MODULE DESCRIPTION FORM

Module Information

Module Title	**Agricultural Informatics**		**Module Delivery**	
Module Type	**Core learning activity**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**AGI1080**			
ECTS Credits	5.00			
SWL (hr/sem)	125			
Module Level	1	**Semester of Delivery**		1
Administering Department	SSWR1969, PLPR1966, HOLA1974, FORE1964, FOSC1965, FICR1973, ANPR1964, AGEC1979, AETT1979, AGME1986	**College**	AGFO1964	
Module Leader	Alla Mohamed Abdullah Omar Dheyaa Mohammed Asmaa Mohammed Adil Moyassar Mohammed Aziz **Nofal Issa Mohamed** sumyia khalaf Badawi Firas Kadhim Dawoo Aljuboori Khaled Anwer Khaled ALKHALED Talal Saeed Hameed Muzahim Saeed Al-Bek	**e-mail**	ala.mohammed58@uomosul.edu.iq dr.omaralmallah@uomosul.edu.iq asmaama@uomosul.edu.iq moyassar_aziz@uomosul.edu.iq nofelemh@uomosul.edu.iq dr.sumyia_khalf@uomosul.edu.iq firasaljuboori@uomosul.edu.iq khalid.anwar31@uomosul.edu.iq stalal1982@uomosul.edu.iq` muzahim_saeed@uomosul.edu.iq	
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**		**Ph.D.** **MSc.**
Module Tutor	Dr. Aman Adel Maolod Ms. Ahmed Sameer Ganem	**e-mail**	Aman_adel@uomosul.edu.iq	
Peer Reviewer Name	N.A.	**e-mail**	N.A.	
Scientific Committee Approval Date		**Version Number**	1.0	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	This Module introduces students to the principles and applications of informatics in agriculture. Students will learn to utilize information technology, data analysis, and decision-support systems to enhance agricultural productivity while ensuring sustainable practices.
Module Learning Outcomes LOs	- Understand the basic concepts of agricultural informatics and its role in sustainable agriculture. - Identify key technologies such as IoT, GIS, remote sensing, and machine learning in agriculture. - Explain the relevance of data-driven decision-making for improving agricultural operations. - Apply data collection and analysis techniques to solve practical agricultural problems. - Use software tools like GIS platforms for mapping and analysis. - Know how to design basic IoT systems for monitoring soil, water, and plant conditions. - Work collaboratively on projects integrating informatics into real-world agricultural challenges.
Indicative Contents	The Agricultural Informatics module bridges Information technology and agriculture, focusing on modern tools like IoT, GIS, AI, and big data to optimize productivity and sustainability. It covers data management, precision farming, remote sensing, and decision support systems. Students gain hands-on experience with GIS mapping, IoT setups, and AI models, enabling them to address challenges like resource efficiency, climate adaptation, and food security through innovative, data-driven strategies. This Module prepares graduates to implement cutting-edge solutions in agriculture for a sustainable future.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

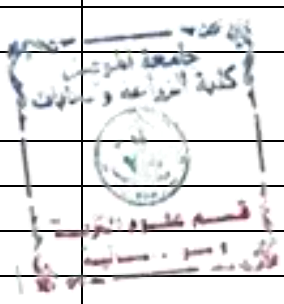
Strategies	1. Interactive lecture, Brainstorming 2. Dialogue and discussion 3. Assigning reports 4. Quizzes 5. Show examples for writing scientific reports in the correct formats.

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**		10% (10)		
	Assignments		10% (10)		
	Projects/ Practical		10% (10)		
	Report		10% (10)		
Summative assessment	**Midterm Exam**	3hr	10% (10)		
	Final Exam	3hr	50% (50)		
Total assessment			100% (100 Marks)		

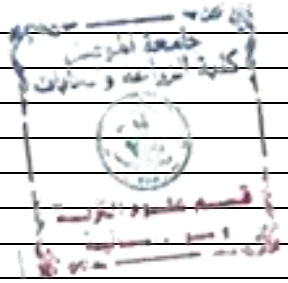


Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Agricultural Informatics
Week 2	Geographic Information Systems (GIS) in Agriculture
Week 3	Internet of Things (IoT) in Smart Agriculture
Week 4	Machine Learning and Artificial Intelligence in Agriculture
Week 5	Remote Sensing in Agriculture
Week 6	Precision Agriculture – GPS and Drones
Week 7	Mid-term Exam
Week 8	Decision Support Systems (DSS) in Agriculture
Week 9	Data Analysis in Agriculture
Week 10	Big Data in Agriculture
Week 11	Sustainable Practices and Climate-Smart Agriculture
Week 12	Smart Greenhouses
Week 13	Livestock Informatics
Week 14	Blockchain Technology and Food Traceability
Week 15	The Future of Agricultural Informatics
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Projects Syllabus)

	Material Covered
Week 1	Discussion on Agricultural Informatics Applications in Iraq.
Week 2	Creating a Local Agricultural Map Using GIS
Week 3	Setting up a Simple Soil Monitoring Device Using Local Tools
Week 4	Using Spreadsheets for Yield Analysis
Week 5	Using Free Satellite Images for Land Analysis
Week 6	Simulating GPS Use for Agricultural Mapping
Week 7	Creating a Simple Irrigation DSS Model Using Excel
Week 8	Analyzing Agricultural Data Using Spreadsheet Software
Week 9	Discussion on Big Data in Agriculture
Week 10	Assessing Sustainability in a Local Agricultural System
Week 11	Designing a Simple Prototype of a Manual Robot
Week 12	Building a Small Greenhouse Using Local Materials
Week 13	Monitoring Livestock Health Using Simple Models
Week 14	Simulating Crop Tracking from Farm to Market
Week 15	Final Project Presentations, that present practical projects addressing local agricultural challenges focusing on feasible technology-based solutions.



Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	• Choudhury, A., Biswas, A., Prateek, M., & Chakraborty, A. (2021). Agricultural Informatics: Automation Using IoT and Machine Learning. Wiley-Scrivener.	No
Recommended Texts	• Pierce, F. J., & Zhang, Q. (2016). Agricultural Automation: Fundamentals and Practices. CRC Press. • Shamtsyan, M., Pasetti, M., & Beskopylny, A. (2021). Robotics, Machinery and Engineering Technology for Precision Agriculture. Springer.	

	• Li, D. (2016). Computer and Computing Technologies in Agriculture: Proceedings of CCTA. Springer. • Satapathy, S., Mishra, D., Vargas, A. R., & El-Bendary, N. (2022). Innovation in Agriculture with IoT and AI. Springer. • Singh, R., Gehlot, A., Singh, B., & Choudhury, S. (2022). Internet of Things (IoT) Enabled Automation in Agriculture. CRC Press. • Boote, K. J. (Ed.). (2021). Advances in Crop Modelling for Sustainable Agriculture. CAB International.	
Websites		

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
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – 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.

Subject Lecturer
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Head of Department
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Chairman of scientific committee
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