

Academic Program and Course Description Guide for Undergraduate Students

2026

Academic Program Description Form

University Name: Wasit
Faculty/Institute: Agriculture
Scientific Department: Soil and Water Resources
Academic or Professional Program Name: Soil and Water Resource
Final Certificate Name: Soil and Water Resources
Academic System: Bologna
Description Preparation Date: 2/11/2025
File Completion Date: 10/3/2026

Signature: [Signature]
Head of Department Name: Ali Jawad Kadhim
Date: 10/3/2026

Signature: [Signature]
Scientific Associate Name: W. S. Al-Husseini
Date: 10/3/2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 10/3/2026 Hibat Allah A. Hussein

Signature: [Signature]

[Signature]
ASSIST. PROF
Dr. Hakeem.S. Abed
Approval of the Dean

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

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

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

1. Program Vision

The primary vision of the Department of Soil Sciences and Water Resources aims to build a solid scientific foundation by providing a suitable environment for students to learn about physical, chemical, biological, and pedological properties. Through laboratory analysis, fieldwork, and the use of the latest technologies, students are equipped with solid scientific skills for soil analysis. This, in turn, leads to the development of scientific cadres who can contribute to solving land problems in the agricultural sector. Furthermore, the department conducts numerous scientific research projects annually through graduate student projects, faculty research, and undergraduate student graduation projects to address some soil and water-related problems. The department also contributes to developing students'

research capabilities by designing experiments and writing solid scientific research for publication in international peer-reviewed journals. The department's primary goal is to achieve excellence in scientific research, create partnerships with government institutions and civil society, and participate in training workshops to keep pace with global developments.

2. Program Mission

Providing innovative scientific research and solutions on sustainable agriculture, facing contemporary challenges, leading to knowledge of new research areas, working collaboratively with researchers from the same or nearby departments. Preparing leadership cadres with the ability to think critically and then analyze problems for the purpose of solving them, which qualifies graduate students to manage some research projects by acquiring research skills and developing their leadership skills. The department is a pioneer in education by periodically updating the curricula to keep pace with reputable international universities and working to spread awareness among members of society to preserve natural resources and encourage and promoting sustainable practices to address climate change.

3. Program Objectives

The program aims to provide undergraduate and graduate students with the necessary knowledge to understand everything related to the concept of soil. The department aims to prepare graduates with a high-level understanding of the physical, chemical, and biological properties of soil, soil surveying and classification, and plant fertility and nutrition. They also have the ability to analyze and evaluate the quality of surface and groundwater, and to understand the effects of agricultural production by studying the interactions that occur among soil, water, and plants. In addition, the department focuses on two important factors: the first is natural resource management, through conducting studies on climate change and its impact on soil and water, finding solutions, and reducing pollution from some industrial products by promoting sustainable agriculture. The second factor is combating desertification and sand encroachment, identifying the causes of desertification, and finding and developing strategies to control it and increase productivity and preserving it as a natural resource.

4. Program Accreditation

The department is working to obtain program accreditation by applying the standards launched by the Ministry

5. Other external influences

Field visits to stations and relevant state institutions

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Notes*
Institution Requirements	15	29	15.38	Basic
College Requirements	19	62.5	33.15	Basic
Department Requirements	30	97	51.45	Basic
Summer Training	1			Basic
Other				
The total	65	188.5		

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

7. Program Description

Year / Level	Course Code	Course Name	Credit Hours
First / First Semester	SolPC1103	Analytical Chemistry	30 theoretical + 45 practical
	SolPh1208	General Physics	30 theoretical + 45 practical
	013101U	Mathematics 1	30 theoretical
	SolED2112	Engineering Drawing	45 practical
	WU04	Human Rights and Concepts of Freedom	30 theoretical
	SolAP1207	Principles of Animal Production	30 theoretical + 45 practical
	SolFC1101	Principles of Field Crops	30 theoretical + 45 practical
	WU004	Computer Fundamentals 1	30 practical
First / Second Semester	SolGe1102	Principles of Geology	30 theoretical + 45 practical
	OC23101	Organic Chemistry	30 theoretical + 45 practical
	OC23102	Fruit Production	30 theoretical + 45 practical
	SolSS1206	Plane Surveying	30 theoretical + 45 practical
	WU004	Computer Fundamentals 2	30 practical
	WU02	English Language	30 theoretical
	OC23104	Principles of Agricultural Economics	30 theoretical + 45 practical
	3U02310	Mathematics 2	30 theoretical
	WU01	Arabic Language	30 theoretical
Second / First Semester	WU05	Crimes of the Ba'ath Regime in Iraq	30 theoretical
	SolBi2216	Biochemistry	30 theoretical + 45 practical
	SolPS1205	Principles of Soil Science	30 theoretical + 45 practical
	SolSt1104	Principles of Statistics	30 theoretical + 45 practical
	SolMi2109	Principles of Microbiology	30 theoretical + 45 practical
	0C13203	Vegetable Production	30 theoretical + 45 practical
	WU22	Computer Applications	30 practical
	SolME2215	Agricultural Machinery and Equipment	30 theoretical + 45 practical

Second / Second Semester	SolSA2214	Soil, Water and Plant Analysis	30 theoretical + 45 practical
	SolPP2113	Principles of Plant Protection	30 theoretical + 45 practical
	SolRS2111	Environment and Meteorology	30 theoretical + 45 practical
	SolAE2218	Principles of Agricultural Extension	30 theoretical
	SolLG2110	Land Leveling and Improvement	30 theoretical + 45 practical
	SolPP2217	Plant Physiology	30 theoretical + 45 practical
	WU23	English Language	30 theoretical
	WU22	Computer Applications 4	30 practical

7. Expected learning outcomes of the program

Knowledge

Cognitive goals	Student learns about the concept of soil and its geological components. The student learns about the types of soil and the external influences that contributed to the formation of soil. The student learns about the nutrients found in the soil.
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Skills

Skills objectives of the program	Thinking skill Scientific research skills Teaching skills
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Ethics

Evaluation	Theoretical tests Practical tests Weekly reports
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8. Teaching and Learning Strategies

- 1- Explanation and clarification
- 2- Lecture method
- 3- Practical lessons in the lab.
- 4- Scientific trips to relevant departments and research stations and Self-learning method

9. Evaluation methods

- 1- Theoretical tests
- 2- Practical tests
- 3- Reports and studies

10. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)	Number of the teaching staff	
	General	Special		Staff	Lecturer

Professor Jamal Naser Abd AIRahman	Soil and water resources	Soil microbiology			√	
Professor Kahraman Hussain Habeeb	Soil and water resources	Soil fertility and fertilization			√	
Professor Mahdi Wasmi Seheeb	Soil and water resources	Soil chemistry			√	
Assistant Professor Laith Salem Salman	Soil and water resources	Soil Mineralogy			√	
Assistant Professor Ahmed Abed Gata	Machine engineering	Agricultural machines			√	
Assistant Professor Muhand Ismael Kulabs	Science	Atmosphere Science			√	
Assistant Professor Wisam Thamir Jabar	Biological Science	Environment and Pollution			√	
Dr. Ali Jawad Kadhim	Soil and water resources	Soil Physics			√	
Assistant Professor Noor AlHuda Jawad Kadhim	Soil and water resources	Soil Microbiology			√	
Dr. Zahraa Khalid Kamel	Soil and water resources	Soil Physics/Irrigation			√	
Dr. Muntather Hamadi Mansour	Soil and water resources	Soil fertility			√	
Lecture Mayada Shuhb Hamed	Soil and water resources	Soil physics			√	
Lecture Hiba Kalaf Razaq	Soil and water resources	Soil Chemistry			√	
Assistant Lecture Afrah Mahdi Saleh	Soil and water resources	Soil Physics			√	
Assistant Lecture Hassanian Muhammad Mahmood	Soil and water resources	Soil Classification			√	
Assistant Lecture Osam Hani Hameed	Soil and water resources	Soil Chemistry			√	

Assistant Lecture Asmma Hussain Alawi	Soil and water resources	Soil Fertility			√	
Assistant Lecture Ali Hussian Ali	Soil and water resources	Soil Physics			√	
Assistant Lecture Buraq Mussa Sadiq	Soil and water resources	Soil Microbiology			√	
Assistant Lecture Waffa Awaad Tuama	Soil and water resources	Soil Physics			√	
Assistant Lecture Yahaya Radi Kareem	Soil and water resources	Soil Physics			√	
Assistant Lecture Karrar Kasim Farhan	Engineering	Refrigerating and Air conditioning			√	
Assistant Lecture Alaa Abd AlMunam Saheb	Engineering	Mechanical			√	
Assistant Lecture Makasid Muraad Saheb	Administration and Economics	Business Management			√	
Assistant Lecture Behar Alaa Majeed	Soil and water resources	Soil Fertility			√	

11. Professional Development

Mentoring new faculty members

Guiding new, visiting, full-time and part-time faculty members by following them up by the Scientific Committee and the Department Head, attending lectures, and giving them the necessary directions.

Professional development of faculty members

- 1- Follow teaching and learning strategies
- 2- Evaluation of learning outcomes by the scientific committee
- 3- Professional development through holding development courses

12. Acceptance Criterion

Central admission

13.The most important sources of information about the program

- 1- The website of the college and university
- 2- University guide
- 3- Central Library
- 4- The most important books and sources for the department
- 5- The Internet

14.Program Development Plan

- 1-Teamwork: Working within the group effectively and actively.
- 2- Time management: Managing time effectively and setting priorities with the ability to work organized by appointments.
- 3- Leadership: The ability to direct and motivate others.
- 4- Independence at work.
- 5- Negotiation and persuasion (the student is able to influence and persuade others to discuss and reach an agreement.
- 6- Global skills (the student is able to speak and understand other languages and appreciate other cultures.

Program Skills Outline

				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First/ first semester	WU004	Computer basics	Basic	•	•	•	•	•	•	•	•	•	•	•	•
	013101U	Mathematics 1	Basic		•		•								
	WU04	Human rights and concepts of freedom	Basic					•				•		•	
	SolAP1207	Principles of animal production	Basic						•						
	SolPh1208	General physics	Basic		•			•		•			•		
	SolFC1101	Principles of field crops	Basic		•	•					•				•
	SolPC1103	analytical chemistry	Basic								•				
	SolED2112	Engineering Drawing	Basic		•								•		•

First/ second semester	WU02	English language 1	Basic		•			•						•	
	WU01	Arabic Language	Basic		•	•	•	•	•	•	•	•	•	•	
	3U02310	Mathematics 2	Basic		•		•								
	SolSS1206	Flat space	Basic					•				•		•	
	OC23102	Fruit production	Basic						•						
	OC23104	Principles of agricultural economics	Basic		•			•		•			•		
	OC23101	organic chemistry	Basic		•	•	•				•				
	SolGe1102	Principles of geology	Basic						••		•	•			

Second/ first semester	WU05	The crimes of the Baath regime in Iraq	Basic												
	WU23	English language 2	Basic												
	WU22	Computer applications	Basic												
	SolMi2109	Principles of microbiology	Basic												
	SolBi2216	Biochemistry	Basic												
	SolRS2111	Environment and weather conditions	Basic												
	0C13203	Green production	Basic												
	SolSt1104	Principles of statistics	Basic												
	SolPS1205	Principles of soil science	Basic												
	WU22	Computer applications 4	Basic												
	SolPP2217	Phosphorus is a plant	Basic												
	SolME2215	Agricultural machines and machinery	Basic												

Second/ second semester	WU04	Concepts of freedom and democracy	Basic												
	SolAE2218	Principles of agricultural extension	Basic												
	SolSA2214	Soil, water and plant analysis	Basic												
	SolLG2110	Land settlement and modification	Basic												
	SolPP2113	Principles of plant protection	Basic												
	0023401	Fertilizer technologies	Basic												
	0013404	Plant nutrition	Basic												
	0023403	Soil management	Basic												
	0023402	Land reclamation	Basic												

Module Information					
Module Title	<u>Principles of soil science</u>		Module Delivery		
Module Type	<u>Core</u>		15. ☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar		
Module Code	<u>SoIPS1205</u>				
ECTS Credits	<u>7</u>				
SWL (hr/sem)	<u>175</u>				
Module Level		1	Semester of Delivery		2
Administering Department		Department of Soil Science & Water Resources	College	College of Agriculture	
Module Leader	Dr. Muntadher Hammadi Mansour		e-mail	Malbudeiri@uowasit.edu.iq	
Module Leader's Acad. Title		Lecture	Module Leader's Qualification		PhD
Module Tutor	Isam Hani Hameed		e-mail	ishani@uowasit.edu.iq	
Peer Reviewer Name		Dr. Muntadher Hammadi Mansour	e-mail	E-mail	
Scientific Committee Approval Date		2/11/2025	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. 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	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	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.
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Learning and Teaching Strategies

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.
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	* 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.
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Student Workload (SWL)			
Structured SWL (h/sem)	125	Structured SWL (h/w)	8
Unstructured SWL (h/sem)	50	Unstructured SWL (h/w)	4
Total SWL (h/sem)	175		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10	10	2 - 11	
	Assignments	2	10	5 - 10	
	Lab.	10	10	2 - 11	
	Report	2	10	4 , 9	
Summative assessment	Midterm Exam	2hr	10	5 , 10	
	Final Exam	3hr	50	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	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	First Monthly Exam
Week 6	Bulk and Particle Density: Numerical values and their impact on agriculture and irrigation.
Week 7	Soil Temperature and Water: Moisture distribution, drainage, saturation point, and field capacity.
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	Second Monthly Exam
Week 13	Microorganisms and Soil Microbiology: Their role in the soil and organic matter recycling.
Week 14	Soil Classification and Survey: Classification systems (e.g., Soil Taxonomy), and their application in Iraq.
Week 15	.Soil Management and Conservation: Reclamation, crop rotation, and erosion control

Delivery Plan (Weekly Lab. Syllabus)

	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	First Monthly Exam
Week 7	Calculating porosity and assessing the soil's :Porosity and Soil Water Retention .water-holding capacity
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	Second Monthly Exam
Week 14	Available Phosphorus Determination: Using the Olsen or Bray method, depending on soil type.
Week 15	Available Potassium Estimation: Using chemical extraction and measuring with a flame photometer.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Fundamentals of Soil Science	نعم
Recommended Texts	Published Research	كلا
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 DESCRIPTION FORM

Module Information			
Module Title	<u>General Physics</u>		Module Delivery
Module Type			1. ☐ Theory • ☒ Lecture • ☒ Lab • ☒ Tutorial • ☐ Practical • ☐ Seminar
Module Code	SolPh1208		
ECTS Credits	<u>7</u>		
SWL (hr/sem)			
Module Level	1	Semester of Delivery	1
Administering Department	MBO	College	College of Agriculture
Module Leader	MS. C. Ahmed S. Jabbar	e-mail	Ahmed.salam@uowasit.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	Its aims to teaching student the fundamental principles of physics, that connected with there specific scientific path.
Module Learning Outcomes	A graduate of the Faculty of Agriculture possesses the necessary physics knowledge as required. Physics will play a significant role in his decisions regarding machinery and time, and will undoubtedly add a broader horizon to him.

Indicative Contents	Indicative physics course content typically covers foundational topics like kinematics, dynamics, and energy, alongside more advanced areas like electromagnetism, quantum mechanics, and relativity. It aims to develop students' understanding of fundamental principles, problem-solving skills, and the ability to apply physics concepts to real-world situations.
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Learning and Teaching Strategies	
Strategies	Effective learning and teaching strategies in physics include active learning, cooperative learning, peer instruction, and the use of storytelling, analogies, and context-based learning. These methods aim to engage students actively, encourage collaboration, and make abstract concepts more relatable.

Student Workload (SWL)			
Structured SWL (h/sem)		Structured SWL (h/w)	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				
	Assignments				
	Projects / Lab.				
	Report				
Summative assessment	Midterm Exam				
	Final Exam				
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to physics and philosophy of physics
Week 2	Types of physical branches
Week 3	Modern Physics
Week 4	Classical Physics
Week 5	Vectors
Week 6	Seminar & Vectors in 2D and 3D
Week 7	Examination Date
Week 8	Mechanical Physics and Classical Theory, Motion, Thermodynamic
Week 9	Motion & Thermodynamics
Week 10	Seminar
Week 11	Materials Engineering Physics
Week 12	Materials Engineering Physics
Week 13	Nanotechnology
Week 14	Semiconductor & Seminar
Week 15	Examination Date

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Introduction in lab
Week 2	How to Write the Experimental in lab & how to read the figures
Week 3,	1 st Experiment: Simple Pendulum
Week 4	Studying the reports of last lab.
Week 5	Seminar
Week 6	2 nd Experiment: Ohm's Law
Week 7	Studying the reports of last lab. & Seminar
Week 8	Examination Date

Week 9	3 rd Experiment: Helical Spring and its types
Week 10	Studying the reports of last lab.
Week 11,	Seminar
Week 12	4 th Experiment: Viscosity coefficient
Week 13	Studying the reports of last lab.
Week 14	Seminar & Application of Lab.
Week 15	Examination Date

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	• "Fundamentals of Physics" by Halliday, Resnick, and Walker • The Feynman Lectures on Physics • Khan Academy Physics • MIT OpenCourseWare (OCW) • Schaum's Outline of Physics • College Physics (OpenStax) • University Physics (Young & Freedman)	
Recommended Texts		
Websites	1. https://www.wiley.com/en-us/Fundamentals+of+Physics%252C+11th+Edition-p-9781119306856 2. https://www.feynmanlectures.caltech.edu/ 3. https://www.khanacademy.org/science/physics 4. https://ocw.mit.edu/courses/physics/ 5. https://ocw.mit.edu/courses/physics/ 6. https://libgen.is/ 7. https://openstax.org/details/books/college-physics 8. https://www.pearson.com/en-us/subject-catalog/p/university-physics/P200000006995/9780135216118 9. Other Website.	

Grading Scheme

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

(50 - 100)	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 Information					
Module Title	<u>Computer basics</u>		Module Delivery		
Module Type	Core		16. ☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar		
Module Code	<u>WU004</u>				
ECTS Credits	<u>3</u>				
SWL (hr/sem)	<u>150</u>				
Module Level		1	Semester of Delivery		2
Administering Department		Department of Soil Science & Water Resources	College	College of Agriculture	
Module Leader	Karrar Qasim farhain		e-mail	karrarahmedi@uowasit.edu.iq	
Module Leader’s Acad. Title		Lecture	Module Leader’s Qualification		Master
Module Tutor	Karrar Qasim farhain		e-mail	karrarahmedi@uowasit.edu.iq	
Peer Reviewer Name		Karrar Qasim farhain	e-mail	E-mail	
Scientific Committee Approval Date		2/11/2025	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	This course aims to: 1. Introduce students to the fundamental concepts of computers and information technology.

	2. Develop computer skills for use in the university environment. 3. Equip students with the ability to use Microsoft Office applications. 4. Develop data processing and analysis skills using Excel. 5. Develop skills in preparing academic reports and presentations. 6. Promote awareness of information security and the safe use of the internet. .Employ computers in agricultural and academic applications. 7
Module Learning Outcomes	1. Upon successful completion of this course, the student will be able to: 2. Understand and apply knowledge 3. Explain basic computer concepts 4. Differentiate between hardware and software components 5. Describe the functions of different operating systems 6. Explain the principles of information security 7. Demonstrate practical skills 8. Manage files and folders efficiently 9. Create and format documents using Word 10. Use basic formulas and functions in Excel 11. Prepare professional presentations using PowerPoint 12. Demonstrate critical thinking skills 13. Analyze and organize data 14. Select appropriate software for completing academic tasks 15. Demonstrate general skills 16. Prepare scientific reports 17. Use the internet and email for educational purposes 18. Collaborate effectively and share files digitally
Indicative Contents	Guide Contents Unit 1 • Introduction to Computers • History of Computer Development

- **Generations of Computers**

Unit 2

- **Computer Hardware**
- **Input Units**
- **Output Units**
- **Central Processing Unit**

Unit 3

- **Software**
- **Operating Systems**
- **File and Folder Management**

Unit 4

- **Microsoft Word**
- **Document Formatting**
- **Tables**
- **Images and Shapes**
- **Report Creation**

Unit 5

- **Microsoft Excel**
- **Spreadsheets**
- **Arithmetic and Logical Functions**
- **Graphs**

Unit 6

- **Microsoft PowerPoint**
- **Presentation Design**
- **Effects and Transitions**

Unit 7

	• The Internet • Search Engines • Email Unit 8 • Information Security • Viruses and Malware • Cloud Computing
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Learning and Teaching Strategies

Strategies	Teaching and Learning Strategies Teaching Strategies • Interactive lectures • Demonstrations • Hands-on laboratory training • E-learning • Classroom discussions Learning Strategies • Cooperative learning • Problem-based learning • Individual and group projects • Practical applications
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Student Workload (SWL)

Structured SWL (h/sem)	105	Structured SWL (h/w)	7
Unstructured SWL (h/sem)	47	Unstructured SWL (h/w)	3
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10	10	2 - 11	
	Assignments	2	10	5 - 10	
	Lab.	10	10	2 - 11	

	Report	2	10	4 , 9	
Summative assessment	Midterm Exam	2hr	10	5 , 10	
	Final Exam	3hr	50	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction and Definitions: Introduction to Computers and Their Development
Week 2	Computer Hardware
Week 3	Input/Output Devices
Week 4	Software and Operating Systems
Week 5	File and Folder Management
Week 6	Microsoft Word
Week 7	Advanced Microsoft Word
Week 8	Microsoft Excel
Week 9	Functions and Formulas in Excel
Week 10	Graphs and Data Analysis
Week 11	Midterm Exam
Week 12	Microsoft PowerPoint
Week 13	Designing Presentations
Week 14	The Internet and Email
Week 15	Information Security and Auditing

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Familiarization with Laboratory Equipment
Week 2	Computer Operation and File Management
Week 3	Using the Operating System

Week 4	Basic Word Applications
Week 5	Document Formatting
Week 6	Spreadsheets and Reports
Week 7	Excel Applications
Week 8	Arithmetic Functions
Week 9	Logical Functions
Week 10	Graphs
Week 11	First Practical Exam
Week 12	Creating Presentations in PowerPoint
Week 13	Effects and Transitions
Week 14	Internet and Email
Week 15	Final Practical Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Computer basics Norton, P. Introduction to Computers. Shelly Cashman Series: Microsoft Office.	no
Recommended Texts	Specialized scientific journals in information technology. Microsoft learning guides.	no
Websites	 Microsoft Learn  Microsoft Office Support	

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 Information					
Module Title	<u>Principles of Animal Production</u>		Module Delivery		
Module Type	<u>C</u>		1. ☒ Theory 1- ☒ Lecture 2- ☒ Lab 3- ☐ Tutorial 4- ☒ Practical 5- ☐ Seminar		
Module Code	<u>SolAP1207</u>				
ECTS Credits	<u>5</u>				
SWL (hr/sem)	<u>79</u>				
Module Level		1	Semester of Delivery		1
Administering Department		Soil sciences and water resources Dept.	College	College of Agriculture	
Module Leader	Dr. Mohammed Abdullah Khamees		e-mail	moabdalalah@uowasit.edu.iq	
Module Leader’s Acad. Title		Assist. Professor	Module Leader’s Qualification		Ph.D.
Module Tutor	Mr. Mohammed Saad		e-mail	moabdalalah@uowasit.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		2/11/2025	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	• Introduce students to the economic importance of livestock and its products. • Identify the different breeds of cattle, buffalo, sheep, and goats, and their classifications according to production. • Gain a basic understanding of the basics of reproduction and reproduction in ruminants. • Provide students with practical skills in calf care and basic ruminant nutrition. • Identify milk production methods and the factors affecting it. • Understand the daily, weekly, and seasonal field operations necessary to manage livestock production pens. • Introduce students to the importance of field records and how to use them to improve production efficiency.

Module Learning Outcomes	1. 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

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. 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.
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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)	79	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	121	Unstructured SWL (h/w)	8
Total SWL (h/sem)	200		

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

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Module Information

Module Title	<u>Arabic language</u>			Module Delivery	
Module Type	<u>U</u>				
Module Code	<u>WUO1</u>				
ECTS Credits	<u>2</u>				
SWL (hr/sem)	<u>50</u>				
Module Level		1	Semester of Delivery		2
Administering Department		Department of Soil Science & Water Resources	College	College of Agriculture	
Module Leader	Dr.Zena Abdullah Khamees		e-mail	zenak@uowasit.edu.iq	
Module Leader's Acad. Title		Lecture	Module Leader's Qualification		PhD
Module Tutor	Dr.Zena Abdullah Khamees		e-mail	zenak@uowasit.edu.iq	
Peer Reviewer Name		Dr.Zena Abdullah Khamees	e-mail	zenak@uowasit.edu.iq	
Scientific Committee Approval Date		2/11/2025	Version Number	1.0	

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

	1. Introduce students to the historical development of the Arabic language 2. Develop students' understanding of Arabic grammar, 3. Enable students to identify and apply grammatical concepts such as subjects, predicates, verbs.
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Module Objectives	4. Improve students' command of complex grammatical structures including exceptions, vocatives, appositives, and numerals. 5. Strengthen students' morphological skills by exploring verb patterns, root and augmented forms, and verb conjugation. 6. Equip students with spelling and punctuation rules, including the correct usage of hamza, ta marbuta, and punctuation marks, to enhance academic writing. 7. Encourage student participation through practical exercises, question-based learning, and collaborative group work to reinforce grammatical concepts.
Module Learning Outcomes	1. Describe the historical development and branches of the Arabic language. 2. Identify and correctly apply major grammatical rules, including nominatives (subjects, predicates), and accusatives (objects, adverbials, and exceptions). 3. Analyze and construct grammatically correct sentences using structures such as the vocative, specification, and appositives (adjective, emphasis, substitution, and coordination). 4. Demonstrate understanding of prepositional phrases and genitive constructions in written and spoken Arabic. 5. Apply morphological analysis using the standard Arabic morphological scale (al-mīzān al-ṣarfī). 6. Differentiate between sound and weak verbs, and correctly conjugate verbs in different forms (root and augmented). 7. Use punctuation marks appropriately in formal writing and apply accurate spelling rules for hamza and final ta'. 8. Communicate using correct grammatical and orthographic forms in both academic and everyday contexts. 9.
Indicative Contents	1. The Holy Quran • Exploring aspects of Quranic eloquence in terms of style, structure, artistic imagery, phonetic harmony, precision of expression, and the connection between rhetorical aspects and the Quran's message of faith. 2. Arabic Literature • Memorizing and analyzing selected pre-Islamic poetry. 3. Morphology • Applying morphological analysis using the standard Arabic morphological scale (the morphological balance). • Introduction to morphological structure and the Arabic root. • Plurals in Arabic.

	• Verb conjugation with pronouns. • Sound and weak verbs (sound and weak, simple and derived forms). 4. Language Skills • The Arabic alphabet (solar and lunar letters). • Arabic punctuation rules and their importance in academic writing. • Spelling rules for the hamza. 5. Arabic Dictionaries • Lexicographical Schools 6. Practical Application through Exercises and Written Assignments
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Learning and Teaching Strategies

Strategies	☐ Lectures and Presentations 1. Structured lectures supported by visual aids to introduce key grammatical, morphological, and orthographic concepts. 2. Use of real-life and academic examples to enhance contextual understanding. ☐ Interactive Discussions 1. Encouraging student participation through guided questions and open-ended discussions to reinforce grammatical analysis and reasoning. 2. Promoting peer-to-peer learning and collaborative exploration of language structures. ☐ Practical Exercises and Drills 1. Application of rules through written exercises, sentence construction, and correction activities. 2. Group and individual practice sessions focused on applying grammar and morphology in writing and speech. ☐ Problem-Based Learning 1. Engaging students in solving grammar and morphology problems to develop critical thinking and application skills. 2. Analyzing authentic Arabic texts to identify and explain language patterns.
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	☐ Use of Educational Technology - Utilizing digital resources such as language learning apps, interactive quizzes, and online grammar tools to enhance learning outside the classroom. ☐ Feedback and Revision Sessions - Providing continuous formative feedback on exercises and assignments. - Organizing review sessions before assessments to consolidate understanding. ☐ Role-play and Daily Language Use - Incorporating real-life scenarios and conversational Arabic to practice correct grammar usage in communication. - Encouraging the use of correct spelling and punctuation in academic writing.
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Student Workload (SWL)			
Structured SWL (h/sem)	33	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	Tests	1	10% (10)	8	LO #1 - #7
	Projects	1	10% (10)	6	LO #1 -#5
	Online assignments	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	First: The Holy Quran: Memorize verses from Surah Al-Baqarah, verses 260-263.
Week 2	- Memorize a Prophetic Hadith.
Week 3	Second: Arabic Literature: Memorize selected poems from the pre-Islamic era (the Mu'allaqat).
Week 4	Poem by Antarah ibn Shaddad.
Week 5	Third: Morphology: Morphological scales.
Week 6	First month exam.
Week 7	Plurals in Arabic.
Week 8	Attributing verbs to pronouns.
Week 9	Verb conjugation in terms of (sound and weak, root and augmented, derivatives).
Week 10	Fourth: Language Skills: The Arabic alphabet (solar and lunar).
Week 11	Rules for writing punctuation marks.
Week 12	Second month exam.
Week 13	Rules for writing the hamza (first, medial, final, and hamzat al-wasl and hamzat al-qat').
Week 14	Fifth: Arabic Dictionaries: Lexicographical Schools.
Week 15	Meanings of unfamiliar words in the Holy Quran. The curriculum of the Al-Ain and Al-Asas schools, and practicing extracting words.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Arabic Language Book: Dr. Rafid Sabah Al-Tamimi, Taghreed Fadel Abbas	Yes
Recommended Texts	Explanations of Arabic language Book	Yes
Websites	https://www.istartarabic.com/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

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MODULE DESCRIPTION FORM

Module Information			
Module Title	<u>Surveying</u>		Module Delivery
Module Type	<u>Core</u>		2. ☐ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	<u>SoISS1206</u>		
ECTS Credits	<u>6</u>		
SWL (hr/sem)			
Module Level	1	Semester of Delivery	2
Administering Department	MBO	College	College of Agriculture
Module Leader	Ihab Fahem Neamah	e-mail	ifahem@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSc in Water Resources Engineering
Module Tutor	Hawraa kareem kiher (M.sc) in Soil Science and Water Resources	e-mail	hjassam@uowasit.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	* Introduce the fundamental concepts of surveying: Enable students to understand the basic principles, definitions, and types of surveying and mapping, emphasizing their direct applications in agricultural fields. * Master field measurement and area calculation techniques:

	Train students on methods for measuring distances and calculating regular and irregular agricultural land areas using both direct and indirect methods. * Operate traditional and modern surveying instruments: Build the students' capacity to set up, calibrate, and use essential surveying tools (such as tapes, compasses, leveling instruments, and an introduction to Total Stations and GPS). * Perform land leveling and grading operations: Enable students to calculate point elevations and conduct differential leveling required for soil leveling, designing irrigation/drainage networks, and determining slope directions. * Execute field layout and staking of agricultural projects: Develop students' skills in transferring paper or digital maps and layouts onto the field, such as staking out irrigation channels, orchard layouts, and property boundaries. * Construct and interpret topographic maps and plans: Cultivate the ability to record field data accurately in surveying field books and transform them into detailed topographic maps using appropriate scales. * Manage and correct surveying errors in the field: Develop critical thinking skills to identify systematic and random errors during field measurements and apply mathematical corrections to ensure high data accuracy.
Module Learning Outcomes	*Student identifies the basic principles of surveying and their applications in agricultural projects. *Ability to use and set up traditional and modern surveying instruments accurately. *Acquisition of field measurement skills for distances and calculating regular and irregular land areas. *Ability to perform leveling operations and calculate point elevations for designing irrigation and drainage networks. *Capability to read, interpret, and draw topographic maps and plans using appropriate scales. *Adherence to high precision and safety procedures during field surveying operations. *Ability to identify field surveying errors and propose mathematical solutions for correction.
Indicative Contents	*Overview of basics and topics related to agricultural surveying and mapping. *Study of distance measurement methods (direct and indirect) and their calculations. *Analysis of equipment used in surveying (tapes, compasses, levels), including parts, functions, and field applications. *Study of leveling operations, elevation calculations, and their applications in irrigation and drainage networks. *Homework assignments regarding land area calculations, error corrections, and self-reflection. *Student-prepared reports and field maps related to the course curriculum. *Study of safety procedures and precision standards required during field surveying operations.

Learning and Teaching Strategies

Strategies	Key strategies for delivering the course include engaging with lecture vocabulary through simple questioning, while simultaneously enhancing and broadening critical thinking skills through dialogue and discussion. For concepts that require further explanation, educational presentations and videos are used, alongside practical field exercises and direct training on surveying instruments.
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Student Workload (SWL)

Structured SWL (h/sem)	30	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	75		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All
	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All
Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Agricultural Surveying: Definitions, importance, and branches.
Week 2	Principles of chains and tape measurements; types of errors in chaining.
Week 3	Ranging lines, setting perpendiculars, and overcoming obstacles in chaining
Week 4	Surveying Measurement Tools & Unit Systems: Metric, Imperial, and local agricultural units (Donum, Ol, Mishara) and conversions.
Week 5	Errors in Measurement Tools: Sources of errors (tape errors, temperature, tension) and mathematical correction methods for length and temperature.
Week 6	Methods of calculating land areas: Regular geometric shapes and coordinates system.
Week 7	Methods of calculating irregular areas: Trapezoidal and Simpson's rules.
Week 8	Midterm Exam
Week 9	Introduction to Leveling: Concepts, definitions, terms, and types of leveling instruments.
Week 10	Differential Leveling and booking methods: Rise and Fall method.
Week 11	Height of Instrument (HI) method for calculating point elevations.
Week 12	Profile Leveling and Cross-Sectioning for irrigation and drainage channels.
Week 13	Errors in leveling operations: Sources, mathematical corrections, and allowable limits.
Week 14	Introduction to modern surveying technologies: Total Station and Global Positioning System (GPS).
Week 15	Final Practical Evaluation and Review

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Practical Course Syllabus: Agricultural Surveying Identification of traditional surveying tools, pacing method, and field safety procedures.
Week 2	Field applications of distance measurements using various types of tapes.
Week 3,	Setting out and erecting perpendicular lines and measuring around field obstacles.
Week 4	Practical exercises and field applications on using measurement tools and converting between surveying units (Metric, Imperial, and local units like Donum).

Week 5	Field training on identifying tape measurement errors and applying mathematical equations to correct measured distances.
Week 6	Office work: Calculating land areas using actual data recorded from field books.
Week 7	Practical exercises and computational applications on Simpson's and Trapezoidal rules for irregular areas.
Week 8	Midterm Practical Exam
Week 9	Identification, setup, and temporary adjustment of the Leveling Instrument and staff reading.
Week 10	Field differential leveling operations and recording data in the surveying field book using the Rise and Fall method
Week 11	Field leveling application and data booking using the Height of Instrument (HI) method.
Week 12	Field application of profile leveling and cross-sectioning for a simulated irrigation canal or drainage ditch
Week 13	Adjusting leveling errors, closing a field traverse, and distributing the error of closure.
Week 14	Field demonstration and hands-on training with GPS tools and digital surveying software.
Week 15	Final Practical Exam and Project Report Submission

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Principles of Agricultural Surveying, Author: Dr. Abdul-Razaq Al-Ali)	
Recommended Texts	Surveying for Agricultural Engineers, Authors: Dr. Ali Hassan Al-Saeedi and Dr. Ahmed Ibrahim Al-Nasiri (I) • Plane Surveying Principles, Authors: Dr. Mahmoud Tawfiq Al-Qadi and Mr. Sami Mohammed Ali (	
Websites	Trusted websites providing additional information about agricultural surveying, land leveling, and GIS applications.	

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 Information				
Module Title	<u>Principles of Crop Sciences</u>		Module Delivery	
Module Type	Core		17. ☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	<u>SolFC1101</u>			
ECTS Credits	<u>4</u>			
SWL (hr/sem)	<u>175</u>			
Module Level		1	Semester of Delivery	2
Administering Department		Field Crop Sciences Dep.	College	Agriculture
Module Leader	Dr. Hussien Ibrahim		e-mail	htarish@uowasit.edu.iq
Module Leader’s Acad. Title		Lecturer	Module Leader’s Qualification	PhD
Module Tutor	Wafaa Awaad Tuama		e-mail	@uowasit.edu.iq
Peer Reviewer Name		Dr. hussien Ibrahim	e-mail	htarish@uowasit.edu.iq
Scientific Committee Approval Date		2/11/2025	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	- Course description: study of Agronomy and its branches, descript field crop characteristics, report of origin of cultivated plants, classification and importance. - Field crop classification according to field utilization, Botanical classification, Date of planting, Duration... - Botanical description of major field crop families. - 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).

	7. 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). 8. Water (division plants according to water availability, water use efficiency, effect of water deficit, tolerance to drought). 9. Soil (compounds, soil salinity and its damage on. crops), study of weeds, classification of weeds according to life cycle and methods of weed control). 10. Crop rotation (conditions of crop rotation design, stages of design crop rotation with examples). Field crops. 11. breeding (objectives of plant breeders, variety, adaptation, methods of field crops breeding)
Module Learning Outcomes	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 . • - Agricultural Research: Enhancing research skills and analyzing information related to crops and the latest developments in this field.
Indicative Contents	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:
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Learning and Teaching Strategies

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.
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Student Workload (SWL)

Structured SWL (h/sem)	90	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	85	Unstructured SWL (h/w)	6
Total SWL (h/sem)	175		

Module Evaluation

		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)

	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	1 st 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	2 nd 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)

	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

	Text	Available in the Library?
Required Texts	1: -Principles of Field Crops, Dr .M . h .Al – Ansary etal.1980. Ministry of Higher 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 Scientific 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

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

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

MODULE DESCRIPTION FOR

Module Information			
Module Title	<u>General Chemistry</u>		Module Delivery
Module Type	<u>Core</u>		☐ Theory 10. ☒ Lecture 11. ☒ Lab 12. ☒ Tutorial 13. ☐ Practical 14. ☐ Seminar
Module Code	<u>SoIPC1103</u>		
ECTS Credits	<u>8</u>		
SWL (hr/sem)	<u>75</u>		
Module Level	1	Semester of Delivery	1
Administering Department	MBO	College	College of Agriculture
Module Leader	Dr. Wisam Thamer Al-Mayah		e-mail: Walmayah@uoswasit.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	PhD in Biology/Ecology
Module Tutor	Ali Husen		e-mail: E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	8. To introduce students to the fundamental principles of Chemistry and its importance in agricultural sciences. 9. To develop students' understanding of atomic structure, chemical bonding, and periodic trends. 10. To enable students to comprehend states of matter and the behavior of gases, liquids, and solids. 11. To familiarize students with chemical reactions, stoichiometry, and basic calculations in chemistry. 12. To enhance students' knowledge of acids, bases, pH, and buffer systems relevant to biological and soil systems. 13. To develop basic laboratory skills, including safe handling of chemicals and use of laboratory equipment. 14. To improve students' ability to apply chemical principles to agricultural problems such as soil chemistry and plant nutrition. 15. To develop analytical thinking and problem-solving skills in solving basic chemical and agricultural-related issues.
Module Learning Outcomes	6- Demonstrate understanding of the fundamental concepts of Chemistry and their relevance to agricultural applications. 7- Describe atomic structure, periodic trends, and chemical bonding theories. 8- Explain the properties of matter and the behavior of gases, liquids, and solids. 9- Apply stoichiometric principles to solve basic chemical reaction problems. 10- Explain the concepts of acids, bases, pH, and buffer systems in chemical and biological contexts. 11- Perform basic laboratory experiments using appropriate techniques and safety procedures. 12- Analyze and interpret simple chemical data and experimental results. 13- Apply chemical knowledge to solve problems related to soil chemistry, fertilizers, and plant nutrition.
Indicative Contents	10. Introduction to Chemistry and its importance in agriculture. 11. Atomic structure, electronic configuration, and periodic table. 12. Chemical bonding (ionic, covalent, and metallic) and molecular structure. 13. States of matter, gas laws, and properties of liquids and solids. 14. Chemical reactions, stoichiometry, and basic calculations. 15. Acids, bases, pH, buffers, and their applications in soil and plant systems.

Learning and Teaching Strategies

Strategies	2. Introduction to Chemistry and its importance in agriculture. 3. Atomic structure, electronic configuration, and periodic table.
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4. Chemical bonding (ionic, covalent, and metallic) and molecular structure.
5. States of matter, gas laws, and properties of liquids and solids.
6. Chemical reactions, stoichiometry, and basic calculations.
7. Acids, bases, pH, buffers, and their applications in soil and plant systems.

Student Workload (SWL)

Structured SWL (h/sem)	30	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	75		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All

	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All
Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Chemistry and its Importance in Agricultural Sciences
Week 2	Structure of Matter: Atoms, Elements, and Compounds
Week 3	Atomic Structure and Electronic Configuration
Week 4	Periodic Table and Periodic Trends
Week 5	Chemical Bonding: Ionic, Covalent, and Metallic Bonds
Week 6	Mid Exam.
Week 7	Chemical Reactions and Balancing Equations
Week 8	Stoichiometry and Chemical Calculations
Week 9	States of Matter and Properties of Gases Water Chemistry and Its Importance in Agriculture
Week 10	Liquids, Solids, and Phase Changes
Week 11	Solutions and Concentration Calculations
Week 12	Water Chemistry and Its Importance in Agriculture
Week 13	Acids, Bases, and pH Scale
Week 14	Buffers and Their Role in Biological and Soil Systems
Week 15	Applications of General Chemistry in Soil Science and Plant Nutrition

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Laboratory Safety Rules and Introduction to Basic
Week 2	Laboratory Equipment
Week 3,	Measurement Techniques and Handling of Glassware

Week 4	Preparation of Solutions and Dilution Calculations
Week 5	Determination of Concentration (Molarity, Normality)
Week 6	Mid Exam.
Week 7	Determination of Fat Content in Agricultural Samples
Week 8	Qualitative Tests for Proteins and Amino Acids
Week 9	Protein Quantitative Determination Methods
Week 10	Enzyme Activity Assays and Factors Affecting Enzyme Activity
Week 11	Identification of Vitamins in Biological Samples
Week 12	Extraction and Analysis of Plant Pigments
Week 13	Isolation of DNA from Plant Tissues
Week 14	Biochemical Analysis of Blood or Plant Sap Samples
Week 15	Practical Review, Data Interpretation, and Final Laboratory Evaluation

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	2. Al-Rawi, Ahmed Abdul Hadi. (1986). Soil Chemistry for Agricultural Colleges. Ministry of Higher Education and Scientific Research, Baghdad, Iraq. 3. Ali, Sami Abdul et al. (1988). General Chemistry. Dar Al-Kutub for Printing and Publishing, Mosul, Iraq.	
Recommended Texts	8. Chang, R., & Goldsby, K. A. Chemistry. McGraw-Hill Education. 9. Zumdahl, S. S., & Zumdahl, S. A. Chemistry: An Atoms First Approach. Cengage Learning.	
Websites	Trusted websites providing additional information about General chemistry.	

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 DESCRIPTION FORM

Module Information				
Module Title	Freedom and Democracy		Module Delivery	
Module Type	Basic		☐ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	WU04			
ECTS Credits	2			
SWL (hr/sem)				
Module Level	1	Semester of Delivery	1	
Administering Department	MBO	College	College of Agriculture	
Module Leader			e-mail	dr.hibasadeq@gmail.com
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD in Political Sociology	
Module Tutor	Dr. Hiba Sadiq Halil		e-mail	dr.hibasadeq@gmail.com

Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	1. To provide students with knowledge of the basic principles of human rights. 2. To explain the inherent nature of human rights and their historical development. 3. To introduce students to the nature of democratic systems.
Module Learning Outcomes	1. Identify the terminology of democratic philosophy according to outcomes suitable for learners' characteristics. 2. Explain the most important issues and questions raised by philosophers of democracy around the world. 3. Distinguish between issues that fall within the scope of democracy and those outside it.
Indicative Contents	1. Definitions of human rights and their designations. 2. Linguistic and terminological meanings of human rights. 3. Types of human rights. 4. Human rights in ancient civilizations. 5. Human rights in Islamic thought. 6. Hammurabi's Code and its relation to rights. 7. Economic, social, and cultural rights. 8. Women's rights in Islam and other civilizations. 9. Renaissance thought, freedom, citizenship, and the democratic state.

Relation with other Modules

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

Learning and Teaching Strategies

Strategies	1. Lecture, direct questioning, problem solving, and discussion. 2. Discussion circles and classroom dialogue. 3. Encouraging students to practice self-learning. 4. Research, reading, and independent exploration.
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Student Workload (SWL)

Structured SWL (h/sem)		Structured SWL (h/w)	
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Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				
	Assignments				
	Projects / Lab.				
	Report				
Summative assessment	Midterm Exam				
	Final Exam				
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Definitions of human rights and their designations
Week 2	Human rights: linguistic and terminological definitions
Week 3	Types of human rights
Week 4	Human rights in Mesopotamian civilization
Week 5	Human rights in the Nile Valley civilization
Week 6	Human rights in Roman civilization and other ancient civilizations
Week 7	Human rights in Islamic religions
Week 8	Hammurabi's Code
Week 9	Economic, social, and cultural rights
Week 10	Women's rights in Islam and other civilizations
Week 11	Renaissance thinkers
Week 12	Freedom according to modern thinkers

Week 13	Definition of citizenship, its history, and its levels
Week 14	The concept of the democratic state
Week 15	Final test

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Supporting books and references recommended by the instructor, scientific journals, and reports.	
Recommended Texts	Required curricular book, if available.	
Websites	Newspapers and internet websites.	

Grading Scheme

خطط الدرجات

Group	Grade	Description	Marks (%)	Definition
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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	Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	Fail, subject to processing	(45-49)	More work required but credit awarded
	F – Fail	Fail	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information			
Module Title	<u>Geology</u>		Module Delivery
Module Type	<u>Core</u>		☐ Theory 15. ☒ Lecture 16. ☒ Lab 17. ☒ Tutorial 18. ☐ Practical 19. ☐ Seminar
Module Code	<u>SolGe1102</u>		
ECTS Credits	<u>7</u>		
SWL (hr/sem)	<u>75</u>		
Module Level	1	Semester of Delivery	2
Administering Department	MBO	College	College of Agriculture
Module Leader	Dr Mahdi Wasmey Scheib	e-mail	malaiedy@uoswasit.edu.iq
Module Leader's Acad. Title	ProfessorDr	Module Leader's Qualification	PhD in Agricultural soil chemistry
Module Tutor	Essam Hani Hameed	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	- The student gets to know the classification and types of rocks and their importance • For the student to learn about methods of adding fertilizers • The student should separate the positive and negative aspects of fertilizer and its harm to plants • For the student to recognize pollution from chemical fertilizers • The student should evaluate soil fertility

Module Learning Outcomes	1-Explanation and clarification 2- Lecture method 3- Student groups 4- Practical lessons 5- Scientific trips 6 - Self-learning method
Indicative Contents	3. .

Learning and Teaching Strategies

Strategies	Key strategies for delivering the course include engaging with lecture vocabulary through simple questioning, while simultaneously enhancing and broadening critical thinking skills through dialogue and discussion. For concepts that require further explanation, educational presentations and videos are used, alongside practical exercises.
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Student Workload (SWL)

Structured SWL (h/sem)	30	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	75		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All
	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All
Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	The student gets to know the concept of saline soils
Week 2	For the student to know the sources of Soil
Week 3	The student will be familiar with the means of Formation soil
Week 4	The student will be familiar with the Rock formation
Week 5	The student will be familiar with the conditions of soil formation
Week 6	student gets to know the types Rocks
Week 7	For the student to recognize the aspects of the earth systems
Week 8	The student will be familiar with the indicators for determining the effect of Geology
Week 9	The student will be familiar with the means of increasing the ability of Field Geology
Week 10	The student will be familiar with the factors determining the quality of irrigation water and the indicators used to determine the quality of irrigation water
Week 11	The student will be familiar with irrigation water classification systems
Week 12	The student will learn Ground Water
Week 13	For the student to become familiar with the problems of limestone soils
Week 14	Second month examination
Week 15	

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	The student will be familiar with irrigation water classification systems	

Recommended Texts	The student will learn Ground Water	
Websites	For the student to become familiar with the problems of limestone soils	

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
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English language

Module Information

Module Title	<u>English</u>			Module Delivery	
Module Type				18. ☐Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	<u>WU02</u>				
ECTS Credits	<u>2</u>				
SWL (hr/sem)					
Module Level		2	Semester of Delivery		2
Administering Department		Soil science and water resources	College	College of Agriculture	
Module Leader				e-mail	
Module Leader's Acad. Title		Assist. Lect.	Module Leader's Qualification		.
Module Tutor	Anaam Kadhim Abass			e-mail	alshahmani@uowasit.edu.iq
Peer Reviewer Name		Name	e-mail	E-mail	
Scientific Committee Approval Date		2/11/2025	Version Number		

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

	2. Teaching the student the basics of the English language.. 3. . to develop students ` basic English language skills in reading , writing , listening and speaking.
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Module Objectives	4. To enable students to communicate effectively in academic and everyday situations using English. .
Module Learning Outcomes	3. Demonstrate a basic understanding of English grammar and vocabulary. 4. Use English effectively in simple written and spoken.. 5. Read and comprehend basic English texts related to academic and everyday contexts. 6. Apply correct grammatical structures in writing speaking.. 7. Develop confidence in using English for learning and communication purposes.
Indicative Contents	3. Basics of English Language. 4. Parts of speech.. 5. Pronouns. 6. Tenses. 7. Vocabulary Development. 8. Reading Comprehension . 9. Writing Skills.

Learning and Teaching Strategies

Strategies	3. Explanation and Clarification. 4. Lecture Method. 5. Student Groups.
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Student Workload (SWL)

Structured SWL (h/sem)		Structured SWL (h/w)	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			

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	Basics of the English language
Week 2	Pronouns
Week 3	Pronouns
Week 4	auxiliary verbs
Week 5	Exam
Week 6	Verb rules
Week 7	Verb rules
Week 8	Noun rules
Week 9	Noun rules
Week 10	Exam
Week 11	Adjective rules
Week 12	Adjective rules
Week 13	auxiliary verbs
Week 14	auxiliary verbs
Week 15	auxiliary verbs

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 Information			
معلومات المادة الدراسية			
Module Information			
Module Title	Principles of Statistics		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	SolSt1104		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	1
Administering Department	Soil Science and Water Resources	College	College of Agriculture
Module Leader	Dr. Hakeem Sultan Abdul	e-mail	hsultan@uowasit.edu.iq
Module Leader's Academic Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	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. Identify the basic concepts of statistics and its importance in scientific research and the agricultural sector. 2. Collect, organize, classify, and present data using tables and graphs. 3. Calculate and interpret measures of central tendency: mean, median, and mode. 4. Calculate and analyze measures of dispersion: range, variance, standard deviation, and coefficient of variation. 5. Understand the principles of probability and basic statistical distributions. 6. Apply sampling methods and determine the appropriate sample size in studies and research. 7. Conduct basic statistical hypothesis tests and interpret their results. 8. Study relationships between variables using correlation and simple regression. 9. Use statistical software to analyze data and extract results. 10. Develop analytical thinking and data-based decision-making skills, and employ statistical methods to solve agricultural and research problems.
Module Learning Outcomes	First: Knowledge and Understanding 1. Define the basic concepts and terminology of statistics. 2. Explain the importance of statistics in scientific research and agricultural applications. 3. Distinguish between data types and methods of collecting and organizing them. Second: Intellectual Skills 4. Analyze statistical data and select the appropriate statistical method for each problem. 5. Interpret statistical analysis results and relate them to agricultural and research problems. 6. Compare different statistical measures and derive scientific conclusions. Third: Practical and Professional Skills 7. Organize and present data using tables and graphs. 8. Calculate and interpret measures of central tendency and dispersion. 9. Apply probability principles and basic hypothesis tests. 10. Use correlation and simple regression methods to analyze relationships between variables. 11. Employ statistical software to enter, analyze, and present data. Fourth: General and Transferable Skills

	12. Prepare accurate and organized scientific statistical reports. 13. Work within a team to collect and analyze data. 14. Make decisions based on evidence and statistical results. 15. Develop critical thinking and problem-solving skills using statistical methods.
Indicative Contents	Basic statistical concepts; data types and measurement levels; data collection and questionnaire design; tabulation and graphical presentation; measures of central tendency and dispersion; probability principles; normal distribution and sampling distributions; statistical estimation and confidence intervals; hypothesis testing; t-test and Z-test; Chi-square test; correlation and simple regression; introduction to ANOVA; and use of Excel, SPSS, or R for agricultural data analysis.

Learning and Teaching Strategies

Strategies	1. Interactive lectures and guided discussion. 2. Practical exercises on data organization, tabulation, and graphing. 3. Problem-solving activities and statistical examples from agriculture. 4. Assignments and short reports. 5. Use of statistical software such as Excel, SPSS, or R. 6. Self-learning through approved references and applied examples.
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Student Workload (SWL) calculated for 15 weeks

Structured SWL (h/sem)	90	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	85	Unstructured SWL (h/w)	6
Total SWL (h/sem)	175		

Module Evaluation

Assessment		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	15	LO #1 - #1,2
	Assignments	3	15% (15)	6	LO #1 - #5
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO #1 - #7

	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction to statistics and its importance in agricultural sciences.
Week 2	Types of data and levels of measurement.
Week 3	Methods of data collection and questionnaire design.
Week 4	Organizing and presenting data using tables and graphs.
Week 5	Measures of central tendency: mean, median, and mode.
Week 6	Measures of dispersion: range, variance, standard deviation, and coefficient of variation.
Week 7	Probability and its basic principles.
Week 8	First monthly exam.
Week 9	Normal distribution and sampling distributions. Sampling and sampling methods. Statistical estimation and confidence intervals.
Week 10	Statistical hypothesis testing. t-test and Z-test.
Week 11	Chi-square test. Correlation analysis and simple regression.
Week 12	Introduction to analysis of variance (ANOVA) and its agricultural applications. Using statistical software such as Excel, SPSS, or R in agricultural data analysis.
Week 13	
Week 14	Second monthly exam.
Week 15	
Week 16	

Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	

Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Suggested sources: 1. Principles of Statistics. 2. Statistics for Agricultural Sciences. 3. Introduction to Statistical Analysis. 4. Scientific references and recent journals in statistics and agricultural research.	Yes
Recommended Texts	Gomez, K. A., & Gomez, A. A. Statistical Procedures for Agricultural Research. Steel, R. G. D., Torrie, J. H., & Dickey, D. A. Principles and Procedures of Statistics.	No
Websites	FAO statistical resources; university library databases; official documentation for Excel, SPSS, and R.	

Grading Scheme

Group	Grade	Description	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	Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX - Fail	Fail, subject to processing	45 - 49	More work required but credit awarded
	F - Fail	Fail	0 - 44	Considerable amount of work required

Note: Marks with 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"; therefore, the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Second Stage

MODULE DESCRIPTION FORM

Module Information			
Module Title	<u>Agricultural Extension</u>	Module Delivery	
Module Type		• 1 ☐ Theory 19. ☒ Lecture 20. ☒ Lab 21. ☒ Tutorial 22. ☐ Practical 23. ☐ Seminar	
Module Code	<u>SoIAE2218</u>		
ECTS Credits	<u>4</u>		
SWL (hr/sem)			
Module Level	1		
Administering Department	MBO	College	كلية الزراعة
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	1
Module Tutor	Hakeem sultan	e-mail	hsultan@uowasit.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

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

Module Aims	To introduce students to the concept and importance of agricultural extension. * To develop students' communication and interaction skills with farmers. * To enable students to plan, implement, and evaluate extension programs. * To enhance students' understanding of farmers' behavior and innovation adoption processes.
Module Learning Outcomes	
Indicative Contents	

Learning and Teaching Strategies

Strategies	
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Student Workload (SWL)

Structured SWL (h/sem)		Structured SWL (h/w)	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				
	Assignments				
	Projects / Lab.				
	Report				

Summative assessment	Midterm Exam				
	Final Exam				
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	1. Introduction to Agricultural Extension 2. History and Development of Extension
Week 2	Objectives and Functions of Extension 4. Extension Agent: Roles and Skills
Week 3	Extension Methods and Approaches 6. Agricultural Communication and Media
Week 4	Adoption and Diffusion of Innovations 8. Planning Extension Programs
Week 5	Implementation of Extension Programs 10. Evaluation of Extension Programs
Week 6	Extension and Rural Development 12. Practical Applications and Field Studies
Week 7	Cognitive Skills * Analyze agricultural problems from an extension perspective. * Evaluate the effectiveness of extension programs. * Select appropriate extension methods for different target groups.
Week 8	Cognitive Skills * Analyze agricultural problems from an extension perspective. * Evaluate the effectiveness of extension programs. * Select appropriate extension methods for different target groups.
Week 9	Practical and Professional Skills * Design a comprehensive extension program. * Effectively use agricultural communication tools. * Conduct extension activities (e.g., field visits, demonstrations, workshops). * Communicate efficiently with farmers and stakeholders.
Week 10	Transferable Skills * Work collaboratively in field activities. * Deliver effective presentations. * Solve problems and make decisions in agricultural contexts. * Use modern technologies for data collection and analysis.
Week 11	
Week 12	
Week 13	
Week 14	

Week 15	
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Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	
Week 2	
Week 3,	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11,	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme

Group	Grade	التقدير	Marks (%)	Definition
	A - Excellent	امتياز	90 - 100	Outstanding Performance

Success Group (50 - 100)	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.

English language

Module Information

Module Title	<u>English</u>			Module Delivery	
Module Type				☐ Theory 12. ☒ Lecture 13. ☐ Lab 14. ☐ Tutorial 15. ☒ Practical 16. ☐ Seminar	
Module Code	<u>WU23</u>				
ECTS Credits	<u>2</u>				
SWL (hr/sem)					
Module Level		2	Semester of Delivery		2
Administering Department		Soil science and water resources	College	College of Agriculture	
Module Leader				e-mail	
Module Leader's Acad. Title		Assist. Lect.	Module Leader's Qualification		.
Module Tutor	Anaam Kadhim Abass			e-mail	alshahmani@uowasit.edu.iq
Peer Reviewer Name		Name	e-mail	E-mail	
Scientific Committee Approval Date		2/11/2025	Version Number		

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

	14- Teaching the student the basics of the English language.. 15- . to develop students ` basic English language skills in reading , writing , listening and speaking.
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Module Objectives	16- To enable students to communicate effectively in academic and everyday situations using English. .
Module Learning Outcomes	• Demonstrate a basic understanding of English grammar and vocabulary. • Use English effectively in simple written and spoken.. • Read and comprehend basic English texts related to academic and everyday contexts. • Apply correct grammatical structures in writing speaking.. • Develop confidence in using English for learning and communication purposes.
Indicative Contents	20. Basics of English Language. 21. Parts of speech.. 22. Pronouns. 23. Tenses. 24. Vocabulary Development. 25. Reading Comprehension . 26. Writing Skills.

Learning and Teaching Strategies

Strategies	8. Explanation and Clarification. 9. Lecture Method. 10. Student Groups.
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Student Workload (SWL)

Structured SWL (h/sem)		Structured SWL (h/w)	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			

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	Basics of the English language
Week 2	Pronouns
Week 3	Pronouns
Week 4	auxiliary verbs
Week 5	Exam
Week 6	Verb rules
Week 7	Verb rules
Week 8	Noun rules
Week 9	Noun rules
Week 10	Exam
Week 11	Adjective rules
Week 12	Adjective rules
Week 13	auxiliary verbs
Week 14	auxiliary verbs
Week 15	auxiliary verbs

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 DESCRIPTION FORM

Module Information			
Module Title	Crimes of the Ba'ath regime in Iraq		Module Delivery
Module Type	Core		☒ Theory 17. ☒ Lecture 18. ☐ Lab 19. ☐ Tutorial 20. ☒ Practical 21. ☒ Seminar
Module Code	WU05		
ECTS Credits	2		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	1
Administering Department	Soil Department	College	College of Agriculture
Module Leader	Dr. Farid Jasim Hassan	e-mail	ffryd725@gmail.com
Module Leader's Acad. Title	Teacher	Module Leader's Qualification	Doctorate
Module Tutor		e-mail	
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	2/11/2025	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	Getting to know a time period that Iraq went -1 through during the rule of the banned Ba'ath regime .from 1979-2003 Highlighting a missing piece of knowledge in the -2 field of scientific research related to 35 years during which the Ba'ath Party regime committed crimes against humanity, including genocide and forced .displacement The necessity of teaching this subject and passing it on -3 .to future generations
Module Learning Outcomes	Learning outcomes for teaching the crimes of the Baath regime in Iraq to second-year students in agriculture colleges include: familiarizing students with the crimes committed by the Baath regime in Iraq in order to document and analyze them, and to understand historical facts for future .generations
Indicative Contents	The guidance contents for the Agricultural Economics Principles course for agriculture college students include: 1- Weekly, monthly, daily exams, and the end-of-year exam. 2- Daily attendance. 3- .Behavior and discipline

Learning and Teaching Strategies	
Strategies	.1 Scaffolding Learning • Start with basic concepts and then gradually move to more complex ones • Provide simple examples at first and then gradually increase complexity .2 Brainstorming .3 Collaborative Learning • Divide students into small groups to tackle complex exercises • Encourage students to explain concepts to each other • Organize group study sessions outside of class .4 Continuous Formative Assessment • Regular short quizzes to check students' understanding of concepts • Weekly assignments that include homework • Provide progress reports on students' development

Student Workload (SWL)

Structured SWL (h/sem)	34	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	66	Unstructured SWL (h/w)	6
Total SWL (h/sem)	100		

Module Evaluation					
		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)	
	Material Covered
Week 1	An Introduction to the Crimes of the Ba'ath Regime
Week 2	The Concept of Crimes and Their Categories
Week 3	Crimes of the Baath regime according to the documentation of the High Iraqi Criminal Court law in 2005
Week 4	Types of international crimes
Week 5	Psychological Crimes – Their Concept – Mechanisms – Effects
Week 6	Social crimes - Militarization of society

Week 7	The Ba'ath regime's stance on religion
Week 8	Zero Uprising of 1977
Week 9	Violations of Iraqi laws
Week 10	The environmental crimes of the Ba'ath regime in Iraq
Week 11	Draining the marshes - clearing orchards, palm trees, and other trees
Week 12	Mass grave crimes
Week 13	The timeline of military coups
Week 14	The chronological classification of mass graves in Iraq 1963-2003
Week 15	The midterm exam
Week 16	The final exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Crimes of the Ba'ath regime in Iraq, -1 Ministry of Higher Education and Scientific Research A lecture on my personal experience as a -2 witness to the Ba'ath regime, as a political prisoner sentenced to life imprisonment and spent ten years in prison, without my family knowing my fate until the day I was released .The Safar Uprising of 1977 -3 .The historical sequence of military coups -4 Dr. Moayad Al-Saadi, Crimes of the Ba'ath -5 Party - Crimes Against Humanity - A Reading of the Basic Concepts, 2nd edition, Al-Kafeel Publishing House, 2023	نعم
Recommended Texts	.(Reliable scientific journals, scientific reports)	كلا
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	Appreciation	Marks %	Definition
Success Group (50 - 100)	A - Excellent	Privilege	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	Accepted	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	Failed (In Progress)	(45-49)	More work required but credit awarded
	F – Fail	Failed	(0-44)	Considerable amount of work required

MODULE DESCRIPTION FORM

Module Information					
Module Title	<u>Plant physiology</u>		Module Delivery		
Module Type			16. Theory 17. Lecture 18. Lab 4. Tutorial 5. Practical 6. Seminar		
Module Code	<u>SoIPP2217</u>				
ECTS Credits	<u>5</u>				
SWL (hr/sem)					
Module Level			Semester of Delivery		
Administering Department		Department of soil science and water resources	College	College of Agriculture	
Module Leader	Dr. naseer fahim yasir		e-mail	nafahim@uowasit.edu.iq	
Module Leader's Acad. Title		Asst.pro	Module Leader's Qualification		Ph.d
Module Tutor	Zahraa Hamid Ruwaidhi		e-mail		
Peer Reviewer Name		Dr. naseer fahim yasir	e-mail		
Scientific Committee Approval Date		2/11/2025	Version Number		

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	Providing student with theoretical and practical information. Relevant to "how a plant work "via three main parts: Biophysics biochemistry and Growth as plant physiology depends upon physical and Biochemical rules. In addition, this course aims to provide students with skills and experiences especially, understanding different plant function and the role of plant physiology in solving the problems of agricultural production scientific Research press .Iraq
Module Learning Outcomes	10. Plant physiology concepts. 11. Identification of plant cell components and their functions. 12. Understanding the mechanism of photosynthesis and its light and dark reactions. 13. Understanding the mechanism of plant respiration, including the calculation of the respiratory quotient (RQ) and energy production. 14. Understanding the mechanism of water absorption by plants. 15. Understanding the mechanism of water loss (transpiration) in plants. 16. Understanding the mechanism of mineral nutrient uptake by plants. 17. Understanding the translocation of photosynthates from sites of synthesis to storage and growing tissues.
Indicative Contents	16. Introduction to plant physiology and its importance. 17. Plant cell structure and functions. 18. Water relations in plants. 19. Water and mineral uptake and transport. 20. Mineral nutrition of plants. 21. Transpiration and the factors affecting it. 22. Photosynthesis, its stages, and the factors affecting it. 23. Plant respiration. 24. Plant enzymes and metabolism. 25. Plant growth regulators (phytohormones). 26. Plant growth and development. 27. Seed dormancy and germination. 28. Flowering, photoperiodism, and vernalization. 29. Plant stress physiology, including drought, salinity, heat, and cold stress. 30. Plant responses to environmental factors. 31. Laboratory experiments and interpretation of experimental results.

Learning and Teaching Strategies

Strategies	4. Laboratory Experiments 5. Plant Observation Activities 6. Physiological Data Analysis 7. Problem-Based Learning 8. Scientific Discussions 9. Research Article Analysis 10. Student Scientific Presentations
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Student Workload (SWL)

Structured SWL (h/sem)		Structured SWL (h/w)	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes الاختبارات القصيرة	10	10	11-2	
	Assignments المهام	2	10	10-5	
	Projects / Lab. المشاريع / المختبر	10	10	11-2	
	Report التقارير	2	10	4,9	
Summative assessment	Midterm Exam الامتحان النصفى	2hr	10	5,10	
	Final Exam الامتحان النهائى	3hr	50	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Definition of plant physiology . Basic Rules of plant physiology

Week 2	Solution and colloidal systems
Week 3	Water Relationships
Week 4	Absorption and Translocation of water and Minerals
Week 5	Photosynthesis
Week 6	Photosynthesis
Week 7	Respiration
Week 8	Metabolism
Week 9	Biological of Nitrogen Fixation
Week 10	Plant Nutrition
Week 11	Growth and Developments
Week 12	Plant hormones and plant growth regulators
Week 13	Plant physiology under stress
Week 14	Kinds of stress, effect of stress and stress tolerance mechanisms
Week 15	General Review and Exam

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	How to prepare solution
Week 2	Kinds of solution
Week 3	Effect of different salt concentration on seed germination
Week 4	Effect of Acidity and Alkoidity on germination growth of plants
Week 5	Measurements of plant Growth
Week 6	Effect of Macro and Micro elements on crop growth
Week 7	Relationship between light interception and plant growth
Week 8	Measurements of plant Growth
Week 9	Effect of plant hormones
Week 10	Ambition and plasmolysis
Week 11	Diffusion and Osmosis
Week 12	Field visit
Week 13	Review, Exam and field visit
Week 14	Review, Exam and field visit
Week 15	Writing and submitting Technical Report

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Physiology of Crop Plants (Translated by Dr. Talib Ahmed Issa). 1990. Bassam Taha Yaseen. Fundamentals of Plant Physiology. 2001. The Modern Method of Plant Physiology. 2010. Iyad Hussein Al-Ma'ini and Mohammed Owaid Ghadeer. Scientific Principles of Field Crop Management, Production, and Improvement. 2018. Introduction to Plant Physiology. 2008. Physicochemical and Environmental Plant Physiology. 2009.	
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FOR

Module Information			
Module Title	<u>Biochemistry</u>		Module Delivery
Module Type	<u>Core</u>		☐ Theory 24. ☒ Lecture 25. ☒ Lab 26. ☒ Tutorial 27. ☐ Practical 28. ☐ Seminar
Module Code	<u>SolBi2216</u>		
ECTS Credits	<u>5</u>		
SWL (hr/sem)	<u>75</u>		
Module Level	1	Semester of Delivery	2
Administering Department	MBO	College	College of Agriculture
Module Leader	Dr. Wisam Thamer Al-Mayah		e-mail: Walmayah@uoswasit.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	PhD in Biology/Ecology
Module Tutor	Buraq Musa	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	7. To introduce students to the fundamental concepts of Biochemistry and their relationship to agricultural sciences. 8. To enable students to understand the chemical structure and functions of major biomolecules such as carbohydrates, proteins, lipids, and nucleic acids. 9. To develop students' understanding of metabolic processes in plant and animal cells. 10. To provide students with knowledge about the role of enzymes, vitamins, and hormones in regulating biological reactions. 11. To explain the relationship between biochemistry, nutrition, and plant and animal health. 12. To train students in basic biochemical laboratory techniques and interpretation of experimental results. 13. To enhance students' ability to apply biochemical principles to agricultural and environmental problems. 14. To develop students' scientific thinking, analytical skills, and problem-solving abilities in agricultural biochemistry.
Module Learning Outcomes	8. Demonstrate an understanding of the fundamental principles of Biochemistry and their applications in agricultural sciences. 9. Identify and describe the structure and functions of major biomolecules including carbohydrates, proteins, lipids, and nucleic acids. 10. Explain the main metabolic pathways and biochemical reactions occurring in living organisms. 11. Analyze the role of enzymes, vitamins, and hormones in biological processes and metabolic regulation. 12. Perform basic biochemical laboratory experiments using appropriate scientific techniques and safety procedures. 13. Interpret biochemical data and laboratory results accurately using scientific reasoning. 14. Apply biochemical knowledge to solve problems related to plant production, animal nutrition, and agricultural practices. 15. Demonstrate critical thinking, teamwork, and effective scientific communication skills in biochemical studies.
Indicative Contents	10. Introduction to Biochemistry and its importance in agricultural sciences. 11. Structure, properties, and biological functions of carbohydrates, proteins, lipids, and nucleic acids. 12. Enzymes: classification, mechanism of action, and factors affecting enzyme activity. 13. Vitamins, coenzymes, and hormones and their roles in metabolism and growth. 14. Bioenergetics and metabolism of carbohydrates, lipids, and proteins. 15. Basic biochemical laboratory techniques, qualitative and quantitative analysis, and interpretation of results. 16. Applications of biochemistry in plant physiology, animal nutrition, soil fertility, and agricultural production.

Learning and Teaching Strategies

Strategies	- Interactive lectures to explain key concepts of Biochemistry and their agricultural applications. - Laboratory practical sessions for conducting biochemical experiments and developing technical skills. - Group discussions and collaborative learning activities to enhance student participation and critical thinking. - Problem-based learning through analysis of agricultural and biochemical case studies. - Use of multimedia presentations, diagrams, and educational videos to simplify complex biochemical processes. - Assignment-based learning including reports, presentations, and literature reviews. - Question-and-answer sessions and formative assessments to reinforce understanding and evaluate progress. - Self-directed learning through reading scientific references and using electronic learning resources.
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Student Workload (SWL)

Structured SWL (h/sem)	30	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	75		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All
	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All

Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Biochemistry and its Importance in Agricultural Sciences
Week 2	Water, pH, Buffers, and Biological Systems
Week 3	Introduction to Carbohydrates: Classification and Functions
Week 4	Monosaccharides, Disaccharides, and Polysaccharides
Week 5	Carbohydrate Metabolism and Glycolysis
Week 6	Mid Exam.
Week 7	Introduction to Lipids: Structure and Biological Importance
Week 8	Fatty Acids, Triglycerides, Phospholipids, and Steroids
Week 9	Lipid Metabolism and Energy Production
Week 10	Introduction to Proteins and Amino Acids
Week 11	Protein Structure, Properties, and Functions
Week 12	Enzymes: Classification, Mechanism of Action, and Factors Affecting Activity
Week 13	Vitamins, Coenzymes, and Hormones in Metabolism
Week 14	Nucleic Acids (DNA & RNA) and Protein Synthesis
Week 15	Applications of Biochemistry in Plant Nutrition, Animal Production, and Agriculture

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Laboratory Safety Rules and Introduction to Biochemical Equipment
Week 2	Preparation of Solutions, pH Measurement, and Buffer Solutions
Week 3,	Qualitative Tests for Carbohydrates
Week 4	Quantitative Estimation of Reducing Sugars
Week 5	Qualitative Tests for Lipids and Oils
Week 6	Mid Exam.
Week 7	Determination of Fat Content in Agricultural Samples

Week 8	Qualitative Tests for Proteins and Amino Acids
Week 9	Protein Quantitative Determination Methods
Week 10	Enzyme Activity Assays and Factors Affecting Enzyme Activity
Week 11	Identification of Vitamins in Biological Samples
Week 12	Extraction and Analysis of Plant Pigments
Week 13	Isolation of DNA from Plant Tissues
Week 14	Biochemical Analysis of Blood or Plant Sap Samples
Week 15	Practical Review, Data Interpretation, and Final Laboratory Evaluation

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	6.Ali Mohammed Hassan & Saad Khalil Shihab. Agricultural Biochemistry. University of Baghdad, Ministry of Higher Education and Scientific Research, Iraq, 1979. 7.Issa Abd Al-Saadi. Biochemistry Laboratory Manual. Dar Al-Masira Publishing, 2009.	
Recommended Texts	3.Nelson, D. L., & Cox, M. M. Lehninger Principles of Biochemistry. W.H. Freeman and Company. 4.Berg, J. M., Tymoczko, J. L., Gatto, G. J., & Stryer, L. Biochemistry. W.H. Freeman and Company.	
Websites	Trusted websites providing additional information about Biochemistry.	

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 DESCRIPTION FORM

Module Information			
Module Title	<u>Smart Agricultural Machinery and Equipment</u>		Module Delivery
Module Type	<u>Core</u>		☐ Theory 29. ☒ Lecture 30. ☒ Lab 31. ☒ Tutorial 32. ☐ Practical 33. ☐ Seminar
Module Code	<u>SoIME2215</u>		
ECTS Credits	<u>6</u>		
SWL (hr/sem)	<u>75</u>		
Module Level	1	Semester of Delivery	2
Administering Department	MBO	College	College of Agriculture
Module Leader	Dr. Ahmed Abed Gatea	e-mail	agatea@uoswasit.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	PhD in Agricultural Machinery and Equipment
Module Tutor	Hussein Saeed	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	Provide students with information and skills in agricultural machinery and equipment required for the university level. - Identify the types and parts of agricultural equipment. - Explain the basics and principles of engineering sciences and their applications in various

	agricultural fields. • Discuss the types of equipment and agricultural machinery related to crop production. • Make the necessary modifications to agricultural machinery for optimal use. • Develop the ability to maintain and repair agricultural equipment. • Develop the ability to manage agricultural equipment in the field.
Module Learning Outcomes	1. Student identifies the various types and parts of agricultural equipment. • Ability to apply basic principles of engineering sciences in agriculture. • Ability to evaluate the efficiency of tractors and agricultural equipment by calculating efficiencies, power, and productivity. • Acquisition of maintenance and repair skills for tractors and agricultural equipment. • Capability to manage agricultural equipment effectively in the field. • Adherence to appropriate safety procedures when using agricultural equipment. • Ability to identify problems affecting equipment performance and propose effective solutions.
Indicative Contents	2. Overview of basics and topics related to tractors and agricultural equipment. 3. Study of the types of tractors and heat engines and their calculations. 4. Analysis of equipment used in agriculture (plows, harvesters, seeders), including parts, 5. functions, and application in different crop stages (tillage, sowing, harvesting). 6. Homework assignments regarding equipment management strategies and self-reflection. 7. Student-prepared reports related to the course curriculum. 8. Study of safety procedures required when operating agricultural equipment.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Key strategies for delivering the course include engaging with lecture vocabulary through simple questioning, while simultaneously enhancing and broadening critical thinking skills through dialogue and discussion. For concepts that require further explanation, educational presentations and videos are used, alongside practical exercises.
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Student Workload (SWL)

Structured SWL (h/sem)	30	Structured SWL (h/w)	2
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Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	75		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All
	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All
Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Agricultural tractors and their types.
Week 2	Heat engines, types, parts, and thermodynamic cycle.
Week 3	Power transmission devices in tractors.
Week 4	Mathematical calculations for heat engine performance
Week 5	First Monthly Exam.
Week 6	First Monthly Exam.
Week 7	Soil preparation equipment (Primary plows).
Week 8	Soil preparation equipment (Secondary plows).
Week 9	Agricultural machinery (Precision agriculture, Artificial Intelligence).
Week 10	Chemical and organic fertilizer machinery.
Week 11	Crop service machinery (Remote sensing).
Week 12	Irrigation systems and automated control.

Week 13	Harvesting and post-harvest equipment and maintenance.
Week 14	Course Review.
Week 15	Final Exam.

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Exploration of agricultural tractors at the College of Agriculture, Wasit University.
Week 2	Mathematical calculations for measuring heat engine performance
Week 3,	Exploration of basic equipment (Moldboard and reversible disk plow)
Week 4	Training on hitching plows to tractors.
Week 5	Use of secondary equipment and conducting experiments.
Week 6	Application of equipment organization in the field.
Week 7	Application of operating procedures for seeding equipment.
Week 8	Presentations on the operation of harvesting equipment and performance monitoring
Week 9	Training on safety procedures during work
Week 10	Review of all equipment and techniques
Week 11	Display of field projects
Week 12	.
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Soil Preparation Equipment, Author: Dr. Aziz Ramo Al-Banna	
Recommended Texts	Agricultural Machinery and Equipment, Authors: Dr. Yassin Hashem Al-Tahan and Dr. Mohammed Jassim Al-Naima • Field Crop Mechanization Equipment, Authors: Mr. Lotfi Hussein and Dr. Abdul Salam Mahmoud	

Websites

Trusted websites providing additional information about agricultural equipment.



وزارة التعليم العالي والبحث

العلمي - العراق

جامعة واسط

كلية الزراعة

قسم علوم التربة والموارد المائية



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 DESCRIPTION FORM

Module Information

Module Title	<u>Soil, Water and Plant Analysis</u>		Module Delivery	
Module Type	<u>Main</u>		☐ Theory 34. ☒ Lecture 35. ☒ Lab 36. ☒ Tutorial 37. ☒ Practical 38. ☐ Seminar	
Module Code	<u>SoISA2214</u>			
ECTS Credits	<u>6</u>			
SWL (hr/sem)	<u>150</u>			
Module Level	1	Semester of Delivery	2	
Administering Department	Department of Soil Science and Water Resources		College	College of Agriculture
Module Leader	Dr. Muntadhar Hammadi Mansour		e-mail	malbudeiri@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	.Ph.D
Module Tutor	Issam Hani Hameed		e-mail	ishani@uowasit.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	2/11/2025		Version Number	

Relation with other Modules

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	.To enable students to identify the types of soil, water, and plant samples .1 .To enable students to classify sampling methods .2 To enable students to identify the equipment required for measurement and .3 .analysis To enable students to evaluate soil, water, and plant contents and diagnose .4 .their physical and chemical properties
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Module Learning Outcomes	1. Explain the basic principles of soil, water, and plant analysis and correct sampling methods .1 2. Distinguish between different types of samples and select the appropriate method for collecting, preserving, and preparing them for analysis .2 3. Use laboratory instruments and equipment for physical and chemical analyses efficiently and safely .3 4. Prepare standard solutions and laboratory reagents and apply quantitative analysis procedures accurately .4 5. Measure selected physical and chemical properties of soil, water, and plants, such as pH, EC, and different nutrients .5 6. Interpret laboratory results and evaluate soil fertility, water quality, and plant nutritional status .6
Indicative Contents	1. Introduction to soil, water, and plant analysis and the importance of analyses in agricultural and environmental fields .1 2. Field sampling methods for soil, water, and plants including preservation, transport, and preparation for analysis .2 3. Basic principles of quantitative analysis, accuracy, precision, and processing of laboratory results .3 4. Preparation of standard solutions, chemical reagents, and basic laboratory calculations .4 5. Physical and chemical analyses of soil, such as soil reaction (pH) and electrical conductivity (EC) .5 6. Determination of cation exchange capacity, organic carbon, and available nutrients in soil .6 7. Agricultural water analysis and evaluation of its suitability for irrigation and different agricultural uses .7 8. Digestion of plant samples and determination of their macro- and micronutrient contents .8 9. Application of gravimetric, volumetric, electrochemical and spectroscopic methods in the laboratory .9 10. Use of atomic absorption, atomic emission, and X-ray techniques in chemical and mineral analysis .10 11. Use of radioactive and stable isotopes in agricultural and environmental studies and analyses .11 12. Writing scientific reports, interpreting laboratory results and linking them to applied agricultural problems .12

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

Student Workload (SWL)

Structured SWL (h/sem)	111	Structured SWL (h/w)	7.5
Unstructured SWL (h/sem)	39	Unstructured SWL (h/w)	2.5
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10	10	2 - 11	
	Assignments	2	10	5 - 10	
	Lab.	10	10	2 - 11	
	Report	2	10	4, 9	
Summative assessment	Midterm Exam	2hr	10	5, 10	
	Final Exam	3hr	50	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to soil, water, and plant analysis
Week 2	Sample collection
Week 3	Review of some basic concepts in quantitative analysis
Week 4	Processing results and verifying the accuracy of analyses
Week 5	Monthly exam
Week 6	Gravimetric analysis methods
Week 7	Volumetric analysis methods
Week 8	Electrochemical analysis methods
Week 9	Spectrophotometric analysis methods

Week 10	Atomic absorption spectrometry methods
Week 11	Atomic emission spectrometry methods
Week 12	Monthly exam
Week 13	Use of X-rays in mineral and quantitative analysis
Week 14	Use of radioactive and stable isotopes in quantitative elemental analysis
Week 15	

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Soil sampling and preparation for analysis
Week 2	Collection of plant and water samples
Week 3	Calculation and preparation of standard solutions
Week 4	Preparation of saturated paste and extracts and measurement of pH and EC
Week 5	Determination of cation exchange capacity
Week 6	Monthly exam
Week 7	Determination of organic carbon level
Week 8	Determination of available nitrogen and available potassium
Week 9	Determination of available phosphorus
Week 10	Determination of total elemental content in soil
Week 11	Digestion of plant samples and determination of their elemental content
Week 12	
Week 13	Monthly exam
Week 14	Determination of soil oxidation-reduction potential
Week 15	Mineral analysis using X-Ray device

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		

Recommended Texts		
Websites		

Grading Sch				
Group	Grade	التقدير	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	Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	Fail (Remedial)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information			
Module Title	<u>Agricultural Land Levelling and Grading</u>		Module Delivery
Module Type	<u>Core</u>		☐ Theory 39. ☒ Lecture 40. ☒ Lab 41. ☒ Tutorial 42. ☐ Practical 43. ☐ Seminar
Module Code	<u>SoILG2110</u>		
ECTS Credits	<u>5</u>		
SWL (hr/sem)			
Module Level	1	Semester of Delivery	2
Administering Department	MBO	College	College of Agriculture
Module Leader	Ihab Fahem Neamah		e-mail: ifahem@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSc in Water Resources Engineering
Module Tutor	Ahmed mohammed Dkheel (M.sc) in soil mechanics and foundation		e-mail: Ah.adkheel@uowasit.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	To equip students with the fundamental concepts of land leveling theory and its relationship to soil and water management. To train students in the use of traditional and modern surveying equipment (such as leveling instruments and laser leveling).

	To enable students to calculate cut and fill volumes and select appropriate slope lines for the farm. To raise students' awareness of the importance of land leveling in optimizing irrigation water use, improving agricultural drainage, and increasing crop uniformity.
Module Learning Outcomes	Upon completion of this course, the student will be able to: Cognitively: Explain the engineering principles of agricultural land reclamation and compare different leveling methods and their calculations. Skillfully: Conduct agricultural surveys of fields and accurately draw contour maps and leveling grids. Appliedly: Design and supervise laser leveling operations in fields and determine cut and fill points to calculate costs and scope of work. Analytically: Diagnose irrigation and drainage problems resulting from uneven terrain and develop appropriate engineering solutions.
Indicative Contents	The course covers the following core topics, distributed across the chapters: Introduction: The concept of land leveling and adjustment, and its economic and environmental importance. Surveying: Creating grid leveling lines and contour maps of fields. Engineering Calculations: Methods for calculating volumes of transported soil (average method, rectangle method, and contour line method). Slope Line Determination: Calculating single and double slope lines according to soil type and irrigation system. Modern Technologies: Studying precision leveling systems using lasers (Laser Land Levelers), their components, and how they work. Field Applications: Maintenance of leveling equipment (tractors, graders) and evaluation of irrigation efficiency after leveling.

Learning and Teaching Strategies

Strategies	To achieve the course objectives, the following strategies are employed: Interactive Lectures: Theoretical explanations supported by presentations and illustrations of engineering concepts. Practical Sessions: Field visits to experimental sites to train students directly in the use of leveling equipment and surveying charts.
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	Problem-Based Learning: Providing students with real field data for a leveling grid and requiring them to calculate cut and fill quantities and design the ground slope independently. Group Work: Dividing students into small working groups for practical sessions to enhance their teamwork and leadership skills during surveying.
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Student Workload (SWL)			
Structured SWL (h/sem)	30	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	75		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All
	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All
Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Surveying and Leveling

	The concept of surveying and its importance in agriculture. Definition of the leveling process and its objectives. Key terms: Sea level (MSM), Benchmark, Line of Collimation.
Week 2	Leveling equipment and accessories Components and types of leveling equipment. Leveling staff: Types and how to read it accurately. Common reading errors and how to avoid them
Week 3	Leveling Instrument Adjustment and Reading Methods Temporary Instrument Adjustment The Concepts of Back Sight, Fore Sight, and Intermediate Sight
Week 4	Calculating Elevations - Instrument Surface Elevation Method Height of Instrument Method (HI). Mathematical rules and steps for calculating point elevations. Examples and practical applications.
Week 5	Elevation Calculation - Rise and Fall Method The Rise and Fall Method: A comparison with the device elevation method in terms of accuracy and speed. Mathematical checks for both methods.
Week 6	Arithmetic auditing and sources of errors Types of errors in the leveling process (automatic, natural, and human errors). The concept of allowable error and how to correct closures in surveying attempts.
Week 7	Longitudinal Leveling (Profile Leveling) The concept of longitudinal leveling and its importance in constructing irrigation canals and drainage channels. How to draw a longitudinal profile and choose the appropriate drawing scales.
Week 8	Cross-Sectional Leveling The concept of cross-sections and their relationship to longitudinal sections. The importance of cross-sections in determining channel boundaries and calculating lateral areas.
Week 9	Design slope and soil leveling Calculation of design slope lines for irrigation canals. Concept of cut depths and fill heights for leveling agricultural land.
Week 10	Grid Leveling The concept of grid leveling and its applications in large-scale agricultural lands. Methods of dividing land into grids (squares or rectangles) and monitoring the levels of their corners.
Week 11	Contour Lines Definition of Contour Lines and Contour Intervals Characteristics of Contour Lines and How to Read Agricultural Topographic Maps
Week 12	Contour Lines - Methods of drawing contour lines (inset shaping and digital approximation). Using contour maps to determine the locations of earth dams and guide watercourses.

Week 13	Area Calculation Methods for calculating the areas of irregularly shaped agricultural fields. Applying the Trapezoidal Rule and Simpson's Rule.
Week 14	Calculating Earthwork Volumes Calculating Excavation and Backfilling Volumes Using Cross-Sections The Mean Area Method and the Prismoidal Formula are used to determine the volume of soil moved during land reclamation.
Week 15	General Review and Final Exam A comprehensive review of key concepts and solutions to complex problems. Final theory exam.

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Introduction to Surveying Equipment & Instruments.
Week 2	Setting up and Adjusting the Levelling Instrument (Temporary Adjustment).
Week 3,	Week 3: Differential Levelling: Level Book and Data Recording
Week 4	Calculating Reduced Levels (R.L.) using the Height of Instrument (H.I.) Method.
Week 5	Calculating Reduced Levels (R.L.) using the Rise and Fall Method.
Week 6	Profile Levelling (Longitudinal Sections) – Field Work
Week 7	Cross-Sectional Levelling – Field Work.
Week 8	Plotting Longitudinal and Cross-Sections.
Week 9	Closed-Loop Levelling & Error of Closure.
Week 10	Grid Levelling (The Grid Method).
Week 11	Introduction to Contouring and Plotting Contour Lines.
Week 12	Area Computation of Irregular Fields (Agricultural Plots).
Week 13	Volume Computation: Earthwork Calculations (Cut and Fill) – Part 1.
Week 14	Volume Computation: Earthwork Calculations (Cut and Fill) – Part 2.
Week 15	Final Practical Examination.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Surveying – Dr. Ali Shukri. * Principles of Surveying – Dr. Ahmed Yousif Al-Saad. * Departmental Field Laboratory Manual.	
Recommended Texts	* Surveying and Levelling – Mohamed Abdel-Fattah Al-Qassas. * Surveying: Principles and Applications – Barry F. Kavanagh. * Irrigation and Drainage Engineering.	
Websites	Learn-Surveying ResearchGate:	

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 DESCRIPTOR

Module Information

Module Title	<u>Computer basics</u>			Module Delivery	
Module Type	Core			☒ Theory 22. ☒ Lecture 23. ☐ Lab 24. ☐ Tutorial 25. ☒ Practical 26. ☐ Seminar	
Module Code	WU22				
ECTS Credits	3				
SWL (hr/sem)	150				
Module Level		1	Semester of Delivery		2
Administering Department		Department of Soil Science & Water Resources	College	College of Agriculture	
Module Leader	Karrar Qasim farhain		e-mail	karrarahmedi@uowasit.edu.iq	
Module Leader's Acad. Title		Lecture	Module Leader's Qualification		Master
Module Tutor	Karrar Qasim farhain		e-mail	karrarahmedi@uowasit.edu.iq	
Peer Reviewer Name		Karrar Qasim farhain	e-mail	E-mail	
Scientific Committee Approval Date		2/11/2025	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	This course aims to: 1. Introduce students to the fundamental concepts of computers and information technology.
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	2. Develop computer skills for use in the university environment. 3. Equip students with the ability to use Microsoft Office applications. 4. Develop data processing and analysis skills using Excel. 5. Develop skills in preparing academic reports and presentations. 6. Promote awareness of information security and the safe use of the internet. .Employ computers in agricultural and academic applications .7
Module Learning Outcomes	1. Upon successful completion of this course, the student will be able to: 2. Understand and apply knowledge 3. Explain basic computer concepts 4. Differentiate between hardware and software components 5. Describe the functions of different operating systems 6. Explain the principles of information security 7. Demonstrate practical skills 8. Manage files and folders efficiently 9. Create and format documents using Word 10. Use basic formulas and functions in Excel 11. Prepare professional presentations using PowerPoint 12. Demonstrate critical thinking skills 13. Analyze and organize data 14. Select appropriate software for completing academic tasks 15. Demonstrate general skills 16. Prepare scientific reports 17. Use the internet and email for educational purposes 18. Collaborate effectively and share files digitally
Indicative Contents	Guide Contents Unit 1 • Introduction to Computers • History of Computer Development

- **Generations of Computers**

Unit 2

- **Computer Hardware**
- **Input Units**
- **Output Units**
- **Central Processing Unit**

Unit 3

- **Software**
- **Operating Systems**
- **File and Folder Management**

Unit 4

- **Microsoft Word**
- **Document Formatting**
- **Tables**
- **Images and Shapes**
- **Report Creation**

Unit 5

- **Microsoft Excel**
- **Spreadsheets**
- **Arithmetic and Logical Functions**
- **Graphs**

Unit 6

- **Microsoft PowerPoint**
- **Presentation Design**
- **Effects and Transitions**

Unit 7

	• The Internet • Search Engines • Email Unit 8 • Information Security • Viruses and Malware • Cloud Computing
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Teaching and Learning Strategies Teaching Strategies • Interactive lectures • Demonstrations • Hands-on laboratory training • E-learning • Classroom discussions Learning Strategies • Cooperative learning • Problem-based learning • Individual and group projects • Practical applications
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Student Workload (SWL)

Structured SWL (h/sem)	105	Structured SWL (h/w)	7
Unstructured SWL (h/sem)	47	Unstructured SWL (h/w)	3
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10	10	2 - 11	
	Assignments	2	10	5 - 10	
	Lab.	10	10	2 - 11	
	Report	2	10	4 , 9	

Summative assessment	Midterm Exam	2hr	10	5 , 10	
	Final Exam	3hr	50	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction and Definitions: Introduction to Computers and Their Development
Week 2	Computer Hardware
Week 3	Input/Output Devices
Week 4	Software and Operating Systems
Week 5	File and Folder Management
Week 6	Microsoft Word
Week 7	Advanced Microsoft Word
Week 8	Microsoft Excel
Week 9	Functions and Formulas in Excel
Week 10	Graphs and Data Analysis
Week 11	Midterm Exam
Week 12	Microsoft PowerPoint
Week 13	Designing Presentations
Week 14	The Internet and Email
Week 15	Information Security and Auditing

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Familiarization with Laboratory Equipment
Week 2	Computer Operation and File Management
Week 3	Using the Operating System
Week 4	Basic Word Applications
Week 5	Document Formatting
Week 6	Spreadsheets and Reports
Week 7	Excel Applications
Week 8	Arithmetic Functions
Week 9	Logical Functions
Week 10	Graphs
Week 11	First Practical Exam
Week 12	Creating Presentations in PowerPoint
Week 13	Effects and Transitions
Week 14	Internet and Email
Week 15	Final Practical Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Computer basics Norton, P. Introduction to Computers. Shelly Cashman Series: Microsoft Office.	no
Recommended Texts	Specialized scientific journals in information technology. Microsoft learning guides.	no
Websites	Microsoft Learn Microsoft Office Support	

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 DESCRIPTION FORM

Module Information			
Module Title	<u>Remote Sensing</u>		Module Delivery
Module Type	<u>Core</u>		☐ Theory 44. ☒ Lecture 45. ☒ Lab 46. ☒ Tutorial 47. ☐ Practical 48. ☐ Seminar
Module Code	<u>SoIRS2111</u>		
ECTS Credits	<u>5</u>		
SWL (hr/sem)			
Module Level	1	Semester of Delivery	2
Administering Department	MBO	College	College of Agriculture
Module Leader		e-mail	ifahem@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSc in Water Resources Engineering
Module Tutor	. Mohanad Ismail Khaliass Heba Kalaf Razzaq	e-mail	albwmohanad@uowasit.edu.iq hibaalquraishy@uowasit.edu.iq
Peer Reviewer Name	Ass. Lect Wafaa Awad Tuama	e-mail	wafaa.awad@uowasit.edu.iq
Scientific Committee Approval Date	2/11/2025	Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims أهداف المادة الدراسية	Investigate the concept, objectives, elements, and applications of remote sensing. Study electromagnetic energy interactions, spectral reflectance, and the factors affecting them.

	Understand different types of sensors, their characteristics, and analyze aerial and space imagery. Study satellite image classification methodologies. Introduce students to Geographic Information Systems (GIS) and their practical uses.
Module Learning Outcomes	1- Ability to accurately understand the physical principles of remote sensing and radiation interaction with the atmosphere and Earth features. 2- Gain skills in downloading, handling, and visually interpreting satellite images to distinguish between vegetation, soil, and water. 3-Ability to perform digital image processing operations (enhancement, correction, and subsetting/clipping) using specialized software. 4-Ability to calculate, extract, and interpret Normalized Difference Vegetation Index (NDVI) for monitoring vegetation cover and crop management. 5-Commitment to scientific accuracy and utilizing digital classification techniques (supervised and unsupervised) to produce land cover maps. Ability to integrate remote sensing data with field measurements to provide innovative solutions for agricultural and environmental problems.
Learning and Teaching Strategies	
Strategies	Explanation and clarification. Lecture delivery method. Student group work. Practical sessions in agricultural fields. Scientific field trips to specialized departments and research stations. Self-learning approachh

Student Workload (SWL)			
Structured SWL (h/sem)	30	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	75		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All
	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All
Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to digital image processing and remote sensing software (e.g., ENVI or ArcGIS), interface, and basic tools.
Week 2	Methods and sources for downloading free satellite imagery and digital data from global portals (e.g., USGS EarthExplorer and Copernicus).
Week 3	Opening and viewing spectral bands, displaying satellite images in True Color and False Color combinations.
Week 4	Practical exercises on extracting and studying spectral signatures/curves for vegetation, soil, and water, and comparing them.
Week 5	Laboratory training on applying image enhancement techniques (Contrast Stretch) and edge enhancement to distinguish agricultural fields.
Week 6	Desktop work: Performing image geometric/radiometric corrections and clipping the study area (Subset/Clip) based on administrative or geographical boundaries.
Week 7	Practical application of band combinations (Layer Stacking) and changing satellite image map projections to match field data.
Week 8	Midterm Practical Examination
Week 9	Training on visual interpretation of agricultural and natural phenomena (distinguishing soil types, crops, and water bodies) in satellite imagery.
Week 10	Applying Unsupervised Classification techniques to produce an initial land cover map for the agricultural region.

Week 11	Applying Supervised Classification techniques, establishing Training Areas (Regions of Interest - ROIs), and utilizing the Maximum Likelihood algorithm.
Week 12	Calculating and extracting the Normalized Difference Vegetation Index (NDVI) to evaluate the health and vitality of crops and vegetation in the study area.
Week 13	Final thematic map layout design (Layout generation) demonstrating soil salinity or vegetation cover, exported as a print-ready final product.
Week 14	Fieldwork demonstration and practical applications linking GPS ground control points with satellite imagery classification results (Ground Truth validation).
Week 15	Final Practical Examination and submission of the software project report.

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Introduction to digital image processing and remote sensing software (e.g., ENVI or ArcGIS), interface, and basic tools.
Week 2	Methods and sources for downloading free satellite imagery and digital data from global portals (e.g., USGS EarthExplorer and Copernicus).
Week 3	Opening and viewing spectral bands, displaying satellite images in True Color and False Color combinations.
Week 4	Practical exercises on extracting and studying spectral signatures/curves for vegetation, soil, and water, and comparing them.
Week 5	Laboratory training on applying image enhancement techniques (Contrast Stretch) and edge enhancement to distinguish agricultural fields.
Week 6	Desktop work: Performing image geometric/radiometric corrections and clipping the study area (Subset/Clip) based on administrative or geographical boundaries.
Week 7	Practical application of band combinations (Layer Stacking) and changing satellite image map projections to match field data.
Week 8	Midterm Practical Examination
Week 9	Training on visual interpretation of agricultural and natural phenomena (distinguishing soil types, crops, and water bodies) in satellite imagery.
Week 10	Applying Unsupervised Classification techniques to produce an initial land cover map for the agricultural region.
Week 11	Applying Supervised Classification techniques, establishing Training Areas (Regions of Interest - ROIs), and utilizing the Maximum Likelihood algorithm.
Week 12	Calculating and extracting the Normalized Difference Vegetation Index (NDVI) to evaluate the health and vitality of crops and vegetation in the study area.
Week 13	Final thematic map layout design (Layout generation) demonstrating soil salinity or vegetation cover, exported as a print-ready final product.
Week 14	Fieldwork demonstration and practical applications linking GPS ground control points with satellite imagery classification results (Ground Truth validation).

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Required Text: Remote Sensing and its Applications in Agriculture and Soil, Author: Dr. Ali Ahmed Al-Ghamdi et al. Recommended Text: Remote Sensing and Image Interpretation, Authors: Thomas Lillesand and Ralph Kiefer. Recommended Text: Applications of Remote Sensing in Studying Soil and Water Resources, Author: Dr. Mohammed Ayad Al-Samarrai. Websites: Trusted platforms providing detailed imagery and spatial data such as USGS EarthExplorer and European Space Agency (ESA) portals.	

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 DESCRIPTION

Module Information			
Module Title	<u>Engineering Drawing</u>		Module Delivery
Module Type	<u>Core</u>		☒ Theory 27. ☒ Lecture 28. ☐ Lab 29. ☐ Tutorial 30. ☒ Practical 31. ☐ Seminar
Module Code	<u>SoIED2112</u>		
ECTS Credits	<u>4</u>		
SWL (hr/sem)	<u>150</u>		
Module Level	UGx12	Semester of Delivery	1
Administering Department	Department of Soil Science & Water Resources	College	College of Agriculture
Module Leader	Asst. Lecturer Karrar Qasim Farhan	e-mail	karrarahmedi@uowasit.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	M.Sc.
Module Tutor	Asst. Lecturer Ibtihal Razzaq	e-mail	
Peer Reviewer Name	To be assigned by the Department	e-mail	E-mail
Scientific Committee Approval Date	2/11/2025	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	This module aims to: 17- Introduce students to the fundamental principles of engineering drawing. 18- Develop students' skills in using engineering drawing instruments accurately. 19- Enable students to prepare and interpret engineering drawings. 20- Familiarize students with engineering scales and dimensioning standards. 21- Teach orthographic projection and isometric drawing techniques. 22- Introduce engineering drawing applications in agricultural engineering, irrigation systems, and water resources. 23- Prepare students for computer-aided drafting using AutoCAD.
Module Learning Outcomes	Upon successful completion of this module, students will be able to: Knowledge and Understanding 11. Explain the principles of engineering drawing. 12. Identify engineering drawing standards and conventions. 13. Describe projection systems and dimensioning techniques. Practical Skills 7. Use engineering drawing tools professionally. 8. Produce accurate engineering drawings. 9. Draw orthographic and isometric projections. 10. Read and interpret engineering drawings. Intellectual Skills 18. Analyze engineering shapes and convert them into technical drawings. 19. Select appropriate drawing methods for engineering applications. Transferable Skills 19. Prepare professional engineering drawings. 20. Work effectively within engineering teams. 21. Present engineering projects using standard drawing conventions.
Indicative Contents	Unit One 32. Introduction to Engineering Drawing 33. Drawing Standards 34. Drawing Instruments Unit Two 11. Engineering Scales 12. Line Types 13. Lettering Unit Three 15. Orthographic Projection 16. Projection Planes

	Unit Four 16. Isometric Drawing 17. Perspective Drawing Unit Five 17. Sections and Sectional Views 18. Dimensioning Unit Six 13. Reading Engineering Drawings Unit Seven 8. Agricultural Engineering Drawings 9. Irrigation and Drainage Layouts Unit Eight 5. Introduction to AutoCAD
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Learning and Teaching Strategies

Strategies	The teaching strategies include: 9. Interactive Lectures 10. Practical Laboratory Sessions 11. Engineering Drawing Workshops 12. Problem-Based Learning 13. Individual and Group Projects 14. Computer-Aided Drawing Demonstrations
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Student Workload (SWL)

Structured SWL (h/sem)	105	Structured SWL (h/w)	7
Unstructured SWL (h/sem)	45	Unstructured SWL (h/w)	3
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10	10	2 - 11	
	Assignments	2	10	5 - 10	
	Lab.	10	10	2 - 11	
	Report	2	10	4 , 9	
Summative assessment	Midterm Exam	2hr	10	5 , 10	
	Final Exam	3hr	50	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Engineering Drawing
Week 2	Drawing Instruments and Line Types
Week 3	Engineering Scales
Week 4	Orthographic Projection
Week 5	Dimensioning
Week 6	Isometric Drawing
Week 7	Perspective Drawing
Week 8	Sections and Sectional Views
Week 9	Reading Engineering Drawings
Week 10	Agricultural Engineering Applications
Week 11	Midterm Examination
Week 12	Irrigation Engineering Drawings
Week 13	Drainage Network Drawings
Week 14	Introduction to AutoCAD
Week 15	Revision

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Introduction to Drawing Instruments
Week 2	Drawing Basic Lines
Week 3	Engineering Scales Practice
Week 4	Orthographic Projection Exercises
Week 5	Dimensioning Practice
Week 6	First Monthly Exam
Week 7	Perspective Drawing
Week 8	Sectional Drawings
Week 9	Reading Engineering Drawings
Week 10	Agricultural Structure Drawing
Week 11	Practical Midterm Examination
Week 12	Irrigation Canal Drawing
Week 13	Drainage System Drawing
Week 14	AutoCAD Practice
Week 15	Practical Final Examination

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Engineering Drawing Fundamentals	no
Recommended Texts	N.D. Bhatt, <i>Engineering Drawing</i> Luzadder & Duff, <i>Fundamentals of Engineering Drawing</i> AutoCAD Fundamentals	no
Websites	Autodesk Education Autodesk Learning Engineering Drawing Tutorials	

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
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Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
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Module Information					
Module Title	<u>Arabic language 2</u>		Module Delivery		
Module Type	<u>U</u>		1.		
Module Code	<u>WU21</u>				
ECTS Credits	<u>2</u>				
SWL (hr/sem)	<u>50</u>				
Module Level		2	Semester of Delivery		1
Administering Department		Department of Soil Science & Water Resources	College	College of Agriculture	
Module Leader	Dr. Zena Abdullah Khamees		e-mail	zenak@uowasit.edu.iq	
Module Leader's Acad. Title		Teacher	Module Leader's Qualification		PhD
Module Tutor	Dr. Zena Abdullah Khamees		e-mail	zenak@uowasit.edu.iq	
Peer Reviewer Name		Dr. Zena Abdullah Khamees	e-mail	zenak@uowasit.edu.iq	
Scientific Committee Approval Date		2/11/2025	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 historical development of the Arabic language 2- Develop students' understanding of Arabic grammar, 3- Enable students to identify and apply grammatical concepts such as subjects, predicates, verbs. 4- Improve students' command of complex grammatical structures including exceptions, vocatives, appositives, and numerals. 5- Strengthen students' morphological skills by exploring verb patterns, root and augmented forms, and verb conjugation. 6- Equip students with spelling and punctuation rules, including the correct usage of hamza, ta marbuta, and punctuation marks, to enhance academic writing. 7- Encourage student participation through practical exercises, question-based learning, and collaborative group work to reinforce grammatical concepts.
Module Learning Outcomes	1. Describe the historical development and branches of the Arabic language. 2. Identify and correctly apply major grammatical rules, including nominatives (subjects, predicates), and accusatives (objects, adverbials, and exceptions). 3. Analyze and construct grammatically correct sentences using structures such as the vocative, specification, and appositives (adjective, emphasis, substitution, and coordination). 4. Demonstrate understanding of prepositional phrases and genitive constructions in written and spoken Arabic. 5. Apply morphological analysis using the standard Arabic morphological scale (al-mīzān al-ṣarfī). 6. Differentiate between sound and weak verbs, and correctly conjugate verbs in different forms (root and augmented). 7. Use punctuation marks appropriately in formal writing and apply accurate spelling rules for hamza and final ta'. 8. Communicate using correct grammatical and orthographic forms in both academic and everyday contexts. 9.
Indicative Contents	1. The Holy Quran 2. The Noble Prophetic Hadith • Exploring aspects of Quranic eloquence in terms of style, structure, artistic imagery, phonetic harmony, precision of expression, and the connection between rhetorical aspects and the message of faith in the Holy Quran. 2. Arabic Literature • Memorizing and analyzing selected poetic texts.

	3. Prose Arts • Introduction to the prose arts in Arabic literature (short story, essay, oratory, and play). 4. Arabic Grammar • The present tense verb: its subjunctive and jussive moods • Genitive and accusative cases 5. Language Skills • The rules for writing the open and closed(ta') that are added to the end of some nouns. • The rules for writing the short and long (alif) at the end of a word. 6. Arabic Dictionaries • Lexicographical Schools Practical application through exercises and written assignments
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Learning and Teaching Strategies	
Strategies	☐ Lectures and Presentations 2 Structured lectures supported by visual aids to introduce key grammatical, morphological, and orthographic concepts. 3 Use of real-life and academic examples to enhance contextual understanding. ☐ Interactive Discussions 1. Encouraging student participation through guided questions and open-ended discussions to reinforce grammatical analysis and reasoning. 2. Promoting peer-to-peer learning and collaborative exploration of language structures. ☐ Practical Exercises and Drills 1. Application of rules through written exercises, sentence construction, and correction activities. 2. Group and individual practice sessions focused on applying grammar and morphology in writing and speech. ☐ Problem-Based Learning 1. Engaging students in solving grammar and morphology problems to develop critical thinking and application skills.

	2. Analyzing authentic Arabic texts to identify and explain language patterns.
	☐ Use of Educational Technology
	1. Utilizing digital resources such as language learning apps, interactive quizzes, and online grammar tools to enhance learning outside the classroom.
	☐ Feedback and Revision Sessions
	1. Providing continuous formative feedback on exercises and assignments.
	2. Organizing review sessions before assessments to consolidate understanding.
	☐ Role-play and Daily Language Use
	1. Incorporating real-life scenarios and conversational Arabic to practice correct grammar usage in communication.
	2. Encouraging the use of correct spelling and punctuation in academic writing.

Student Workload (SWL)

Structured SWL (h/sem)	33	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	Tests	1	10% (10)	8	LO #1 - #7
	Projects	1	10% (10)	6	LO #1 -#5
	Online assignments	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)		
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Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	The Holy Quran and the Noble Prophetic Hadith
Week 2	Verses from a poem by Sharif al-Radi in mourning for his mother
Week 3	Memorizing verses from a poem by Abu al-Ala al-Ma'arri
Week 4	Memorizing verses from a poem by al-Jawahiri and verses from a poem by al-Sayyab
Week 5	First Monthly Exam
Week 6	Prose Arts
Week 7	The Present Tense Verb: Subjunctive and Jussive Cases
Week 8	Genitive Cases
Week 9	Accusative Cases
Week 10	Rules for Writing the Letter Taa (Open and Closed)
Week 11	Rules for Writing the Long Alif (Long and Short)
Week 12	Writing the Letters Dad and Dhaa
Week 13	Arabic Dictionaries
Week 14	Second Monthly Exam
Week 15	Common Linguistic Mistakes

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Arabic Language Book: Dr. Rafid Sabah Al-Tamimi, Taghreed Fadel Abbas	Yes
Recommended Texts	Explanations of Arabic language Book	Yes
Websites	https://www.istartarabic.com/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 Information					
Module Title	<u>Principles of Microbiology</u>		Module Delivery		
Module Type	<u>Core</u>		☐ Theory 49. ☒ Lecture 50. ☒ Lab 51. ☒ Tutorial 52. ☐ Practical 53. ☐ Seminar		
Module Code	<u>SolMi2109</u>				
ECTS Credits	<u>6</u>				
SWL (hr/sem)	<u>75</u>				
Module Level		1	Semester of Delivery		2
Administering Department		MBO	College	College of Agriculture	
Module Leader	Dr. Noor alhuda Jawad Kadhim		e-mail	nkadhim@uoswasit.edu.iq	
Module Leader's Acad. Title		Assistant Professor	Module Leader's Qualification		PhD in Soil Microbiology
Module Tutor	Buraq Musa		e-mail	E-mail	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		2/11/2025	Version Number		

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	Course Objectives: Principles of Microbiology Understand Microbial Diversity and Classification: To identify and distinguish between the major groups of microorganisms, including bacteria, archaea, viruses, fungi, and protozoa, based on their structural and physiological characteristics. Master Aseptic Techniques and Laboratory Safety: To develop proficiency in handling microorganisms safely in a laboratory setting, ensuring the prevention of contamination through proper sterilization and aseptic procedures. Comprehend Microbial Cell Structure and Function: To analyze the internal and external structures of microbial cells (such as cell

	walls, membranes, and organelles) and understand how these components contribute to their survival and pathogenicity. 10. Analyze Microbial Growth and Metabolism: To study the chemical processes by which microbes obtain energy and nutrients, and to identify the physical and chemical factors that influence their growth rates. 11. Explore Microbial Genetics and Biotechnology: To examine the mechanisms of DNA replication, gene expression, and genetic transfer in microbes, and how these processes are applied in modern genetic engineering. 12. Evaluate Methods of Microbial Control: To understand the principles and applications of physical and chemical agents used to control microbial growth, including sterilization, disinfection, and the use of antibiotics. 13. Examine Host-Microbe Interactions and Pathogenesis: To investigate the mechanisms by which pathogens cause disease and how the human immune system responds to prevent or clear infections. 14. Recognize Environmental and Industrial Applications: To assess the vital roles microorganisms play in ecosystems, food production, waste management, and the pharmaceutical industry. Would you like me to expand on any of these specific objectives or provide a list of key terminology for this course?
Module Learning Outcomes	Learning Outcomes: Principles of Microbiology 13. LO1: Differentiate Microorganisms: Identify and categorize microorganisms into major groups (bacteria, viruses, fungi, protozoa) based on their morphology, cellular structure, and taxonomic classification. 14. LO2: Apply Aseptic Techniques: Demonstrate professional competency in laboratory skills, including the preparation of culture media, aseptic transfer methods, and the safe handling of microbial samples. 15. LO3: Utilize Microscopy and Staining: Execute various staining procedures, such as Gram staining and acid-fast staining, and effectively operate light microscopes to visualize and identify microbial specimens. 16. LO4: Analyze Metabolic Pathways: Explain the biochemical processes of microbial metabolism, including fermentation, aerobic respiration, and anaerobic respiration, and how they relate to microbial growth. 17. LO5: Evaluate Growth Control: Determine the effectiveness of different physical and chemical agents (heat, radiation, disinfectants, and antibiotics) in controlling or eliminating microbial populations. 18. LO6: Interpret Genetic Mechanisms: Describe the processes of horizontal gene transfer (transformation, transduction, and conjugation) and their role in the spread of antibiotic resistance. 19. LO7: Explain Pathogenic Mechanisms: Outline the stages of infectious disease development, including portal of entry, colonization, evasion of host defenses, and damage to host tissues. 20. LO8: Assess Immune Responses: Detail the components and functions of the innate and adaptive immune systems in recognizing and neutralizing microbial pathogens. 21. LO9: Integrate Environmental and Applied Microbiology: Evaluate the role of microorganisms in nitrogen and carbon cycling,

as well as their applications in food production and bioremediation.

Indicative Contents

Course Syllabus: Principles of Microbiology (Indicative Content)

1. Introduction to Microbiology

1. History and pioneers of microbiology (Pasteur, Koch, Lister).
2. The scope and relevance of microbiology in medicine, industry, and the environment.
3. Comparison between prokaryotic and eukaryotic microorganisms.

2. Microbial Taxonomy and Classification

1. Binomial nomenclature and hierarchical classification.
2. Characteristics of the three domains: Bacteria, Archaea, and Eukarya.
3. Criteria for classifying bacteria (morphology, biochemical tests, and genetic analysis).

3. Microbial Structure and Function

1. Anatomy of the bacterial cell: Cell wall (Gram-positive vs. Gram-negative), plasma membrane, and cytoplasm.
2. External structures: Capsules, flagella, pili, and fimbriae.
3. Specialized structures: Endospores and inclusion bodies.

4. Microbial Growth and Nutrition

1. Physical requirements for growth (temperature, pH, osmotic pressure).
2. Chemical requirements (carbon, nitrogen, sulfur, phosphorous, and trace elements).
3. The bacterial growth curve: Lag, log, stationary, and death phases.
4. Culture media types: Selective, differential, enriched, and general-purpose media.

5. Microbial Metabolism

1. Enzymes and their role in microbial metabolism.
2. Energy production: Glycolysis, the Krebs cycle, and the electron transport chain.
3. Fermentation vs. aerobic and anaerobic respiration.

6. Microbial Genetics

- Structure and replication of the microbial genome.
- Mechanisms of horizontal gene transfer: Transformation, conjugation, and transduction.
- Introduction to mutations and their impact on antibiotic resistance.

7. Control of Microbial Growth

1. Physical methods of control: Heat (autoclaving, pasteurization), filtration, and radiation.
2. Chemical methods of control: Disinfectants, antiseptics, and sterilants.
3. Principles of antimicrobial therapy and mechanisms of antibiotic action.

8. Virology

1. General structure and classification of viruses.
2. Viral replication cycles (Lytic vs. Lysogenic).
3. Overview of significant human viral pathogens.

9. Mycology and Parasitology

1. Characteristics and classification of fungi (molds and yeasts).
2. Introduction to protozoa and helminths of medical importance.

10. Host-Microbe Interactions and Immunology

1. Normal microbiota vs. opportunistic pathogens.
2. Mechanisms of microbial pathogenicity and virulence factors.
3. Basics of the immune system: Innate (non-specific) and adaptive (specific) immunity.

11. Applied and Environmental Microbiology

1. Microbes in food production and spoilage.
2. Role of microorganisms in biogeochemical cycles.
3. Introduction to biotechnology and bioremediation.

Learning and Teaching Strategies

Strategies

Teaching and Learning Strategies: Principles of Microbiology

1. Theoretical Teaching Strategies

1. **Interactive Lectures:** Utilizing multimedia presentations to explain complex microbial processes, supplemented by "think-pair-share" activities to engage students in conceptual discussions.
2. **Case-Based Learning (CBL):** Presenting clinical or environmental scenarios where students must apply microbiological principles to identify a pathogen or solve a contamination problem.
3. **Concept Mapping:** Encouraging students to create visual maps linking microbial structures, metabolic pathways, and their roles in disease or industry.
4. **Flipped Classroom:** Assigning pre-reading materials or instructional videos on basic concepts (like the history of microbiology) to allow more time for in-depth analysis and problem-solving during class hours.

2. Practical and Laboratory Strategies

- **Hands-on Laboratory Sessions:** Systematic training in essential techniques, such as aseptic transfer, pure culture isolation, and differential staining (e.g., Gram staining).
- **Inquiry-Based Labs:** Moving beyond "cookbook" experiments by allowing students to design simple experiments, such as testing the efficacy of different household disinfectants.
- **Microscopic Observations:** Intensive practice in using light microscopy to identify morphology and arrangement of various microbial specimens.
- **Simulation Software:** Using virtual lab simulations to practice high-risk procedures or experiments that require long incubation periods.

3. Collaborative and Active Learning

1. **Group Projects and Presentations:** Assigning teams to research and present on specific topics, such as "The Rise of Superbugs" or "Microbes in the Food Industry."
2. **Peer Teaching:** Organizing sessions where students explain specific metabolic cycles or genetic mechanisms to their classmates to reinforce their own understanding.
3. **Problem-Solving Workshops:** Dedicated sessions for calculating microbial growth rates, dilution factors, and interpreting biochemical test results.

4. Independent Learning and Digital Integration

- 1- **Self-Directed Research:** Encouraging the use of digital libraries and scientific databases (like PubMed or

	ScienceDirect) to stay updated on current microbiological research. 2- Online Quizzes and Self-Assessment: Using Learning Management Systems (LMS) to provide immediate feedback through formative assessments and interactive modules. 3- Virtual Field Trips: Exploring virtual tours of industrial fermentation plants or wastewater treatment facilities to see large-scale microbial applications. 5. Assessment and Feedback Loops - Continuous Formative Assessment: Using classroom polls and short weekly quizzes to identify and address misconceptions early in the semester. - Practical Lab Exams (OSPE): Assessing technical competency through timed stations where students must demonstrate specific lab skills or identify unknown samples. - Constructive Feedback: Providing detailed comments on lab reports and assignments to guide students toward academic and technical improvement.
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Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5	2,5,7,9,10	1,2,4,8,9
	Assignments	2	20	1-10	All
	Projects / Lab.	2	20	1-10	All
	Report	1	5	1-13	All
Summative assessment	Midterm Exam		50	1-4,5-11	1,2,3,4; 5,6,7,8,9,10
	Final Exam		50	15	All

Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Intro to Microbiology: History, types, and relation to other sciences
Week 2	Bacteria: Shapes and structures
Week 3	Metabolic activities of bacteria
Week 4	Fungi: General characteristics and types
Week 5	Metabolic activities and classification of fungi
Week 6	First Monthly Exam
Week 7	Viruses: Definition, structure, and classification
Week 8	Types of viral replication
Week 9	Algae: Definition, structure, and classification.
Week 10	Biofertilizers: Types and importance
Week 11	Biofertilizers (Part II)
Week 12	Second Monthly Exam
Week 13	Protozoa: Definition, structure, and classification
Week 14	Pathogenic microorganisms in soil and water
Week 15	Comprehensive Exam

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	
Week 2	
Week 3,	
Week 4	
Week 5	

Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	.
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Principles of Microbiology book	
Recommended Texts	* Brock Biology of Microorganisms 1- Authors: Michael T. Madigan, Kelly S. Bender, Daniel H. Buckley, W. Ian Stahl, and David A. Sattley. * Microbiology: An Introduction 1- Authors: Gerard J. Tortora, Berdell R. Funke, and Christine L. Case.	
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

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MODULE DESCRIPTION FORM

Module Information				
Module Title	Principles of plant protection		Module Delivery	
Module Type	C		1. ☐ Theory 1. ☒ Lecture 2. ☐ Lab 3. ☐ Tutorial 4. ☐ Practical 5. ☐ Seminar	
Module Code	SolPP2113			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	1	Semester of Delivery		2
Administering Department	Plant protection	College	Agri.	
Module Leader	Dr. Hasan Hadi Faraj + assist. Lect. Wafaa		e-mail	hasanfaraj@uowasit.edu.iq
Module Leader's Acad. Title	Assist. Prof.	Module Leader's Qualification	PhD	
Module Tutor	Wafaa Awaad Tuama		e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	2/11/2025	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
1. Preparing students capable of working in the field of crop protection according to modern scientific curricula. 2. Entering the agricultural sector with outstanding competence through participation in projects.	Module Objectives
the agricultural sector with outstanding competence through participation in projects	Module Learning Outcomes
	Indicative Contents

Learning and Teaching Strategies

- Teamwork through class discussions and collaborative activities.
- Use of multimedia, such as educational videos and presentations, to explain 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	Tests	1	10% (10)	15	LO #1 - #14
	College assignments	1	10% (10)	14	LO # 8- #13
	Homework	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)

Subject	Week
Some definitions and terms in plant diseases	1
Living standards of organisms	2
Disease development stages	3
Diagnosis of the pathogen	4
Host response to infection	5
Effects of pathogens on their hosts	6

Organisms that cause plant diseases	7
Methods of plant resistance to pathogens	8
Viruses	9
Nematodes	10
Means of pathogen spread	11
Control of plant diseases	12
Agricultural pests	13
Economic importance of insects	14
Insect metamorphosis	15

Delivery Plan (Weekly Lab. Syllabus)

Subject	Week
Introduction to Pests	1
Identify the most important insect pests	2
Observe some insect infestations	3
Observe examples of harmful insects	4
First Exam	5
The economic importance of plant diseases:	6
The most common plant diseases in Iraq:	7
Parasitic plants:	8
Some definitions and terms in plant diseases	9
Parasitism of living organisms	10
Stages of disease development	11
Disease diagnosis	12
Host response to infection	13
Effect of pathogen on their hosts	14
Second Month Exam	15

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	General Entomology	Yes

Recommended Texts	Plant Pathology	No
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Grading Scheme

Group	Grade		Marks %	Definition
Success Group (50 - 100)	A - Excellent		90 - 100	Outstanding Performance
	B - Very Good		80 - 89	Above average with some errors
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	D - Satisfactory		60 - 69	Fair but with major shortcomings
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Fail Group (0 – 49)	FX – Fail		(45-49)	More work required but credit awarded
	F – Fail		(0-44)	Considerable amount of work required

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