf rearing, feed preparation, identifying animal breeds, reproductive health checks, and poultry housing setup to develop applied skills. **4-Group Discussions and Case Studies** Group-based learning through analysis of production scenarios, reproductive case studies, and comparative evaluations of different breeds and production systems. **5-Visual Aids and Models** Use of anatomical models, charts, and digital simulations to explain complex biological and physiological concepts such as reproduction, pregnancy, and growth stages. **6-Farm Records and Data Analysis** Students will learn how to record, interpret, and analyze farm data to assess productivity and improve management practices. **7-Student Presentations and Reports** Each student will be encouraged to present short reports or reflections based on field experiences, breed comparisons, or nutrition plans for different species.

Student Workload (SWL)			
Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)	47	**Unstructured SWL (h/w)**	3
Total SWL (h/sem)	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Tests**	1	10% (10)	8	LO #1 - #7
	Projects	1	10% (10)	6	LO #1 -#5
	Lab	1	10% (10)	9	LO #1 - #8
	Reports	1	10% (10)	15	LO #1 - #14
Summative assessment	**Mid Exam**	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Economic Importance of Animal Products
Week 2	Breeds of Cattle and Buffalo
Week 3	Types and Breeds of Cattle
Week 4	Introduction to Reproduction in Cattle
Week 5	Calf Rearing and Care
Week 6	Concept of Nutrition in Ruminant Animals
Week 7	Milk Production from Cattle and Buffalo
Week 8	Basic Daily, Weekly, and Seasonal Farm Operations
Week 9	Farm Records and Identification of Productive Information

Week 10	Animal Housing and Its Types
Week 11	The Buffalo
Week 12	Sheep and Goat Rearing
Week 13	Economic Importance of Sheep and Goat Products
Week 14	Classification and Methods of Classification
Week 15	Reproduction in Ruminant Animals

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Field Operations 1
Week 2	Field Operations 2
Week 3	Field Operations 3
Week 4	First Visit to the Animal Farm
Week 5	Basic Field Operations on Animals
Week 6	Cattle Breeds – Dairy Type
Week 7	Cattle Breeds – Beef Type
Week 8	Cattle Breeds – Dual Purpose Type
Week 9	Animal Housing
Week 10	Reproduction and Sexual Maturity
Week 11	Pregnancy and Parturition
Week 12	Feeding of Newborns
Week 13	Milking, Mammary System, and Types of Milking Machines

Week 14	Sheep and Goat Breeds
Week 15	Field Visit

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Basics of Sheep and Goat Production by Dr. Jalal Elia Al-Qas	Yes
Recommended Texts	Principles of Animal Production. Najeeb Tawfiq Ghazal and others 1979 University of Mosul	Yes
Websites	https://www.fao.org/animal-production/ar	

Grading Scheme				
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 5

Code	Course/Module Title	ECTS	Semester
AGR127	Statistics	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
This course introduces the **basic principles of statistics** and their applications in scientific research, particularly in agriculture, biology, and related fields. It covers topics such as **data collection**, **organization**, **presentation**, **measures of central tendency and dispersion**, **probability distributions**, **hypothesis testing**, **correlation**, **regression**, and **analysis of variance (ANOVA)**. Students will learn to use statistical tools and software to analyze and interpret data, supporting scientific conclusions and decision-making. Emphasis is placed on **practical applications**, problem-solving, and understanding the role of statistics in research and industry.			

MODULE DESCRIPTION FORM

Module Information					
Module Title	Principles of Statistics		**Module Delivery**		
Module Type	Basic		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☑ **Seminar**		
Module Code	AGR127				
ECTS Credits	6				
SWL (hr/sem)	125				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Food Science		**College**	College of Agriculture	
Module Leader	Dr. Nabil Raheem Lahmod		**e-mail**	nraheem@uowasit.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Msc. Sara Ali Husain		**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	15/11/2024		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1 . Providing students with theoretical and practical scientific knowledge in the field of statistics. 2. The ability to collect and classify data. 3. The ability to measure the degree of relationship between variables 4. Providing students with the skills required in field management and its impact on field work.
Module Learning Outcomes	Learning outcomes for teaching the principles of statistics to first-year students in colleges of agriculture include: 1. Basic Concepts: * Definition of statistics and its importance in agriculture. * Understanding data types (quantitative, qualitative) and their sources. 2. Data Analysis: * Organizing and presenting data using tables and graphs. * Calculating statistical measures such as mean, median, and standard deviation. 3. Probability Distributions: * Understanding normal distributions and statistical inference. * Applying probability in analyzing agricultural data. 4. Statistical Inference: * Understanding statistical hypotheses and their tests (such as the t-test, chi-square test). * Interpreting statistical results and making decisions based on them. 5. Agricultural Applications: * Using statistics to analyze crop and livestock experiments. * Applying statistical methods to improve agricultural production.
Indicative Contents	The syllabus for the Principles of Statistics course for students in colleges of agriculture includes the following topics: 1. Introduction to Statistics: • Definition of statistics and its importance in agriculture. • Types of data (quantitative, qualitative) and their sources. • Levels of measurement (nominal, ordinal, interval, relative). 2. Data Presentation and Analysis: • Organizing data in frequency tables. • Representing data graphically (histograms, columns, circles, lines). • Calculating descriptive measures (mean, median, mode, range, variance, standard deviation). 3. Probability: • Introduction to probability theory.

	• Probability distributions (normal distribution, binomial distribution). • Applications of probability in agriculture. 4. Statistical Distributions :The normal distribution and its properties. • Other distributions relevant to agriculture (such as the Poisson distribution). 5. Statistical inference: • Estimating parameters (point estimate, confidence intervals). • Statistical hypothesis testing (t-test, Z-test, chi-square test). • Analysis of variance (ANOVA). 6. Correlation and regression: • Analyzing the correlation between variables. •The simple linear regression model and its applications in agriculture

Learning and Teaching Strategies	
Strategies	1. Scaffolded Learning: • Breaking down statistical concepts into small, sequential steps. • Starting with basic concepts (such as mean and variance) and progressing to more complex concepts (such as regression and analysis of variance). • Presenting simple examples initially and gradually increasing complexity. 2. Intensive Hands-On Practice: • Allocating a significant portion of lecture time to solving statistical exercises step-by-step. • Assigning students to complete large sets of homework exercises to reinforce understanding. • Using real or quasi-real data from the agricultural field to apply concepts. 3. Problem-Based Learning: • Presenting realistic statistical problems that require the application of mathematical and statistical concepts. • Encouraging students to work individually or in groups to find solutions. • Discussing solutions in class and pointing out common mistakes. 4. Visual and Graphical Learning: • Use graphs and charts to illustrate abstract concepts (such as normal distribution and correlation). • Teach students how to create graphs manually and using software. • Demonstrate how to interpret graphs in an agricultural context. 5. Repetition and Practice: • Repeat key concepts periodically to ensure they are consolidated. • Provide a wide variety of exercises (theoretical and practical). • Encourage students to complete additional exercises outside of class. 6. Example-Based Learning: • Provide detailed practical examples of each statistical concept. • Demonstrate how each concept is applied in an agricultural context (such as crop or

	livestock data analysis). • Encourage students to analyze additional examples on their own. 7. Collaborative Learning: • Divide students into small groups to complete complex exercises. • Encourage students to explain concepts to each other. • Organize group study sessions outside of class. 8. Continuous Formative Assessment: • Periodic quizzes to assess students' understanding of concepts. • Weekly assignments that include solving statistical exercises. • Progress reports on student progress. 9. Real-Data Learning: • Use real data from agricultural experiments or scientific research. • Teach students how to clean and analyze data. •Demonstrate how to interpret results in an agricultural context.

Student Workload (SWL)

Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)	47	**Unstructured SWL (h/w)**	3
Total SWL (h/sem)	125		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	10% (10)	15	LO #1 - #14
	Assignments	1	10% (10)	6	LO #1 - #5
	Projects / Lab.	1	10% (10)	7	LO #1 - #6
	Report	1	10%	14	LO #1 - #14
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered

Week 1	Introduction to Statistics
Week 2	Statistical Symbols
Week 3	Data Presentation and Summarization
Week 4	Frequency Distribution of Tables and Data
Week 5	Measures of Centering
Week 6	Measures of Dispersion
Week 7	Hypothesis Testing
Week 8	Normal Distribution
Week 9	t-Test
Week 10	Z-Test
Week 11	F-Test
Week 12	Simple Linear Correlation
Week 13	Simple Linear Regression
Week 14	Probability Theory
Week 15	Midterm Exam

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Applications of descriptive and quantitative measures
Week 2	Applications of statistical symbols
Week 3	Exercises of frequency tables and graphic representation
Week 4	Exercises of measures of centering
Week 5	Exercises of dispersion
Week 6	Applications of normal graphic distributions
Week 7	Exercises of t-tests
Week 8	Exercises of z-tests
Week 9	Exercises of the F-test
Week 10	Exercises of correlation
Week 11	Exercises of linear regression
Week 12	Exercises of probability
Week 13	Data collection and analysis
Week 14	ANOVA test

Week 15	Interval test

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Introduction to Statistics, written by Dr. Khashe Mahmoud Al-Rawi, College of Agriculture and Forestry, University of Mosul, 1989	Yes
Recommended Texts	)Reliable scientific journals, scientific reports.(	No
Websites		

Grading Scheme				
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 6

Code	Course/Module Title	ECTS	Semester
CS1302	Principles of soil Sciences	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			

The teaching of soil science to first-year students in the Field Crops Department at the College of Agriculture aims to provide them with the scientific fundamentals of soil, including its physical and chemical properties, and to link these characteristics to crop productivity, enabling them to make informed decisions in selecting suitable land for cultivation. The course also focuses on developing practical skills through laboratory and field analysis of soil samples, as well as raising environmental awareness about the importance of preserving soil from degradation to ensure the sustainability of agricultural resources.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Basics of soil science			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**CS1302**				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Department of Field Crops Sciences		**College**	College of Agriculture	
Module Leader	Dr.Noor alhuda Jawad Kadhim		**e-mail**	nkadhim@uowasit.edu.iq	
Module Leader's Acad. Title	Asstant professor		**Module Leader's Qualification**	PhD	
Module Tutor	Dr.Zahraa khaled kamel		**e-mail**	zakameel@uowasit.edu.iq	
Peer Reviewer Name	Dr.Noor alhuda		**e-mail**	E-mail	

	Jawad		
Scientific Committee Approval Date	15/ 11 /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. Knowledge and Understanding** *Provide a comprehensive definition of soil and its components (mineral, organic, and soil solution), and understand its role in supporting plant life and human society. *Recognize the integration of soil science with other disciplines: physics, chemistry, biology, classification, and plant nutrition. *Understand the factors affecting soil formation (parent material, climate, living organisms, topography, and time). **2. Practical Skills** *Develop the ability to collect soil samples and analyze their morphological properties (texture, structure, color), and measure physical and chemical properties such as moisture, pH, salinity, and porosity. *Apply skills to classify soils according to recognized classification systems (such as Soil Taxonomy). *Evaluate soil quality at local and global levels and interpret the impact of natural and human factors on it.

	3. Application and Sustainable Development *Link soil characteristics to appropriate crop choices to ensure sustainable and economically viable agricultural production. *Understand the scientific foundations of soil management (e.g., adding organic matter, crop rotation, erosion control) to enhance soil health and productivity in the long term. *Apply basic concepts (physical, chemical, biological) to make evidence-based decisions regarding soil use and management.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Scientific definition and characterization of soil components and their properties. 2. Conducting field and laboratory analyses to measure physical, chemical, and biological properties. 3. Scientifically classifying soils and applying classification results in real-world decision-making. 4. Assessing soil suitability for agriculture or other uses and adopting sustainable management practices. 5. Scientific communication: preparing accurate reports and presenting results in an academic manner.
Indicative Contents المحتويات الإرشادية	**1. Introduction and Definitions** *What is soil?: Definition of soil including its mineral and organic components, water, air, and its importance for plants and humans. *The relationship of soil science with other disciplines: Physics, chemistry, biology, geology, and environmental sciences. **2. Soil Formation (Pedogenesis)** *Forming factors: Parent material, climate, living organisms, topography, and time. *Formation processes: Physical weathering (e.g., thermal disintegration) and chemical weathering (e.g., oxidation). **3. Physical Properties** *Morphology and field appearance: Color, texture, structure, density, and porosity.

	*Texture and composition: Proportions of sand, silt, and clay and their effects on aeration and porosity. *Moisture content and patterns: Saturation point, field capacity, and plant-available water. *Temperature and air in soil: Ventilation, concentrations of oxygen and carbon dioxide, and often water vapor. **4. Chemical Properties** *pH, cation exchange capacity (CEC), salinity, and base saturation percentage. *Soil nutrient metabolism: Elements such as nitrogen, phosphorus, and potassium; organic and synthetic fertilization. **5. Biological Properties** *Soil organisms: Bacteria, fungi, protozoa, and earthworms. *Role of microorganisms: Organic matter decomposition, structure enhancement, nitrogen fixation, and disease suppression. **6. Soil Classification and Survey** *Classification systems: Such as Soil Taxonomy, and stratified and spatial surveys for identifying suitable soil types. *Accessing soil data: Using maps and reports to support future land use decisions. **7. Soil Management and Conservation** *Management practices: Fertilization, crop rotation, tillage, water management, and conservation tillage. *Conservation and sustainability: Erosion prevention, soil reclamation, forest suitability, and environmentally sustainable use. *Soil analysis: Laboratory and field methods for sampling and interpreting results Proposed Course Structure (Weekly / Hourly Breakdown) **Introduction and Definitions** *Soil Formation and Development Factors

	*Physical Properties of Soil *Chemical Properties of Soil Biological Properties of Soil *Soil Classification and Survey *Fertilization and Nutrient Management *Irrigation and Soil Water Management *Salinity Control and Chemical Issues *Soil Modeling and Sustainability *Practical Applications: Field Models and Reports *Review, Recap, and Final Examination *Teaching and Assessment Methods *Lectures combined with field and laboratory exercises *Applied reports, quizzes, homework assignments, and final exams *Laboratory/field projects: Sample analysis, map preparation, and recommendations for agricultural practices for planning.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Educational Pedagogical Principles *Integration of Traditional and Active Learning: *Constructive lectures (direct instruction) provide the essential theoretical foundation, especially for first-year students. *Active, engaging, digital, and collaborative learning (e.g., Problem-Based Learning (PBL), conceptual packages, project-based learning) enhances applied understanding and deeper comprehension. *Linking Theory to Practical Application:

	*Fieldwork (e.g., soil sampling, analysis) and laboratory reports help reinforce theoretical concepts through hands-on experience. *Interdisciplinary Strategy: *Integrates physics, chemistry, biology, and geology into a unified, cohesive content to support a systems-level understanding of soil. **2. Supportive Tools and Techniques** *Teacher-designed resources and guides (e.g., SSSA, NRCS): Provide ready-to-use lesson plans, lab reference cards, and interactive activities. *Use of apps and formative assessment tools: Short quizzes to assess understanding and surveys that enable immediate instructional adjustments. *Individual and group assessment: Through observation during group activities, individual reports, and collaborative evaluations. **3. Evaluation and Development Mechanism** *Team formation and task distribution: In PBL activities, students tackle a specific challenge in committees of 4–6 members. *Assessment tools: Performance checklists, individual feedback, and instructor evaluation of teamwork processes. *Comprehensive assessment: Includes a written exam, a field or lab-based project, and an oral presentation at the end of the semester. **4. Advantages of the Proposed Learning Strategy** * Ensures a smooth transition from theoretical knowledge to practical application. * Develops critical thinking, problem-solving, and teamwork skills. * Prepares students for the job market through exposure to real-world field and laboratory experiences. * Allows the use of diverse and modern resources that support educational goals.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	85	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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**	3	15% (5)	15	LO #1 - #1,2
	Assignments	3	15% (5)	6	LO #1 - #5
	Lab.	2	10% (5)	7,8	LO #1 - #8,9
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	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 and Definitions: Concept of soil, its components, and its importance as an ecosystem and its role in life
Week 2	Soil Particles and Structure: Particle size, and the relationship between structural composition and soil properties.

Week 3	Weathering and Erosion: From rocks to soil: the role of natural factors in soil formation.
Week 4	Parent Material and Physical Properties of Soil :Texture, color, density, and porosity.
Week 5	Bulk and Particle Density: Numerical values and their impact on agriculture and irrigation.
Week 6	Soil Temperature and Water: Moisture distribution, drainage, saturation point, and field capacity.
Week 7	First Monthly Exam
Week 8	Water Balance, Drainage, and Erosion: Water management and the impacts of erosion.
Week 9	Soil Acidity and Salinity (pH): Measuring pH and methods of adjustment (neutralization); chemical foundations.
Week 10	Cation Exchange Capacity (CEC): Exchange mechanisms and importance in soil fertility.
Week 11	Chemical Soil Amendments: Adjusting acidity and alkalinity; fertilizer management.
Week 12	Microorganisms and Soil Microbiology: Their role in the soil and organic matter recycling.
Week 13	Soil Classification and Survey: Classification systems (e.g., Soil Taxonomy), and their application in Iraq.
Week 14	Soil Management and Conservation: Reclamation, crop rotation, and erosion control.
Week 15	**Second Monthly Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Laboratory Safety Instructions and Equipment Familiarization: Introduction to safety rules and identification of laboratory tools used in soil analysis.
Week 2	Soil Sampling and Preparation: Methods for collecting soil samples and preparing them for

	lab testing (drying, sieving, storage).
Week 3	Soil Texture (Mechanical Analysis) – Hydrometer Method: Determining the percentage of sand, silt, and clay in the soil.
Week 4	Soil Texture – Hand Feel Method Identifying :soil texture by hand using simple tactile tests.
Week 5	Bulk Density and Particle Density Determination: Calculating soil density to estimate pore space.
Week 6	Porosity and Soil Water Retention: Calculating porosity and assessing the soil's water-holding capacity.
Week 7	First Monthly Exam
Week 8	Soil pH Determination: Using a pH meter to measure the acidity or alkalinity of soil.
Week 9	Electrical Conductivity (EC): Measuring soil salinity and its effect on plant growth.
Week 10	Estimation of Soil Organic Matter: Using the burning method or chemical methods such as Walkley-Black.
Week 11	Estimation of Carbonates and Gypsum: Determining calcium carbonate and gypsum content in soil.
Week 12	Soil Nitrogen Analysis: Using chemical methods to estimate the concentration of available nitrogen.
Week 13	Available Phosphorus Determination: Using the Olsen or Bray method, depending on soil type.
Week 14	Available Potassium Estimation: Using chemical extraction and measuring with a flame photometer.
Week 15	Second Monthly Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Soil Science	نعم

Recommended Texts	Published Research	كلا
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

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Module 7

Code	Course/Module Title	ECTS	Semester
CS1311	Principles of Crop Sciences	7	2

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	79	96

Description

The objective of teaching the *Principles of Field Crops* course to students in the Faculty of Agriculture is to provide them with the scientific and practical foundations necessary to understand the production of major field crops, such as cereals, legumes, and oil crops. It also aims to enhance their knowledge of the factors affecting crop growth, such as soil, climate, and irrigation, and how to manage them to increase productivity. Additionally, the course seeks to familiarize students with the importance of field crops in achieving food security and economic development, while preparing them to develop their skills in agricultural research and innovation. Finally, it helps qualify students to apply modern techniques in sustainable agriculture, enhancing their professional competence in the job market.

MODULE DESCRIPTION FORM FOR PRINCIPLES OF CROP SCIENCES

Module Information
معلومات المادة الدراسية

Module Title	Principles of Crop Sciences	**Module Delivery**	
Module Type	Core	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	CS1311		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	**Semester of Delivery**	2
Administering Department	Field Crop Sciences Dep.	**College**	Agriculture
Module Leader	Dr. Hussien Ibrahem Almtarfi	**e-mail**	htarish@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	PhD
Module Tutor	Mrs. Muataz Abdul Khadim	**e-mail**	@uowasit.edu.iq

Peer Reviewer Name	Dr. hussien Ibrahem Almtarfi	**e-mail**	htarish@uowasit.edu.iq
Scientific Committee Approval Date	10/ 3 /2025	**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- Course description: study of Agronomy and its branches, descript field crop characteristics, report of origin of cultivated plants, classification and importance. 2- Field crop classification according to field utilization, Botanical classification, Date of planting, Duration... 3- Botanical description of major field crop families. 4- Environmental factors and its relationship with field crops growth: Light (effected factors in light intensity, photoperiodism, effect of the light on the plants and plant adaptation for light factor). 5- Temperature (The effect of temperature on field crops, damage of high temperature on field crops, World Thermal area, and the. relations between temperature and light). 6- Water (division plants according to water availability, water use efficiency, effect of water deficit, tolerance to drought). 7- Soil (compounds, soil salinity and its damage on. crops), study of weeds, classification of weeds according to life cycle and methods of weed control). 8- Crop rotation (conditions of crop rotation design, stages of design crop rotation with examples). Field crops.

	9- breeding (objectives of plant breeders, variety, adaptation, methods of field crops breeding
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The learning outcomes for the course on Principles of Field Crops can include the following points : 1- Understanding the basics of crop science: becoming acquainted individuals with the fundamental principles of crop science, including genetics, ecology, and soil science . 2- Knowledge of crop types: distinguishing between food crops, fodder crops, and industrial crops, and understanding the characteristics of each type . 3- Agricultural methods: Understanding different farming methods, including traditional farming, organic farming, and sustainable farming practices . 4- Crop Management: Developing crop management skills, including planning, scheduling, monitoring, and analyzing agricultural data . 5- Modern technologies: Familiarizing with modern technologies in crop cultivation, such as precision agriculture and biotechnology . 6- Pest and disease control: Understanding strategies for controlling pests and diseases that affect crops, including chemical and biological methods . 7- Productivity assessment: the ability to evaluate productivity and crop quality, and use appropriate performance indicators . 8- Environmental impacts: Understanding the environmental impacts of crop cultivation, including sustainable resource use and climate change . 9 - Agricultural Research: Enhancing research skills and analyzing information related to crops and the latest developments in this field.
Indicative Contents المحتويات الإرشادية	Introduction to Crop Science: • Definition of Crop Science and its Importance. • The history of agriculture and its development. Types of crops: • Food crops (grains, vegetables, fruits). • Fodder crops. • Industrial crops (such as cotton, tobacco). Soil Science: • Soil composition and types. • The effect of soil on crop growth. Agricultural ecology: • Climatic factors and their impact on crops. • The relationships between crops and the surrounding environment. Farming methods: • Traditional farming methods. • Organic farming and sustainable agriculture. • Precision agriculture. Crop management:

	• Crop planting planning. • Scheduling planting and crop care. • Monitoring crops and assessing productivity. Pest and disease control: • Identifying common pests and diseases. • Pest control strategies (chemical and biological). Modern agricultural technologies:

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Learning based on the theoretical understanding of the subject matter: Learning based on the theoretical understanding of the subject matter: Teaching the student to attempt to understand the theoretical aspect of the subject or idea and to anticipate the outcome before practical application. - Employing scientific and knowledge-based foundations in the correct theoretical understanding in the field of field crops. 2. Experiential learning: Experiential learning: - Conducting practical experiments to study the germination and growth of field crops. 3. Learning based on the collaborative application of ideas: Learning based on the collaborative application of ideas: - Assigning students in groups to implement a specific idea of field crop cultivation. - Encouraging students to research and work within research groups. 4. Learning based on the exchange of ideas and innovative solutions in problem-solving: Learning based on the exchange of ideas and innovative solutions in problem-solving: Learn how to face the challenge with an idea and then an effective solution to solve the problem in the least time, cost, and safely. - Exchanging ideas with others and utilizing them in the service of scientific research in the field of crop production management. 5. Multimedia-supported education: Multimedia-supported education: - Using educational videos and simulations to explain various processes. - Displaying video clips to illustrate the physiological processes occurring in the plant. 6. Self-directed and independent learning: Self-directed and independent learning:

	Encouraging students to engage in research and self-study using scientific references and specialized articles. 7. Learning based on the results of previous scientific research: Learning based on the results of previous scientific research.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	85	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقييم المادة الدراسية					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (5)	15	LO #1 - #1,2
	Assignments	3	15% (5)	6	LO #1 - #5
	Lab.	2	10% (5)	7,8	LO #1 - #8,9

Summative assessment	**Midterm Exam**	2hr	10% (10)	8	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 about field crops, development and origin**
Week 2	**Classification of crops depending on (Botanical, Sowing Date, live cycle …. Etc .)**
Week 3	**Ecological factors and their relationship with growth, Light. , Photoperiodism**
Week 4	**Temperature**, Maximum, minimum and optimum temp. and its effects of crops
Week 5	**Soil Factors Structure ،Texture, Soil Reaction, Saline Soil**
Week 6	**1st Exam.**
Week 7	**Water and its role. For plant including : 1- Hydrophytes. 2 : - Mesophytes. 3 - : xerophytes. 4 : - field Capacity**
Week 8	**Weed and its Control. Methods of Weed Control .**
Week 9	**Grain Grading**
Week 10	**Crop Rotation**
Week 11	**2nd exam plus drought**
Week 12	**Irrigation Methods**
Week 13	**Crop Management & Soil Management(**
Week 14	**Breeding and Improving Field Crops**

Week 15	**Effect of biological Factors on Crop Production**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Diagnosis of field crop seeds based on external appearance: size, shape, color, luster, taste, etc. etc.
Week 2	Seed diagnosis based on physiological traits, diagnosis based on chemical specifications.
Week 3	Germination tests: Soil germination. Laboratory germination types of seed beds (seedling trays). How to calculate the germination rate
Week 4	Calculating germination rate / germination speed
Week 5	Comparison between field germination and laboratory germination
Week 6	Calculating the amount of seeds per unit area
Week 7	Practical exam / Cultivation of several crops using different methods
Week 8	Types of fertilizers and methods for calculating fertilizer quantities based on their concentrations
Week 9	Methods of adding fertilizers. Fertilizer application schedules
Week 10	Practical training for grading seed samples
Week 11	Cleanliness and purity tests. And preparing the forms
Week 12	Field visit to nearby crop fields to learn about the plants
Week 13	Watching soil preparation equipment and crop service operations
Week 14	Diagnosis of common weeds in crop fields, training on hybridization and selection techniques
Week 15	Allelopathy / symbiosis / Competition

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1: -Principles of Field Crops, Dr .M . h .Al – Ansary etal.1980. Ministry of Highter Education, book house . Iraq. 2 : - Field Crop Production and Improving , M . H . Al – Ansary 1981.Iraq – book house press – Mousil .. 3 : - Understanding crop production , H . J . Atea and K . M . Wehaib. 1991 .Ministry of Higher Education and Secientific Research . Iraq .. 4 : - Cereals and Legumes crops , K . L . Al – Khfagy . 2011 . Baghdad University.	yes
Recommended Texts	Crop Research, Crop Physiology	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
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automatic rounding outlined above.

Module 8

Code	Course/Module Title	ECTS	Semester
AGR115	Agricultural Economics	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	34	66
Description			
This course introduces students to the basic concepts and principles of **agricultural economics**, focusing on the application of economic theory to the agriculture sector. It explores the **economic behavior of individuals, firms, and governments** in relation to agricultural production, distribution, and consumption. Topics include **supply and demand in agriculture**, **production economics**, **farm management**, **market structures**, **price analysis**, **agricultural policy**, and **resource use in farming**. Special emphasis is placed on the role of agriculture in national economic development, food security, and sustainability. Students will learn how to apply economic tools to solve real-world problems in farming, agribusiness, and rural development.			

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Agricultural Economics	**Module Delivery**
Module Type	**Basic**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☑ **Seminar**
Module Code	AGR115	
ECTS Credits	**4**	
SWL (hr/sem)	**100**	

Module Level		1 1	**Semester of Delivery**		1
Administering Department		Department of Field crop Sciences	**College**	College of Agriculture	
Module Leader	MSc Sara Ali Hussein		**e-mail**	sahussain@uowasit.edu.iq	
Module Leader's Acad. Title		Assistant teacher	**Module Leader's Qualification**		Master's
Module Tutor			**e-mail**		
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		15/03/2025	**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- .Introducing the student to the basic concepts of this science, particularly microeconomics.** **2- .How to analyze economic problems and methods of economic research.** **3- .Introducing the student to the principles of demand and consumer behavior in maximizing satisfaction.** **4- .Understanding the supply side and how consumers reach equilibrium.** **5- .The course also aims to introduce the student to the production function and the relationship between production and production**

	resources, production costs and their types, and markets and their types.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**Learning outcomes for teaching the principles of agricultural economics to first-year students in colleges of agriculture include:** **A - Cognitive objectives** **1. Understand the meaning of economics, economic analysis, and its types** **2. Understand consumer demand and behavior in maximizing satisfaction through some economic theories** **.3Understand the supply of production and how to achieve balance for the consumer** **4- Identify the types of production costs and types of markets.** **B - Course Skill Objectives** **1. The student will acquire skills in economic analysis at the micro-level.** **2. The student will acquire skills in understanding consumer behavior and maximizing consumer satisfaction.** **.3The student will acquire skills in distinguishing different markets, types of production resources, and types of production costs.**
Indicative Contents المحتويات الإرشادية	**The syllabus for the Principles of Agricultural Economics course for students in colleges of agriculture includes:** **-1Lectures: Lectures can be used as a means of introducing basic concepts and information in the principles of agricultural economics. The teacher can clarify concepts and theories, illustrate them with examples, and explain the relationships between different concepts.** **2- Group discussions: Group discussions can be organized around specific economic concepts. Students can discuss issues, exchange views, and interact with each other. This type of learning encourages critical thinking and expands understanding.** **-3Interactive lessons: Interactive learning techniques such as practical**

	activities or simulations can be used to help students apply and better understand economic concepts. **4- Case Studies: Case studies can be used to apply economic concepts to real-life scenarios. Students collaborate to analyze the case, discuss possible solutions, and make economic decisions.** **5 Presentations: Students may be asked to prepare and deliver presentations on economic concepts. This requires students to have a deep understanding of the subject and the ability to simplify and explain it to an audience.** **6- Use of technology: Technology can be used in teaching and learning, such as using interactive educational programs and online resources to enhance student understanding and provide diverse learning experiences.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**.1Scaffolded Learning:** **•Start with basic concepts and then progress to more complex concepts.** **•Provide simple examples at first, then gradually increase the complexity.** **.2Brainstorm** **3 . Problem-Based Learning:** **•Present economic problems that require the application of mathematical concepts.** **•Encourage students to work individually or in groups to find solutions.** **•Discuss solutions in class and explain common mistakes.** **4 Visual and Graphical Learning:** **•Use graphs and charts to illustrate concepts.** **•Teach students how to create graphs manually.** **•Demonstrate how to interpret graphs in the context of agriculture.** **-5Repetition and Practice-Based Learning:** **•Repeat core concepts periodically to ensure they are consolidated.**

	•Provide a wide variety of exercises. **•Encourage students to complete additional exercises outside of class.** **6 - Thinking strategy based on the student's ability, for example (if the student is able to learn the concept of applying the concept of agricultural economics on the farm, whether in terms of achieving optimal resources and production, as well as how to dispose of production in detail.** **- 7Critical thinking strategy in learning, which is a term that symbolizes the highest levels of thinking, which aims to pose a problem and then analyze it logically to arrive at the desired solution..** **- 8Collaborative Learning:** **•Divide students into small groups to solve complex exercises.** **•Encourage students to explain concepts to each other.** **•Organize group study sessions outside of class.** **- 9Continuous Formative Assessment:** **•Periodic quizzes to assess students' understanding of concepts.** **•Weekly assignments including homework.** **•Progress reports on student progress.**

Student Workload (SWL) **.The student's academic load is calculated as 15 weeks**			
Structured SWL (h/sem) Regular student load during the semester	34	**Structured SWL (h/w)** **Regular weekly student workload**	2
Unstructured SWL (h/sem) **Irregular student load during the semester**	66	**Unstructured SWL (h/w)** **Irregular student study load per week**	6
Total SWL (h/sem) **The student's total academic load during the semester**	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	1	10% (10)	6	LO #1 - #14
	Assignments	1	10% (10)	15	LO #1 - #5
	Projects /	1	10% (10)	7	LO #1 - #6
	Report	1	10%	15	LO #1 - #14
Summative assessment	**Midterm Exam**	2hr	10% (10)	16	LO #1 - #7
	Final Exam	3hr	50% (50)	-	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	General Concepts of Economics / The Relationship of Economics to Other Sciences / The Economic Problem
Week 2	Aspects of Economic Life / Agricultural Economics and Its Branches / Agriculture and Types of Agriculture / Economic Systems
Week 3	Theory of Consumer Behavior
Week 4	Demand / Demand Schedule / Demand Curve / Types of Demand

Week 5	Elasticity of Demand / Factors Affecting Demand
Week 6	Supply / Supply Schedule / Supply Curve
Week 7	Elasticity of Supply / Factors Affecting Supply
Week 8	Elasticity of Supply and Time / Equilibrium Price
Week 9	Production Theory / Production Function / Short Run and Long Run
Week 10	Law of Diminishing Returns and Its Stages
Week 11	Costs / Explicit and Implicit Costs / Types of Costs
Week 12	Average Costs / Long-Run and Short-Run Costs / Revenues
Week 13	Agricultural Business Management
Week 14	Market Concept, Functions, and Types
Week 15	Semester Exam
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Principles of Economics - Dr. Karim Mahdi Al-Hasnawi (College of Administration and Economics - University of Baghdad) 2012 Principles of Agricultural Economics - Dr. Abdul Wahab Matar Al-Dahri (Main References) (Sources) (College of Agriculture - University of Baghdad - 1998) *Principles of Agricultural Economics - Dr. Salem Tawfiq Al-Najfi College of Administration and Economics - University of	yes

	Mosul - 2001	
Recommended Texts	.(Reliable scientific journals, scientific reports)	No
Websites		

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

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

Module 9

Code	Course/Module Title	ECTS	Semester
WU02	Academic Englis Language 1	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	32	18
Description			
This course is designed to develop students' **academic English language skills**, with a focus on enhancing their **reading, writing, listening, and speaking** abilities in an academic context. Emphasis is placed on **vocabulary development**, **grammar accuracy**, **sentence and paragraph structure**, and **basic academic writing techniques**. Students will engage with a variety of texts and practice language skills through structured activities that build confidence in understanding and using English in university and professional settings. The course prepares students for future academic success by strengthening their ability to comprehend lectures, write assignments, participate in discussions, and read academic materials effectively.			

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	English Language	**Module Delivery**	
Module Type	Basic	☒ **Theory** ☒ **Lecture** ☐**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	WU02		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	**Semester of Delivery**	2

Administering Department	Field crop dept.	**College**	College of Agriculture
Module Leader	Suhad Kareem Rahi Al-Magsoosi	**e-mail**	skareem@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	PhD
Module Tutor		**e-mail**	
Peer Reviewer Name	Nabil R. lAHMOD	**e-mail**	
Scientific Committee Approval Date	15/3/2025	**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	to enable the learner to communicate effectively and appropriately in real life situation: b. to use English effectively for study purpose across the curriculum; c. to develop interest in and appreciation of Literature; d. to develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing; e. to revise and reinforce structure already learnt.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	to develop the students' abilities in grammar, oral skills, reading, and study skills 1. Students will increase their awareness of correct usage of English grammar in writing and speaking. 2. Improve their speaking ability in English both in terms of fluency and comprehensibility. 3. Receive feedback on their performance through oral presentations. 4. Increase their reading speed and comprehension of academic articles. 5. improve their reading fluency skills through extensive reading.

	6. Expand their vocabulary by keeping a vocabulary journal. 7. strengthen their ability to write academic papers, essays and summaries using the process approach.
Indicative Contents المحتويات الإرشادية	The course aims to develop communicative competence in English for intercultural contexts by teaching language items and communicative strategies essential for such scenarios, while at the same time giving students ample chances to output such items. The aims of this course are reflected in the content, which contains several themes, such as cultural awareness, intercultural awareness and English as a global language. Indicative content includes understanding the uniqueness of your own culture and other cultures, as well as being aware of the role culture plays in communication in English as a global language. In addition, this course allows for discussions about what it means for English to be a global language of communication and how misunderstandings and miscommunications when using English occurs. The course also includes practice in the pronunciation features that help improve intelligibility in intercultural contexts, namely the Lingua Franca Core.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Cultivate relationships Speaking with students to know each student, helps you understand who they are, where they come from and, perhaps, gain some insight into what teaching and learning styles are most effective for them. 2. Teach language skills across all curriculum topics 3. Speak slowly and be patient: Speaking in a slower, measured cadence Being a bit more aware of your pronunciation 4. Prioritize “productive language” 5. Using a variety of methods to engage learning 6. Using visual aids by the use of pictures, diagrams, charts and other visual tools. 7. Coordinate with the ESL teacher: Such discussions can yield insights into individual students and their learning styles or challenges; they can also be helpful for sharing information about curriculum topics, potentially providing ESL teachers with ideas for highly relevant vocabulary words that can reinforce academic lessons. 8. Pre-teach new vocabulary words that may be unfamiliar to ELLs, or even to give them a copy of the article or link to the material ahead of time. 9. Build in some group work. 10. Respect moments of silence: Many new language learners tend to be a little reticent and quiet, opting for silence over speaking up and saying something “wrong” in a language that is still unfamiliar. Research-based strategies for differentiating instruction to promote student learning

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3,6,9	LO #1, #7
	Assignments	2	10% (10)	10	LO #3, #4 and #6
	Projects / Lab.	0	0 %		
	Essays	1	10% (10)	14	LO #5
Summative assessment	Midterm Exam	2hr	20% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Unit-1 (Hello)
Week 2	Unit-2 (Your world)
Week 3	Unit-3 (Personal information)
Week 4	Unit-4 (Family and friends)
Week 5	Unit-5 (It's my life)
Week 6	Unit-6 (Every day)
Week 7	**Mid-term Exam**
Week 8	Unit-7 (Places I like)

Week 9	Unit-8 (Where I live)
Week 10	Unit-9 (Happy birthday)
Week 11	Unit-10 (We had a good time)
Week 12	Unit-11 (we can do it)
Week 13	Unit-12 (Thank you very much)
Week 14	Unit-13 (Here and now)
Week 15	Unit-14 (It's time to go)

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Headway. Beginner. Student's Book by Liz and John Soars, 2019.	Yes
Recommended Texts		No
Websites	https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en	

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 10

Code	Course/Module Title	ECTS	Semester
AGR115	Computer science	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	34	66
Description			
This course introduces students to the basic concepts and principles of **agricultural economics**, focusing on the application of economic theory to the agriculture sector. It explores the **economic behavior of individuals, firms, and governments** in relation to agricultural production, distribution, and consumption. Topics include **supply and demand in agriculture**, **production economics**, **farm management**, **market structures**, **price analysis**, **agricultural policy**, and **resource use in farming**. Special emphasis is placed on the role of agriculture in national economic development, food security, and sustainability. Students will learn how to apply economic tools to solve real-world problems in farming, agribusiness, and rural development.			

MODULE DESCRIPTION FORM

Module Information					
Module Title	Computer programming		**Module Delivery**		
Module Type	B		☒**Theory** ☒**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**		
Module Code	WOU4				
ECTS Credits	3				
SWL (hr/sem)	75				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Field crop		**College**	College of Agriculture	
Module Leader	Huda Lafta ali		**e-mail**	hulafta@uowasit.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name	Nabil Raheem		**e-mail**		
Scientific Committee Approval Date	2025-3- 15		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Identify the parts of the computer and the function of each part, and identify computer technologies, programs, and applications necessary to work on it and complete work.
Module Learning Outcomes	Delivering theoretical lectures to deliver information to students through the following methods: (whiteboard, data projector, interactive lecture, educational video presentation). Implementing practical lectures through observations and interaction with field or laboratory aspects.
Indicative Contents	Conducting daily quick exams. Evaluating students through the submission of academic reports and oral presentations. Conducting monthly exams. Conducting practical exams. Conducting final exams.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Delivering theoretical lectures to deliver information to students through the following methods: (whiteboard, data projector, interactive lecture, educational video presentation). Implementing practical lectures through observations and interaction with field or laboratory aspects.

Student Workload (SWL)			
Structured SWL (h/sem)	45	**Structured SWL (h/w)**	15
Unstructured SWL (h/sem)	5	**Unstructured SWL (h/w)**	10
Total SWL (h/sem)	**75**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Assignments**	1	10% (10)	Continuous	1,2,3,4,5,6
	Projects / Lab.	15	10% (10)	Continuous	1,2,3,4,5,6
	Report	1	15% (15)	Continuous	1,2,3,4,5,6،7,8,9,10,11,12,13,14,
	Seminars	1	5% (5)	Continuous	1,2,3,4,5,6
Summative assessment	**Midterm Exam**	2hr	10% (10)	14	1,2,3,4,5,6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	What is a computer? / Computer features / Computer components / Types of computers
Week 2	Main parts of a personal computer
Week 3	Operating systems and their types
Week 4	Information Network
Week 5	Telephone networks and the computer world
Week 6	Internet
Week 7	Computers in our daily life
Week 8	Insurance, Copyright, and Law
Week 9	Dealing with menus and icons
Week 10	Desktop Quick Menu
Week 11	Windows Explorer
Week 12	Using some add-on programs with Windows
Week 13	How to improve the appearance of screen lines when using flat panel LCD displays or laptops
Week 13	What is the Firewall available in Windows XP and how do I activate it?
Week 14	Dynamic Disk

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Required textbooks: Computer Science textbook Main references (sources): Office software user guide	Yes
Recommended Texts	Recommended books and references (scientific journals, reports).	Yes
Websites	No	

Grading Scheme

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

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Module 11

Code	Course/Module Title	ECTS	Semester
CS1311	**Surveying and Leveling**	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			

The objective of teaching Surveying and Leveling to first-year students in the Field Crops Department of Agricultural Colleges is to provide them with the basic principles of land measurement and elevation determination, which aids in proper agricultural and irrigation planning. The course also enhances students' understanding of the importance of precise land leveling to improve water use efficiency and distribution. Additionally, it serves as a foundation for modern precision farming techniques and agricultural project management. Finally, it helps develop students' practical skills to apply this knowledge effectively in the field.

MODULE DESCRIPTION FORM FOR

Surveying and Leveling

Module Information معلومات المادة الدراسية					
Module Title	**Surveying and Leveling**			**Module Delivery**	
Module Type	**COR**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**CSLV2340**				
ECTS Credits	**2**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Field Crop Sciences Dep.		**College**	Agriculture	
Module Leader	Mrs. Ali malik hassan		**e-mail**	gl819@uowasit.edu.iq	
Module Leader's Acad. Title	Assiste Lecturer		**Module Leader's Qualification**	master	
Module Tutor	Mrs. Ali malik hassan		**e-mail**	gl819@uowasit.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	//2025		**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. **Understanding the Basic Principles of Surveying**: Recognizing the fundamental concepts of surveying and its types. Distinguishing between plane surveying and geodetic surveying. 2. **Familiarization with Surveying Tools and Instruments**: Learning about instruments such as the compass, level, theodolite, and measuring tape. Understanding how to use and maintain these instruments. 3. **Mastering the Measurement of Distances and Angles**: Learning methods for measuring horizontal and vertical distances. Learning how to measure horizontal and vertical angles. 4. **Applying Setting-Out and Field Marking Techniques**: Learning how to set out buildings, roads, and pipelines on the ground. Accurately transferring engineering designs from paper to the field. 5. **Conducting Surveying and Map Drawing**: Carrying out basic topographic survey tasks. Drawing maps using field data. 6. **Processing Surveying Data**: Calculating areas, coordinates, and deviations. Using adjustment methods to minimize errors. 7. **Developing Practical and Field Skills**: Acquiring teamwork skills in the field. Training on note-taking and preparing survey reports. 8. **Introduction to Modern Surveying Techniques**: Providing an introduction to the use of electronic instruments such as GPS and levels. Connecting the basics to modern techniques in engineering work.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**Learning Outcomes for the Surveying and Levelling Course may include the following points:** **Cognitive Learning Outcomes:** 1. Defines the basic concepts of surveying and its types. 2. Distinguishes between different types of surveying instruments and their uses. 3. Explains the principles of plane measurement, angles, and distances. **Skill-Based Learning Outcomes:** 4. Performs distance and angle measurements using traditional surveying tools. 5. Accurately uses instruments such as the level, theodolite, and compass in surveying tasks. 6. Draws surveying maps and topographic data based on field measurements. 7. Calculates areas, coordinates, and deviations using both manual methods and software. **Practical Learning Outcomes:** 8. Applies surveying layout methods for real-world projects. 9. Conducts surveying and layout operations for simple projects (such as land plots, roads, and buildings). 10. Prepares accurate field reports that include surveying data and results. **Mental / Analytical Learning Outcomes:** 11. Evaluates surveying errors and analyzes their sources. 12. Compares different measurement methods in terms of accuracy and suitability. 13. Selects the most appropriate method or instrument based on the project type and site conditions.
Indicative Contents المحتويات الإرشادية	**Introduction to Surveying:** • Definition of surveying and its importance. • Main applications of surveying. **Types of Surveying Measurement Units:** • Linear measurement units. • Angular measurement units. **Tools Used in Surveying:** • Measuring tape and its types. • Methods of using the measuring tape.

	Areas and Shapes: • Areas of regular shapes. • Areas of irregular shapes. **Leveling Science:** • Definition of leveling and its importance. • Methods of leveling. **Levelling Instruments:** • Main types of leveling instruments. • Error correction in the leveling process.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• **Learning Based on Theoretical Understanding of the Subject Matter:** • Teaching students to attempt a theoretical understanding of the topic or concept and anticipate results before practical application. • Employing scientific and cognitive foundations for accurate theoretical understanding in the field of surveying and levelling. • **Learning Through Practical Experience:** • Conducting hands-on experiments to become familiar with surveying and levelling instruments and tools. • **Collaborative Application-Based Learning:** • Assigning students in groups to apply a specific idea, such as conducting a land survey for an agricultural field. • Encouraging students to research and work collaboratively in teams.

	• **Learning Through Idea Exchange and Innovative Problem-Solving:**
	  • Learning how to face challenges with a creative idea, then implementing effective solutions in minimal time and cost, and in a safe manner.
	  • Exchanging ideas with others and applying them to support scientific research in the field of surveying.
	• **Multimedia-Supported Learning:**
	  • Using educational videos and simulations to explain various procedures.
	  • Presenting visual clips to demonstrate surveying operations and methods as performed on-site.
	• **Self-Directed and Independent Learning:**
	  • Encouraging students to conduct self-study and research using scientific references and specialized articles.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	85	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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**	3	15% (5)	15	LO #1 - #1,2
	Assignments	3	15% (5)	6	LO #1 - #5
	Lab.	2	10% (5)	7,8	LO #1 - #8,9
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	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	**Definition of the space / types of surveys / good scanning requirements / importance of**
Week 2	**Measurement systems / modules / Measurement errors and mistakes..**
Week 3	**Survey tape / Terms choose stations / Order book field.**
Week 4	**Errors in the work of scanning / processing methods and overcome..**

Week 5	**1st Exam. Scale / types / Osnavh / factors identified..**
Week 6	Spaces / regular shapes and irregular / space coordinates
Week 7	**Settlement / terminology / kinds of settings / device**
Week 8	**Types of settlement / balling and refraction phenomena**
Week 9	**Methods for calculating the levels of points and teams**
Week 10	**Business sectors longitudinal / her / action steps / identify a**
Week 11	**2sd Exam. Account the levels of points / distance scale / drawn on**
Week 12	**Find high drilling depth reclamation / expense cutting**
Week 13	**Topographical maps / routes representation..**
Week 14	**Method of contour lines (subsistence) definition line**
Week 15	**Applications and various issues / problems in the division of territory / reviews.**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	familiar with the tools used in the space characteristics disadvantages tuned / uses.
Week 2	Adjust guidance in measurements and calculate distances flat, oblique
Week 3	Used tools / methods residence and projection / field survey using the tape.
Week 4	Scale lengths and install the stations / roads residence and projection / symptoms
Week 5	Linear way to draw a map of appropriate scale..
Week 6	Applications in a scale drawing / longitudinal / schematic
Week 7	Applications in areas account and Practical Examples
Week 8	Applications to calculate the area of irregular shapes /

Week 9	Recognize Aalfil device (balance) its parts
Week 10	Applications in direct routes to find the levels of the points in
Week 11	Find elevations rise and fall way and how high the device
Week 12	Applications in the longitudinal sector work / identify the main
Week 13	Drawing on graph paper and determine the size of
Week 14	Applications in the work of contour map, drawn /
Week 15	Your Altheodoleight - set the device - measuring vertical and horizontal angles..

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Surveying - translation: Feridun Jalal Al-ddin and Nabil Ibrahim. Written by: John Vancoc.	yes
Recommended Texts	Research,	no
Websites		

Grading Scheme

مخطط الدرجات

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

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

Module 12

Code	Course/Module Title	ECTS	Semester
AGR1351	**Biochemistry**	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			
The objective of the Biochemistry course is briefly to: 1. Understand chemical reactions in living organisms – study vital processes such as metabolism, protein synthesis, and enzyme reactions. 2. Analyze the molecular components of life – such as carbohydrates, lipids, proteins, and nucleic acids (DNA and RNA). 3. Relate chemistry to biology – explain how molecules control cellular functions and heredity. 4. Practical applications – in medicine (such as drug design), nutrition, and genetic engineering.			

MODULE DESCRIPTION FORM

Module Information

Module Title	Biochemistry	**Module Delivery**	
Module Type	Core	☒**Theory** ☒**Lecture** ☐**Lab** ☐**Tutorial** ☒**Practical** ☑**Seminar**	
Module Code	AGR131		
ECTS Credits	6		
SWL (hr/sem)	175		
Module Level	1	**Semester of Delivery**	1
Administering Department	Department of Field Crops Sciences	**College**	College of Agriculture
Module Leader	DR. Mohsin Falih Abdullah	**e-mail**	mufalih@uowasit.edu.iq
Module Leader's Acad. Title	Teacher	**Module Leader's Qualification**	Ph.D
Module Tutor	Assi.TR Huda Mohamed	**e-mail**	
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	15/11/2024	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Define the concept of biochemistry and the most important reactions it involves in living organisms. 2. Understand the molecular structure of carbohydrates, proteins, lipids, and nucleic acids and their importance. 3. Study metabolic reactions (catabolic and anabolic reactions). 4. Define enzymes and their mechanism of action. 5. Interpret laboratory tests.
Module Learning Outcomes	Biochemistry Learning Outcomes for Agricultural Students 1. Theoretical Knowledge: o Understand the structure and function of biomolecules (proteins, carbohydrates, lipids, nucleic acids). o Know basic metabolic reactions (respiration, fermentation, photosynthesis). 2. Practical Skills: o Perform basic biochemical analyses (enzyme measurement, crop analysis). o Interpret the results of analyses related to soil, plants, and animals. 3. Agricultural Applications: o Linking biological concepts to improving agricultural and animal production. o Understanding the role of biochemistry in plant and animal nutrition.

Indicative Contents	Guidelines for the Agricultural Biochemistry Course: 1. Basic Information: o Course Title: Agricultural Biochemistry o Code: o Credit Hours: 2 Theoretical + 3 Practical 2. General Description: o Study of the chemical principles of biological processes in plants and animals related to the agricultural field. • Objectives: o Understand the chemical structure of biomolecules o Analyze metabolic processes in living organisms o Relate biological concepts to agricultural applications 2. Main Contents: o Biochemical Basics o Carbohydrates, Proteins, and Lipids o Nucleic Acids and Enzymes o Metabolic and Energy Processes 3. Assessment: o Theoretical Tests o Practical Reports o Classroom Participation and Activities

	1. References: o Main textbook o Supporting references 2. Requirements: o Attend lectures o Complete assignments and experiments

Learning and Teaching Strategies	
Strategies	Theoretical Learning Strategies: a. Problem-Based Learning (PBL): b. Collaborative Learning: c. Concept Maps and Diagrams: 2. Practical Learning Strategies: a. Guided Laboratory Experiments: b. Field Visits: c. Applied Projects: 3. Strategies for Enhancing Understanding: A. Constructivism:

	B. Active learning: C. Immediate feedback: **4**.Assessment Strategies: A. Formative Assessment: B. Summative Assessment: 5. Supporting Tools and Technologies: • Simulation software: such as Virtual Labs to simulate biochemical experiments. • Blended Learning: Integrating traditional lectures with electronic materials (videos on metabolic pathways). • Interactive platforms: such as Padlet to share simple research on course topics. . •

Student Workload (SWL)

Structured SWL (h Regular student load during the semester	78	**Structured SWL (h/w)** Regular weekly student workload	5
Unstructured SWL (h/sem) Irregular student load during the semester	97	**Unstructured SWL (h/w)** Irregular student study load per week	6

Total SWL (h/sem) The student's total academic load during the semester	**175**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	10% (10)	15	LO #1 - #14
	Assignments	1	10% (10)	6	LO #1 - #5
	Projects / Lab.	1	10% (10)	7	LO #1 - #6
	Report	1	10%	14	LO #1 - #14
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Theoretical weekly curriculum

	Material Covered

Week 1	Basics of biochemistry
Week 2	Carbohydrates
Week 3	Carbohydrate classification and structure
Week 4	Carbohydrate metabolism (catabolism and anabolism)
Week 5	Proteins
Week 6	Protein structure and functions
Week 7	Enzymes
Week 8	Fats Classification and Structure of Fats
Week 9	Mid-term exam
Week 10	The role of fats in animal nutrition and energy storage
Week 11	Nucleic acids

Week 12	Metabolism and energy
Week 13	Cellular respiration (Glycolysis, Krebs cycle, electron transport chain)
Week 14	For photosynthesis (photochemical and photochemical stages)
Week 15	For photosynthesis (photochemical and photochemical stages)
Week 16	Semester exam

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Introduction to the laboratory and its tools
Week 2	• Laboratory safety •
Week 3	pH analysis
Week 4	Measure the pH of soil and water
Week 5	Starch analysis in plant foods

Week 6	Estimation of soluble sugars
Week 7	Total protein analysis (Biuret method)
Week 8	Measuring protein concentration in animal feed
Week 9	Extracting fat from oil seeds
Week 10	Measurement of amylase activity in germinated seeds
Week 11	DNA extraction from plant tissue
Week 12	DNA detection by simple methods
Week 13	Measuring respiration rate in plant tissues
Week 14	Photosynthesis analysis (measuring the rate of oxygen production)
Week 15	Semester exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Biochemistry (Ali Al-Dawoodi)	YES
Recommended Texts	Reliable scientific journals, scientific reports).	NO
Websites		

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