MODULE DESCRIPTION FORM

Module Information					
Module Title	AGRICULTURAL STATISTICS			**Module Delivery**	
Module Type	**Core learning activity**			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**AGS1060**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	Yousif.Yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026		**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- Knows statistics and its types, and differentiates between descriptive statistics and inferential or inferential statistics 2- Explains what descriptive variables are, and recognizes the difference between a sample and a population 3- Organizes and draws a frequency distribution table and identifies its parts 4- Organizes a relative frequency distribution table and ascending and

	descending summation 5−Finds the arithmetic mean − and recognizes the properties of the arithmetic mean 6− Works on how to find the range, mean deviation, variance, and standard deviation
Module Learning Outcomes	LO#1: Is able to compile and classify data, and present it with tables and graphics LO#2: Is able to calculate descriptive statistics of numerical data. LO#3: Can build hypothesis and test the hypothesis, and can make a statistical deduction. LO#4: Can build relation between the data using statistics and make interpretations on them in order to make decisions.
Indicative Contents	Enriching the student with knowledge regarding the conduct and benefit of the agricultural statistical process, and learning how to measure the measurement of centering, mediation and correlation and how to employ them in the field of agricultural engineering sciences and techniques for implementing integration correctly to reach quantity and quality Total hrs = 125 = SSWL - (Exam hrs) = 125-3= 122 (Time table hrs x 15 weeks)

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

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

Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO#2
	Collage Assignments	2	10% (10)	2 and 12	LO#1, LO#2 and LO#3
	Home Assignments	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO#3
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to the nature of statistics and the most important sections of statistics - the nature of data and statistical symbols
Week 2	The nature of statistical data - the difference between quantitative and descriptive variables, with examples of each type
Week 3	The difference between society and sample with mathematical examples
Week 4	Tabular and Graphing - Frequency Distribution Table - How to Create Classes and Find Class Length
Week 5	Clustered Distributions - Descending Cumulative Frequency Distribution Table - Frequency Curve - Graph of Cumulative Frequency Distribution Table
Week 6	Measures of mediation and centering - arithmetic mean - geometric mean
Week 7	Measures of centering and centering - harmonic mean - squared mean - median - mode
Week 8	Measures of dispersion or variation - range - mean deviation - variance and standard deviation
Week 9	Measures of dispersion or variation - the most important properties of variation or standard deviation - standard error - standard score
Week 10	Principles of probability theory - factorial - permutations - combinations - random experiment
Week 11	Discrete Probability Distributions - Binomial Distribution - Properties of Binomial Distribution
Week 12	Hypothesis Testing - Statistical Hypothesis - Null Hypothesis - Alternative Hypothesis
Week 13	Types of Error - General Steps in Hypothesis Testing
Week 14	T-test - Z-test
Week 15	Simple Correlation and Regression - Correlation Coefficient
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	The natural of statistical data
Week 2	The natural of statistical data
Week 3	Statistical symbol

Week 4	Graphical represent and display of data
Week 5	Graphical represent and display of data
Week 6	Measures of mediation and centering
Week 7	Measures of mediation and centering
Week 8	Measure of dispersion or different
Week 9	Measure of dispersion or different
Week 10	Midterm exam
Week 11	Probability theory
Week 12	Statistical test
Week 13	Statistical test
Week 14	Correlation coefficient data analysis
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	introduction to Statistics - Principles of Statistics	Yes
Recommended Texts	Statistics and Statistical Methods Book	No
Websites	https://www.udemy.com/course/bmwqjwxb/?srsltid=AfmBOooesbV6jEmBd_tAQSa288D__QY0Hc1yK1i3seCLaNtYAT4ckpyn	

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.


أ.د. يوسف يعقوب فلال

MODULE DESCRIPTION FORM

Module Information

Module Title	**AGRICULTURAL MARKETING TECHNIQUES**	**Module Delivery**	
Module Type	**Core learning activity**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	AMT1100		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	**Ph.D.**
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/2/2026	**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. The student gains a basic understanding of the food marketing system in the country. 2. The student describes the agricultural marketing chain. 3. The student identifies various economic principles and how they relate to agricultural marketing. 4. The student discusses consumer demand and the impact of marketing on consumer demand. 5. The student discusses specialty products and value-added products. 6. The student understands the importance of agricultural cooperatives. 7. The student describes the structure of agricultural marketing. 8. The student develops a marketing plan for an agricultural product

Module Learning Outcomes	The student should be able to: LO#1: Explain the basic marketing functions of buying, selling, transportation, storage, financing, standardization, pricing, and risk bearing. LO#2: Apply economic principles to the marketing of agricultural products. LO#3: Identify alternatives in the marketing of agricultural commodities/products. LO#4: Study the structure of agricultural markets.
Indicative Contents	Indicative content includes the following. Part A - Circuit Theory Developing the correct management skills for agricultural marketing in the precise specialization and determining the appropriate means for marketing agricultural products in the fastest time, highest marketing efficiency and lowest costs, and working to transport agricultural commodities through good and fast transportation methods to ensure transportation in the fastest times because agricultural crops are susceptible to rapid spoilage if they are not transported and stored in storage methods. Various types, and work on packing agricultural products in glass, cardboard, plastic or wooden boxes. The most important modern means of shopping will be discussed, such as electronic marketing via the Internet. Students will also be taught how to shop practically by visiting wholesale marketing places and teaching students how a merchant or broker works in shopping. Total hrs = 32 = SSWL - (Exam hrs) = 32 - 2 = 30 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	93	**Unstructured SWL (h/w)**	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	4,6,9	LO#2, LO#4
	Home Assignments	2	10% (10)	2 and 12	LO#1, LO#4
	Collage Assignments	1	5% (5)	10 and 11	LO#3
	Report	1	10% (10)	13	LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introductions and Course Overview; Types of Markets, Role of Agriculture Marketing in economic development.
Week 2	Agricultural Marketing system, Marketing system productivity.
Week 3	Analysis of Agricultural Marketing system and approaches.
Week 4	Market organizations.
Week 5	Marketing tools.
Week 6	Market Efficiency and Margins and costs.
Week 7	**Midterm Exam**.
Week 8	Agricultural Marketing in Iraq.
Week 9	Agricultural Marketing problems and solutions.
Week 10	Role of Private and public sector in agricultural marketing.
Week 11	Government Marketing services, Agricultural Marketing information system.
Week 12	Agricultural Extension services, Marketing legislation, Agricultural prices, Agricultural price policy in Iraq, Agricultural wholesale markets.
Week 13	Development and Characteristics of Wholesales Markets, Commodity Marketing in Iraq.
Week 14	International Agricultural Marketing.
Week 15	Methods of exporting, Export process, WTO and its implementation in Iraq.
Week 16	Preparing the student for the final exam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Principles of Agricultural Marketing, Abu Saeed Al-Duwaihji, Al-Hamid Publishing House, 2001, Amman.	Yes
Recommended Texts	– Ali Faleh Al-Zaib, "Marketing Management - A Strategic Applied Perspective," Dar Al-Yazouri Scientific, 2019. - Ali Faleh Al-Zouaib, "Marketing Communications: An Applied Methodological Approach," 9th Edition, Dar Al-Masiriya for Publishing and Distribution, Amman-Jordan, 2191 – Issa Hammoud Al-Hassan, "Commercial Promotion of Goods and Services," 9th edition, Zahran Publishing and Distribution House, Oman, .2191 - Ghassan Qasim Daoud Al-Almi, "Marketing Management New Ideas and Directions," 9th edition, Safaa Publishing House. Distribution, Amman	No
Websites	-	

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

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	**SUSTANIBLE DEVELOPMENT**			**Module Delivery**	
Module Type	**Core learning activity**			☒Theory ☐Lecture ☐Lab ☐Tutorial ☐Practical ☒Seminar	
Module Code	**SUD1090**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI	**Semester of Delivery**		2	
Administering Department	AGME1986	**College**	AGFO1964		
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	N.A.	**e-mail**	N.A.		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/2/2026	**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. Understand the concept of sustainable development and its various dimensions. 2. Analyze the impact of environmental and social changes on achieving sustainability. 3. Study the role of government policies and innovation in supporting sustainable development. 4. Raise awareness of the importance of achieving social justice within the goals of sustainability.
Module Learning Outcomes	LO#1: How sustainability considerations can actually be embedded within an individual's and community's day to day activities and decision-making

	processes. LO#2: How existing sustainable development tools and methods can be adjusted/fine-tuned accordingly, and how to design sustainability performance metric to assess the impact on community's sustainable development. LO#3: How to design feedback systems that can readjust the pathways of processes and procedures to ensure success in implementing sustainable development initiatives. LO#4: How to empower communities set sustainability targets using appropriate metrics.
Indicative Contents	The theoretical and cognitive foundation of the concept of sustainable development will be developed and an experiential understanding of emerging global challenges for sustainable environmental and community governance systems will be gained through theoretical lectures in the fifteen weeks. By focusing on seminars related to sustainable development and simulating successful country experiences, the capacity of communities and students will be enhanced and their research role and development in establishing the necessary information links and feedback loops within the system will be raised to allow system actors to have a sound understanding of developing sustainable solutions. This will enable visualization of the different factors that affect sustainability and proposing an action plan for building sustainable communities. Total hrs = 62 = SSWL - (Exam hrs) = 62-2= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	62	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	63	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation				
	Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning**

					Outcome
Formative assessment	**Quizzes**	3	15% (15)	3, 9 ,11	LO#1, LO#2, LO#3 and LO#4
	Collage Assignments	2	10% (10)	2 and 12	LO#1 and LO#3
	Projects	1	10% (10)	Continuous	All
	Report	1	5% (5)	14	LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Theory Syllabus)	
	Material Covered
Week 1	Introduction to Sustainable Development
Week 2	Economic, Social, and Environmental Dimensions of Sustainable Development
Week 3	History and Evolution of the Concept of Sustainable Development
Week 4	(Sustainable Development Goals (SDGs
Week 5	Sustainability in Natural Resource Management
Week 6	Climate Change and Its Impact on Sustainable Development
Week 7	Midterm Exam
Week 8	The Role of Education and Awareness in Achieving Sustainable Development
Week 9	Renewable Energy and Sustainability
Week 10	Sustainability in the Agricultural and Food Sector
Week 11	Government Policies and Their Role in Achieving Sustainable Development

Week 12	Innovation and Technology in Supporting Sustainability
Week 13	Social Justice and Equality in Sustainable Development
Week 14	Global Challenges Facing Sustainable Development
Week 15	The Future of Sustainable Development
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Seminars Syllabus)	
	Material Covered
Week 1	• Analysis of environmental challenges and opportunities in sustainable development.
Week 2	• Analyzing the role of technology in supporting sustainability.
Week 3	• Workshop on sustainability applications in local projects.
Week 4	• Netherlands: Circular farming in the dairy sector, reusing animal waste for energy and bioplastics, using bioreactor technology integrated with IoT sensors
Week 5	• Smart Pastures project in Mongolia, rotational grazing systems based on satellite monitoring, to restore 15% of degraded pastures annually
Week 6	• Intensive Rice Project in Madagascar, implementing SRI (System of Rice Intensification) to increase production by 50% while saving water in a geography: highland areas in Antananarivo
Week 7	• Smart Sustainable Farms in Ethiopia, integrating conservation agriculture with drought early warning systems: to increase crop resilience by 40% in Tigray regions.
Week 8	• Brazil: Low Carbon Agriculture Model (ABC Program), reducing methane emissions by 38% through integrated livestock waste management
Week 9	• China: Loess Plateau Rehabilitation, largest ecological restoration project (35,000 km²), using terraced terraces + water harvesting + selective afforestation.

Week 10	• Jordan: “Water Rationing” project, micro-drip irrigation technology with big data analysis, by reducing water consumption by 70% in vegetable cultivation.
Week 11	• Zambia: Conservation agriculture with FAO, zero tillage + permanent mulch + crop rotation, to increase maize production by 120% in 5 years
Week 12	• “Palm Oasis” project in Morocco, combating desertification through solar drip irrigation systems.
Week 13	• African Drylands Program (Senegal), cultivation of salt-resistant sorghum with fog harvesting, to reduce rural youth migration by 55%
Week 14	• “Integrated Farming” project in the Niger Delta, fish farming with rice cultivation in the same water body, to increase income by 300% while improving biological fertility
Week 15	Project presentations and discussions on feasibility and conclusions. •

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Omar bin Akhdar Khalfawi "Sustainable Development" عمر بن اخضر خلفاوي " التنمية المستدامة"	No
Recommended Texts	Abdullah bin Abdulrahman Al-Baridi "Sustainable Development: An Integrated Approach to Sustainability Concepts and Applications" عبدالله بن عبد الرحمن البريدي " التنمية المستدامة : مدخل تكاملي لمفاهيم الاستدامة وتطبيقاتها"	

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

Websites	

MODULE DESCRIPTION FORM

Module Information					
Module Title	**BIODIVERSITY**		**Module Delivery**		
Module Type	**Core learning activity**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**		
Module Code	**BIO1070**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI		**Semester of Delivery**		2
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	Yousif.Yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**		**Ph.D.**
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026		**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. Enable students to appreciate the importance of biodiversity conservation in addressing environmental challenges and climate change.** **2. Provide students with fundamental concepts of biological diversity and the role of living organisms in ecosystems..**
Module Learning Outcomes LOs	The student should be able to: LO#1: **Identify classifications of living organisms and patterns of biological diversity in various environments.** LO#2: **Understand the evolutionary and genetic mechanisms that contribute to**

Module Aims, Learning Outcomes and Indicative Contents	
	the emergence of biodiversity over time. LO#3: **Evaluate threats to biodiversity and analyze the impact of human activities on ecosystems.** LO#4: **Propose suitable strategies for biodiversity conservation and the sustainable use of natural resources.**
Indicative Contents	Indicative content includes the following. Theoretical The course covers fundamental concepts of biological diversity and taxonomic classifications, extending to ecosystem studies and methods for species and habitat conservation, with a focus on current threats and future challenges. Total hrs = 125 = SSWL - (Exam hrs) = 63-3 = 60 hrs (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	**1. (Interactive Lectures)** **2. (Project-Based Learning)** **3. (Case Studies)** **4. (Field Trips)** **5. (Group Discussions and Presentations)**

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Home Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	College Assignments	2	10% (10)	All	All
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4

Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Biological Diversity
Week 2	Taxonomy and Scientific Nomenclature
Week 3	Genetic Diversity and Evolution
Week 4	Ecological Diversity and Ecosystems
Week 5	Measuring Biodiversity and Its Indicators
Week 6	Factors Affecting Biological Diversity
Week 7	Mid-term Exam
Week 8	Environmental and Economic Value of Biodiversity
Week 9	Current Threats to Biodiversity
Week 10	Species Extinction and Conservation Strategies
Week 11	Biodiversity in Aquatic Ecosystems
Week 12	Biodiversity in Terrestrial Ecosystems
Week 13	Climate Change and Its Impact on Biodiversity
Week 14	Biodiversity and Sustainable Development
Week 15	Natural Resource Management and Sustainable Use
Week 16	Future Directions in Biodiversity Enhancement

Delivery Plan (Weekly Laboratory Syllabus)	
	Material Covered
Week 1	Future Directions in Biodiversity Enhancement
Week 2	Collection and Classification of Plant and Animal Samples
Week 3	Practical Applications of Scientific Nomenclature in the Lab
Week 4	Genetic Diversity Measurements and DNA Analysis Techniques

Week 5	Field Survey of Ecosystems (Forest or Agricultural)
Week 6	Biodiversity Assessment in Soil and Water Samples
Week 7	Monitoring Environmental Threats (e.g., Pollution and Biological Invasions)
Week 8	Community Analysis of Biotic Assemblages
Week 9	In-situ and Ex-situ Conservation Techniques
Week 10	Studying the Impact of Climate Change on Biotic Communities
Week 11	Field Visit to High-Biodiversity Areas
Week 12	Data Documentation and Analysis Using Statistical Software
Week 13	Designing Models for Biodiversity Conservation and Sustainable Use
Week 14	Developing Management Plans for Species Protection
Week 15	Presentation and Discussion of Research Findings and Practical Reports

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Gaston, K. (2010) Chapter 2: Biodiversity. In N.S. Sodhi & P. R. Ehrlich, Conservation Biology for All (pp. 27 - 43). Society for Conservation Biology.	-
Recommended Texts		-
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

MODULE DESCRIPTION FORM

Module Information					
Module Title	**BIOSAFETY and SECURITY**			**Module Delivery**	
Module Type	**Suport learning activity**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**BSS1050**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	UGI		**Semester of Delivery**		2
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	Yousif.Yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**		**Ph.D.**
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	ACE1020	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Equip students with fundamental knowledge of biosafety and biosecurity principles and their practical application in agricultural, forestry, and food-related settings. 2. Enable students to develop the skills necessary to identify, assess, and manage biological hazards, ensuring the protection of human health, the environment, and food products.
Module Learning	The student should be able to:

Module Aims, Learning Outcomes and Indicative Contents	
Outcomes LOs	LO#1: Identify common biological hazards in agriculture, forestry, and food sectors, and assess their level of risk. LO#2: Apply biosafety and biosecurity principles and practices in accordance with recognized international standards and levels. LO#3: Design and implement prevention and control programs for biological hazards in laboratories and agricultural/food production facilities. LO#4: Adhere to ethical and legal considerations when handling biological materials, ensuring public health and environmental protection.
Indicative Contents	Indicative content includes the following. Theoretical The course covers the concepts of biosafety and biosecurity, risk assessment, regulations, and safe laboratory techniques, with practical training on using personal protective equipment, sterilization, and waste disposal. It also enhances understanding of emergency response and designing biosecurity protocols in agricultural and food sectors, aiming to ensure worker safety and protect products and the environment. Total hrs = 75 = SSWL - (Exam hrs) = 47-2 = 28 hrs (Time table hrs x 15 weeks)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. **(Interactive Lectures)** 2. **(Project-Based Learning)** 3. **(Case Studies)** 4. **(Workshops and Hands-On Training)** 5. **(Group Discussions and Presentations)**

Student Workload (SWL)			
Structured SWL (h/sem)	47	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	28	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	**75**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Home Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	College Assignments	2	10% (10)	All	All
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4

Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Biosafety and Biosecurity
Week 2	Types of Biological Hazards in the Agricultural and Food Sectors
Week 3	Risk Assessment and Management
Week 4	Biosafety Levels and International Standards
Week 5	Personal Protective Equipment (PPE) and Safe Work Practices
Week 6	Sterilization, Disinfection, and Biological Waste Disposal
Week 7	Mid-term Exam
Week 8	Safe Storage, Handling, and Transport of Biological Materials
Week 9	Good Laboratory Practices (GLP) and Quality Standards
Week 10	Biosecurity in Agriculture and Protection of Plant and Animal Resources
Week 11	Emergencies and Rapid Response to Biological Incidents
Week 12	Local and International Regulations on Biosafety and Biosecurity
Week 13	Ethical Considerations and Dual-Use of Biological Technologies
Week 14	Case Studies and Practical Applications in Biosafety and Biosecurity
Week 15	Workshops and Simulations for Biosafety Protocol Design
Week 16	Comprehensive Review and Final Assessment

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Biosafety and Biosecurity
Week 2	Types of Biological Hazards in the Agricultural and Food Sectors
Week 3	Risk Assessment and Management

Week 4	Biosafety Levels and International Standards
Week 5	Personal Protective Equipment (PPE) and Safe Work Practices
Week 6	Sterilization, Disinfection, and Biological Waste Disposal
Week 7	Safe Storage, Handling, and Transport of Biological Materials
Week 8	Good Laboratory Practices (GLP) and Quality Standards
Week 9	Biosecurity in Agriculture and Protection of Plant and Animal Resources
Week 10	Emergencies and Rapid Response to Biological Incidents
Week 11	Local and International Regulations on Biosafety and Biosecurity
Week 12	Ethical Considerations and Dual-Use of Biological Technologies
Week 13	Case Studies and Practical Applications in Biosafety and Biosecurity
Week 14	Workshops and Simulations for Biosafety Protocol Design
Week 15	Comprehensive Review and Final Assessment

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Basics of Biological and Occupational Safety in Laboratories and Scientific Institutions / Ministry of Higher Education - University of Kufa / College of Agriculture - Department of Food Sciences.	-
Recommended Texts	Biosafety and Biosecurity Training and Education Materials/Biorisk Management Guide May 2020 - This guide was issued in cooperation with the Ministry of Higher Education and the Iraqi Ministry of Health.	-
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	**FX –** Fail	(45-49)	More work required but credit awarded

MODULE DESCRIPTION FORM

Module Information

Module Title	ARABIC LANGUAGE 1	**Module Delivery**	
Module Type	**Basic learning activities**	☒Theory ☐Lecture ☐Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	UOM1011		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	**Ph.D.**
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/2/2026	**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. Introducing students to the basics of the Arabic language. Also breaking the barrier of shyness and increasing their confidence inside and outside the classroom. 2. Engaging them in short discussions where they can write or express themselves orally. 3. Improving their reading, writing, listening and speaking skills as students, and strengthening students' literary ability to appreciate the styles of the language and realize its beauty . . 1

Module Learning Outcomes	The student should be able to: LO#1: Create a full awareness of the correct use of Arabic grammar in writing and speaking. LO#2: Students will improve their ability to speak Arabic in terms of fluency and

	comprehension. LO#3: Students will review the grammatical forms of Arabic and use these forms in specific communicative contexts, which include: classroom activities, homework, reading texts, and writing. LO#4: Students will enhance their ability to write short paragraphs and summaries .using a process approach
Indicative Contents	Indicative content includes the following. Theoretical Introduction to communication in general and the Arabic language in particular, with an introduction to word categories (parts of speech) in Arabic {4 hours}. Explanation of each part of speech in Arabic such as nouns, pronouns, verbs, adjectives, adverbs, prepositions, conjunctions and conjunctions {16 hours}. Basic skills in learning Arabic: reading and writing are gradually introduced over the past weeks {6 hours}. The last part is dedicated to some error correction and feedback sessions {4 hours}. -Total hrs = 32 = SSWL - (Exam hrs) = 32 - 2 = 30 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)

	32		2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	50		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	4,6,9	LO#1, LO#3
	Home Assignments	2	10% (10)	2 and 12	LO#1, LO#4
	Collage Assignments	1	5% (5)	10 and 11	LO#2
	Report	1	10% (10)	13	LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Speech and its parts
Week 2	Punctuation marks
Week 3	Subject and predicate
Week 4	An and its sisters
Week 5	Kan and its sisters
Week 6	Rules for writing numbers
Week 7	Midterm exam
Week 8	Surat Al-Fajr
Week 9	Its importance and explanation in addition to rhetorical, grammatical and semantic images
Week 10	The medial hamza and the extreme hamza
Week 11	The difference between the letter Ḍād and the letter Ḍād
Week 12	Literature Nazik Al-Malaika with her collections
Week 13	Prose styles Al-Jahiz and Abu Hayyan Al-Tawhidi
Week 14	The difference between the open taa and the closed taa
Week 15	Say and do not say
Week 16	Preparing the student for the final exam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	ين ذريل، عدنان " اللغة والأسلو ب دراسة" الطبعة الثانية ، 2006	No
Recommended Texts	بحيري، سعيد حسن، "الاساس في فقه اللغة العربية 2000	No
Websites	-	

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

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

MODULE 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**				
SWL (hr/sem)	**125**				
Module Level	1	**Semester of Delivery**		2	
Administering Department	AGME1986	**College**	**AGFO1964**		
Module Leader	YOUSIF YAKOUB HILAL	**e-mail**	yousif.yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	Hussain abed hammod	**e-mail**	hu_hammod@uomosul.edu.iq		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/2/2026	**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 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	The student should be able to: LO#1. Understand the Role of IT in Agriculture and Forestry LO#2. Identify Key Digital Technologies for Modern Farming and Forestry LO#3. Recognize Foundational Concepts in Data Security and E-Commerce LO#4. Explore Future Innovations in Agricultural Informatics
Indicative Contents المحتويات الإرشادية	The Agricultural Informatics module links information technology with agriculture, emphasizing modern tools such as IoT, GIS, AI, and big data to improve productivity and sustainability. It encompasses data management, precision farming, remote sensing, and decision support systems. Students acquire hands-on experience with GIS mapping, IoT configurations, and AI models, preparing them to address challenges like resource efficiency, climate adaptation, and food security through innovative, data-driven approaches. This module equips graduates to deploy advanced solutions in agriculture for a sustainable future.

Learning and Teaching Strategies

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

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4,11	LO#1, LO#3
	Assignments	2	10% (10)	9,13	LO#2, LO#4
	Projects/ Seminar	1	10% (10)	All	All
	Report	1	10% (10)	15	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO#1, LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Agricultural Informatics
Week 2	Agricultural Data Management Systems (ADMS)
Week 3	Internet of Things (IoT) in Agriculture
Week 4	Machine Learning and Artificial Intelligence in Agriculture
Week 5	Decision Support Systems (DSS) in Agriculture
Week 6	Using Drones in Agriculture
Week 7	Data Analysis in Agriculture
Week 8	**Mid-term Exam**
Week 9	Blockchain Technology and Food Traceability
Week 10	Mobile Applications in Agricultural Extension
Week 11	Forest Monitoring and Desertification Control Using Remote Sensing
Week 12	Agricultural Machinery Management and Robotics: Self-Driving Tractors
Week 13	E-Commerce in the Agricultural Sector
Week 14	Data Security and Protection in Smart Agriculture
Week 15	The Future of Agricultural Informatics: Prospects and Innovations
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Projects/Seminar Syllabus)

	Material Covered
Week 1	Discussion on Agricultural Informatics Applications in Iraq.
Week 2	Designing a Simple Database for a Virtual Farm

Delivery Plan (Weekly Projects/Seminar Syllabus)

	Material Covered
Week 3	Using Spreadsheets for Yield Analysis
Week 4	Automated Pest and Disease Detection Using AI Algorithms
Week 5	Setting up a Simple Soil Monitoring Device Using Local Tools and Creating a Simple Irrigation DSS Model Using Excel
Week 6	Aerial Drone Surveys and Spectral Image Analysis
Week 7	Simulating GPS Use for Agricultural Mapping and Creating a Local Agricultural Map Using GIS
Week 8	Simulating Crop Tracking from Farm to Market
Week 9	Prototyping a Mobile Application for Agricultural Extension
Week 10	Designing a Simple Prototype of a Manual Robot
Week 11	Building a Small Greenhouse Using Local Materials
Week 12	Developing an E-Commerce Marketing Plan for an Agricultural Product
Week 13	Applications of Data Security in Smart Farming
Week 14	The Future and Innovations in Agricultural Informatics
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.	No
Websites		

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 is required, but credit awarded
	F – Fail	(0-44)	Considerable amount of work required

- **Note: Marks at decimal points above or below 0.5 will be rounded to the nearest full mark (e.g., 54.5 to 55, 54.4 to 54). The University does NOT condone "near-pass fails"; adjustments to marks will only involve the automatic rounding stated above.**

MODULE DESCRIPTION FORM

Module Information				
Module Title	**INDUSTRIAL ENGINERING DROWING**	**Module Delivery**		
Module Type	C	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**		
Module Code	IED3500			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	**4**	**Semester of Delivery**	2	
Administering Department	AGME1986	**College**	**AGFO1964**	
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.	
Module Tutor	Hussain Abed Hammod	**e-mail**	hu_hamood@uomosul.edu.iq	
Peer Reviewer Name	N.A.	**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026	**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	END1030	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Developing the ability of students of the Department of Agricultural Machinery and Equipment to comprehend engineering and industrial drawing using the computer. 2- Training the student to draw using the computer to complete the drawings in a perfect and fast manner. 3- Developing the student's ability to comprehend and visualize to draw shapes of different degrees of difficulty. 4- Using advanced object modeling programs after mastering the use of the AutoCAD program.
Module Learning Outcomes	1: The student should understand all the engineering characteristics of graphical interfaces for drawing using the computer. 2: The student should learn how to use the tools required for two-dimensional and three-dimensional drawing correctly.

	3: The student should understand and apply the drawing, modification, dimensions, layers, printing, etc. commands. 4: The student should be able to draw isometric perspectives for each geometric shape in terms of the two-dimensional drawing and draw its three projections.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A: Computer Aided Drafting Basics</u> • Introduction to Computer Aided Drafting (CAD): An overview of computer aided drafting, with an emphasis on its importance in modern engineering. An introduction to software commands such as AutoCAD and SolidWorks, including their hardware components and versions. • AutoCAD Interface and Basic Commands: Learn the basic interface of AutoCAD, including the toolbar for drawing and editing, and explain the basic commands and their uses. • Dimensions. <u>Part B: Geometric Projections</u>: • Geometric Projections: Understand projection techniques, especially orthogonal projection. • Midterm Exam: An assessment covering topics learned in Part A and basic projection skills. • Classroom Work: Practical Applications for Deducing the Third Projection: Apply the concepts learned in drawing projections. <u>Part C: Advanced Drafting Techniques and Computer Aided Design (CAD) Programs</u> • Geometric Perspective Drawing (Isometric): An introduction to isometric drawing techniques. Drawing objects in isometric view for a three-dimensional representation. • Isometric Drawing Review: A review of the principles of isometric drawing and its application in technical drawings. • Drawing simple geometric shapes using AutoCAD: Practical practice using AutoCAD to draw simple geometric shapes. Total hrs = 48 = SSWL - (Exam hrs) = 48 - 3 = 45 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	• Lecture-based teaching: Explain concepts and demonstrate tools, techniques and software during lecture time so that students can observe the process before applying it themselves. • Practical training: Practical lectures: Provide practical sessions where students use software such as AutoCAD and SolidWorks to develop their skills. • Guided exercises: Provide step-by-step instructions to complete 2D and 3D drawing tasks such as projections and isometric perspective. • Interactive class discussions: Actively engage students in discussions where they can ask questions and clarify doubts on topics such as projection techniques or computer-aided design (CAD) tools. • Project-based assessments: Assign students projects that require them to apply the concepts they have learned, such as creating detailed engineering drawings using computer-based software.

Student Workload (SWL)			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	77	**Unstructured SWL (h/w)**	5
Total SWL (h/sem)	**125**		

Module Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	7	
	Assignments	10	20% (20)	3 to 14	
	Projects / Lab.	1	5% (5)	Continuous	All
	Reports	1	5% (5)	----	----------
Summative assessment	Midterm Exam	2hr	10% (10)	7	1, 2
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly, Syllabus)	
	Material Covered
Week 1	Introduction about computer and AutoCAD Component of AutoCAD screen, Title bar, Menu bar, Tool Bar, properties.
Week 2	Make a new drawing, saving, Unite, boundary of paper ,Command line.
Week 3	Draw list: Line, Xline, circle, arc, polyline.
Week 4	Draw list: point (dividing, measures), Ellipse, Text, block.
Week 5	Modify list: Erase, offset, copy, Rotate, Array, Trim, Extend.
Week 6	Modify list: Mirror, Move, Explode, Fillet, Chamfer+ quiz.
Week 7	Object snap, Polar tracking +mid-term exam.
Week 8	Dimensions.
Week 9	Projections: Introduction about projections, types of projections, projections in third angle, Projections of Object contain perpendicular surface only.
Week 10	projection of object contains include surface, projections of curved surface.
Week 11	finding a missing view, section.
Week 12	Isometric drawing: Introduction about isometric drawing.
Week 13	Isometric drawing: isometric drawing for perpendicular surface include surface, curved surface.
Week 14	3D in AutoCAD: Introduction about three dimensions in AutoCAD.
Week 15	Assembly (finding the 3D viewing from projection) + final-term exam.

Delivery Plan (Weekly Practical Syllabus)	
	Material Covered
Week 1	Component of AutoCAD screen, Title bar, Menu bar, Tool Bar, properties.
Week 2	new drawing, saving, Unite, boundary of paper, Command line.
Week 3	Draw Line, Xline, circle, arc, polyline.
Week 4	Draw point (dividing, measures), Ellipse, Text, block.
Week 5	Modify Erase, offset, copy, Rotate, Array, Trim, Extend.

Week 6	Modify Mirror, Move, Explode, Fillet, Chamfer +quiz.
Week 7	Object snap, Polar tracking +mid-term exam.
Week 8	Dimensions.
Week 9	projections, types of projections, projections in third angle, Projections of Object contain perpendicular surface only.
Week 10	projection of object contains include surface, projections of curved surface.
Week 11	finding a missing view, section.
Week 12	isometric drawing.
Week 13	isometric drawing for perpendicular surface includes surface, curved surface.
Week 14	three dimensions in AutoCAD.
Week 15	Assembly (finding the 3D viewing from projection) +final-term ezam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Mastering AutoCAD 2010 and AutoCAD LT 2010 1st Edition **1990**.	NO
Recommended Texts	AutoCAD 2010 Command Reference, AutoCAD tutorial2011	-
Websites	Getting Started with the Basics in AutoCAD 2017	

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 is 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.

MODULE DESCRIPTION

Module Information

Module Title	**ENGLISH LANGUAGE 2**	**Module Delivery**	
Module Type	**Basic learning activities**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOM2022		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGll	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/2/2026	**Version Number**	1.0

Relation with other Modules

Prerequisite module	UOM1021	**Semester**	2
Co-requisites module	None	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1-(Scientific Structural Competence) 2-(Analytical Reading & ESP Terminology) 3-(Translation Accuracy) 4-(Critical Communication & Fluency)
Module Learning Outcomes LOs	The student should be able to: LO#1: **Demonstrate grammatical accuracy** by using advanced verb aspects (Progressive & Perfect) and Passive Voice to describe agricultural processes and scientific experiments effectively. LO#2: **Analyze specialized agricultural and literary texts** to identify main ideas, deduce the meaning of technical terms within context, and deconstruct complex sentence structures. LO#3: **Apply translation techniques** to accurately transfer scientific concepts and texts from English into Arabic, maintaining terminological precision and appropriate scientific style. LO#4: **Engage in critical discussions** and debates regarding cultural and controversial topics, demonstrating the ability to articulate opinions and evaluate arguments confidently.
Indicative Contents	Indicative content includes the following.

	Theoretical • **Advanced Grammar & Diagrams: Progressive and Perfect Tenses, Passive Voice, and Morphology.** • **ESP Reading: Analysis of specialized agricultural texts and scientific reports.** • **Translation: English-to-Arabic translation of scientific and geographical concepts.** • **Oral Skills & Culture: Debates, cultural discussions, and media analysis to enhance fluency.** Total hrs = 32 = SSWL - (Exam hrs) = 32-2= 30 (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	20% (10)	2 and 13	LO#1 and LO#3
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Continuous Aspect & Verb Types
Week 2	The Perfect Aspect
Week 3	Scientific Voice (Passive)
Week 4	Logical Connectives & Cohesion
Week 5	Terminology & First Reading
Week 6	Deep Analysis
Week 7	Mid-term Exam
Week 8	Translation & Application
Week 9	Practical workshop on translation techniques (from and into Arabic)
Week 10	Identity & Culture
Week 11	English for Agriculture
Week 12	Debate & Argumentation
Week 13	Literature & Analysis
Week 14	Science & Business
Week 15	Media & Lifestyle
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	New Headway Plus/Beginner part1	Yes
Recommended Texts	Rapid Review of English Grammar 2020–2021	No
Websites		

Grading Scheme

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

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	AGRICULTURAL PRODUCTION MECHANIZATION TECHNIQUES			**Module Delivery**	
Module Type	Core			☒Theory ☐ Lecture ☐Lab ☐Tutorial ☒ Practical ☐Seminar	
Module Code	APT2130				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Nofal Issa Mohamed		**e-mail**	nofelemh@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	MSc.	
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	01/02/2025		**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-Teaching students the fundamentals of agricultural machinery and equipment and their applications in the agricultural sector. 2-Practically applying these fundamentals in various agricultural fields. 3-Preparing advanced personnel in this field who can utilize these tools in different agricultural sectors. 4-Understanding the theories behind the design and operation of specialized agricultural equipment, as well as maintenance methods to ensure the sustainability of agricultural operations. 5-Keeping up with the rapid advancements in the agricultural sector to meet local market demands and export surplus production to global markets.
Module Learning Outcomes	**LO#1:** Clarify the fundamentals and principles of agricultural machinery and equipment and their applications in various agricultural fields. **LO#2:** Acquire knowledge of the maintenance, repair, and servicing methods of

	agricultural machinery and equipment. **LO#3:** Develop the ability to keep up with agricultural development and expansion plans, including land cultivation and the adoption of modern agricultural techniques. **LO#4:** Gain knowledge in optimizing the use of resources, such as water resources, and making the most of available reserves through the implementation of efficient irrigation methods. **LO#5:** Develop both theoretical and practical expertise in establishing small-scale agricultural production projects in the fields of crop and livestock production. **LO#6:** Acquire skills in managing agricultural machinery and equipment in the field. LO#7: Develop skills in improving crop harvesting processes to minimize both quantitative and qualitative losses. **LO#8:** Enhance plant production through the adoption of modern seeding techniques and crop management practices.
Indicative Contents	**Introduction to Agricultural Tractors: Definition and Classification** Agricultural tractors serve as the primary source of power on farms, used for various agricultural operations such as towing and hauling equipment. They are classified based on their size, horsepower, and the type of tasks they perform, including wheeled and tracked tractors. **Tractor Engines and Farm Power Sources** Agricultural tractors rely on internal combustion engines powered by diesel or gasoline. Other power sources on farms include electricity, solar energy, and mechanical power derived from animals. **Engine Operation: Four-Stroke and Two-Stroke Cycles** Engines operate using either a four-stroke cycle (intake, compression, power, exhaust) or a two-stroke cycle, with the choice affecting fuel efficiency and overall engine performance. **Power Transmission Systems in Agricultural Tractors** Power is transmitted from the engine to the wheels or equipment through components such as the gearbox (manual or automatic), clutch, and hydraulic transmission systems, allowing for precise control of speed and power. **Ground Contact Mechanisms, Hydraulic System, and Power Take-Off (PTO)** Ground contact mechanisms include wheels or tracks to ensure stability and traction. The hydraulic system is used for raising and lowering implements, while the PTO drives mechanical attachments. **Primary Soil Preparation Equipment** This category includes various plows such as the moldboard plow, chisel plow, disc plow, vertical disc plow, and rotary plow, all designed to break up and turn the soil, improving aeration and preparing it for planting. **Secondary and Specialized Soil Preparation Equipment** Equipment such as harrows and leveling tools are used after plowing to refine the soil surface and optimize growing conditions. Other tools include subsoilers, cultivators, furrow openers, and undercut cultivators. **Seeding Equipment** Seeding machinery includes conventional and precision seeders that ensure uniform seed distribution at the proper depth for optimal germination. **Planting and Transplanting Equipment** These machines are used for planting seedlings and crops that require systematic placement, such as vegetables and field crops. **Fertilization Equipment** This includes manure spreaders and chemical fertilizer applicators, which help distribute nutrients efficiently across fields. **Sprinkler Irrigation Equipment** Sprinkler irrigation systems, either stationary or mobile, deliver water evenly to crops, enhancing water use efficiency.

	Drip Irrigation Systems and Pumps Drip irrigation systems provide a slow and steady water supply directly to plant roots through perforated pipes, while pumps transfer water from various sources to agricultural fields. **Pest and Fire Control Equipment** This category includes sprayers and dusters used to combat agricultural pests and diseases, along with fire control equipment for fields and forests. **Grain Harvesting and Fruit Picking Equipment** This includes combine harvesters and their functional units, which are essential for efficient harvesting operations. **Post-Harvest Equipment** post-harvest operations involve drying, sorting, storage, and packaging systems designed to maintain crop quality and minimize losses before marketing.

Learning and Teaching Strategies

Strategies	Quizzes Reports Homework Discussion and solving exercises within the lecture, student interaction. .

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Agricultural Tractors: Definition, Classification, and Power Sources Used on Farms, Agricultural Tractor Engines and Power Sources.
Week 2	Engine Operation Mechanism: Four-Stroke and Two-Stroke Cycles
Week 3	Power Transmission and Drive Systems in Agricultural Tractors
Week 4	Ground Engagement Systems, Hydraulic System, and Power Take-Off (PTO) Shaft
Week 5	Primary Soil Preparation Equipment
Week 6	Secondary and Specialized Soil Preparation Equipment
Week 7	Seeding Equipment
Week 8	Planting and Transplanting Equipment
Week 9	Fertilization Equipment
Week 10	Sprinkler Irrigation Equipment and Pumps
Week 11	Drip Irrigation Equipment
Week 12	Weed, Pest and Fire Control Equipment
Week 13	Grain Harvesting and Fruit Picking Equipment
Week 14	Mechanization of animal farm
Week 15	Final Examination

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Components and Assembly of Internal Combustion Engines
Week 2	Training on Operating Agricultural Tractors
Week 3	Timing System and Fuel System
Week 4	Cooling System and Lubrication System
Week 5	Field Training on Equipment Usage
Week 6	Field Training on Equipment Usage
Week 7	Field Training on Equipment Usage
Week8	Field Training on Equipment Usage
Week9	Field Training on Equipment Usage
Week10	Field Training on Equipment Usage
Week11	Field Training on Equipment Usage
Week12	Field Training on Equipment Usage
Week13	Field Training on Equipment Usage

Week14	Field Training on Equipment Usage
Week15	Final Examination

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	- **Agricultural Machinery and Equipment**, authored by Dr. Yassin Hashim Al-Tahan and Dr. Mohammed Jasim Al-Naama. **Mechanization of animal farm,** authored by Dr. Mohammed Jasim Al-Naama	Yes
Recommended Texts	- **CIGR Handbook of Agricultural Engineering. Vol., 1, 2, 3, 4, 5. American Society of Agricultural Engineers. USA**	NO
Websites	https://asabe.org/ , https://www.fao.org/home/ar	

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.

MODULE DESCRIPTION

Module Information

Module Title	**Beneficial insects**	**Module Delivery**	
Module Type	**Core learning activity**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**
Module Code	PE12180		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		

Module Level	UGII	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	assistant professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	2026/2/1	**Version Number**	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Introduce the concept of beneficial insects and their agricultural and environmental importance. 2- Understand honeybee biology, social organization, and economic value. 3- Develop skills in honeybee colony management and seasonal care. 4- Identify honeybee products and apply proper methods for harvesting and utilization. 5- Diagnose honeybee diseases and pests and apply prevention and control methods. 6- Explain the role of honeybees and other insects in pollination and crop yield improvement. 7- Apply methods of honeybee reproduction and queen rearing. 8- Understand silkworm biology, rearing practices, and silk production. 9- Learn principles of biological control using predators and parasitoids. 10- Distinguish beneficial insects from agricultural pests in the field. 11- Build practical skills in field collection, observation, and evaluation. 12- Promote awareness of the role of beneficial insects in ecological balance and sustainable agriculture.
Module Learning Outcomes	LO#1 Understand the scientific and ecological principles of beneficial insects and their roles in agro-ecosystems. LO#2. Know honeybee biology, colony social organization, and roles of colony members. LO#3. Identify honeybee and silkworm diseases and pests, and relevant prevention and control measures. LO#4. Apply skills in apiary management, queen rearing, and natural and artificial reproduction. LO#5. Appreciate the roles of pollinators, predators, parasitoids, and scavenger insects in pollination, biological control, and sustainability.
Indicative Contents	The first four weeks focus on introducing honeybees in terms of their economic and environmental importance, common races, and social organization within the colony. The course then covers honeybee biology, life cycle, external and internal anatomy, and the roles of different colony members. Students learn the principles of establishing and managing an apiary, including essential tools, equipment, and seasonal care, with practical training in hive inspection. In addition, the course addresses honeybee products, their importance, and practical methods for harvesting and utilization. [SSWL=15 hrs]. Weeks five to eight cover honeybee diseases and pests, including their identification, diagnosis, and methods of prevention and control. The course highlights the role of honeybees in pollination and their importance in increasing agricultural productivity,

	with field visits to observe pollinators. It also addresses natural and artificial methods of honeybee reproduction, such as swarming and colony division. In addition, students learn the principles and practical steps of queen rearing and artificial insemination through applied training. [SSWL=15 hrs] . Week nine focuses on introducing the silkworm and its economic importance. It covers the silkworm life cycle, rearing practices, and feeding methods, with practical training on cocoon identification, silk extraction, and prevention of common diseases.. [SSWL=10 hrs] Weeks ten, eleven, and twelve focus on the concepts and applications of biological control. These weeks cover the role of predatory and parasitic insects in controlling agricultural pests, including their types and mechanisms of predation and parasitism. The content also addresses biological control of weeds using insects, with practical training in field sampling, observation of feeding behavior, and evaluation of field effectiveness. [SSWL=10 hrs] Weeks thirteen and fourteen focus on pollinating insects and decomposer insects and their environmental roles. The content covers the concept of pollination, types of pollinating insects, and their importance in biodiversity and agricultural production, with field observation of pollination behavior. It also introduces scavenger and decomposer insects, their common examples, and their role in organic matter decomposition, soil fertility improvement, and ecological balance, supported by practical sampling and activity assessment**.** [SSWL=10 hrs] Total hrs = 63 = SSWL - (Exam hrs) = 63 = 63 hr (Time table hrs x 15 weeks)
Learning and Teaching Strategies	
Strategies	1- Interactive lecture 2- Brainstorming 3- Dialogue and discussion 4-Field Training 5- Practical exercises 6- Field project 7- Self-education

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	125		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to honeybees, including their economic and environmental importance, common races, and social organization within the colony.
Week 2	Honeybee biology, including the life cycle, external and internal anatomy, and the functions of workers, the queen, and drones.
Week 3	Honeybee colony management, including apiary establishment, tools and equipment, and seasonal feeding and care.
Week 4	Honeybee products, including honey, beeswax, royal jelly, pollen, propolis, and bee venom.
Week 5	Honeybee diseases and pests, including bacterial, fungal, and viral diseases, insect and non-insect pests, and methods of prevention and control.
Week 6	The role of honeybees in pollination, their importance in increasing agricultural productivity, and the management of honeybee colonies for pollination purposes.

Week 7	Methods of honeybee reproduction, including natural reproduction, swarming and its types, and artificial colony division.
Week 8	.Queen rearing and artificial insemination in honeybees
Week 9	Silkworms: introduction and economic importance, life cycle, rearing practices, silk production, and common diseases with methods of prevention.
Week 10	Predators: the concept of biological control, types of predatory insects, mechanisms of predation, use of predators in controlling agricultural pests, and applied examples from agricultural fields.
Week 11	Parasitoids: the concept of biological control, types of parasitic insects, mechanisms of parasitism, use of parasitoids in controlling agricultural pests, and applied examples from agricultural fields.
Week 12	Biological control of weeds, including weed-feeding insects, their types, and their importance.
Week 13	Pollinating insects: the concept of pollination, types of pollinating insects, their role in biodiversity, their impact on agricultural crops, and methods for their conservation.
Week 14	Scavenger and decomposer insects: definition, common examples, their role in organic matter decomposition, and their importance in soil fertility.
Week 15	General review and monthly examination.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Apiary visit to identify honeybee colonies and races.
Week 2	Laboratory dissection of honeybee colony members and identification of the main internal organs and structures.
Week 3	Identification of essential tools and equipment used in beekeeping and honeybee colony inspection.
Week 4	Practical application of methods for collecting honeybee products.
Week 5	Diagnosis of diseases and pests affecting honeybees.
Week 6	Apiary visit and identification of different types of pollinating insects.
Week 7	Methods of handling, hiving swarms, and artificial colony division.

Week 8	Practical application of queen rearing and artificial insemination methods.
Week 9	Silkworm stages, feeding and rearing practices, identification of cocoons, and silk extraction.
Week 10	Collection of predatory insects and their identification in comparison with agricultural pests.
Week 11	Parasitic insects, observation of parasitism, and applications of biological control.
Week 12	Field sample collection, observation of feeding behavior, and evaluation of field activity.
Week 13	Collection of pollinating insects, observation of pollination behavior, and evaluation of their field activity.
Week 14	Collection of scavenger insects, study of their role in decomposition, and their relationship to soil fertility.
Week 15	General review, final practical examination, and submission of reports.

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Beekeeping and Silkworms Book / Written by Dr. Louay Karim Al-Naji	
Recommended Texts	The bees of the world /Charles D. Michener	
Websites	https://www.google.com/search?q=%D9%83%D8%AA%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&oq=%D9%83%D8%AA%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&aqs=chrome..69i57j0i22i30l2j0i15i22i30l2.6551j0j15&sourceid=chrome&ie=UTF-8	

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	**SOIL and WATER SUITBILTY**			**Module Delivery**	
Module Type	**Core learning activity**			☒Theory ☐Lecture ☐Lab ☐Tutorial ☒Practical ☐Seminar	
Module Code	**SWS2190**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	2	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	assistant professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2026/2/1		**Version Number**		

Relation with other Modules			
Prerequisite module	APT2130	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Understand the concept of soil and water suitability. 2. Analyze the impact of environmental and social changes on achieving sustainability. 3. Study the role of government policies and innovation in supporting sustainable development. 4. Raise awareness of the importance of achieving social justice within the goals of sustainability.
Module Learning Outcomes	1. Interpret the concepts and goals of sustainable development. 2. Assess the impact of climate and policies on resource sustainability. 3. Analyze the role of education and technology in achieving sustainable development. 4. Propose innovative strategies to enhance sustainability in various sectors.
Indicative Contents	1. Introduction to the Sustainable Development Goals and Global Challenges. 2. Natural Resource Management and Climate Change. 3. Policies Supporting Sustainability in the Fields of Energy and Agriculture. 4. Innovation and Social Justice in Achieving a Sustainable Future.

	Total hrs = 62 = SSWL - (Exam hrs) = 62-2= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	5.8
Total SWL (h/sem)	150		

Module Evaluation

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

Delivery Plan (Weekly Theory Syllabus)

	Material Covered
Week 1	• Definition of soil, components and types of soils
Week 2	• Physical properties of soil (texture, density, permeability)
Week 3	• Physical properties of soil (structure, color, texture)
Week 4	• Soil chemical properties (pH, Electrical Conductivity, Nutrients)
Week 5	• Chemical properties of soil (Soil Colloids, Cation Exchange)
Week 6	• Fertile soil and factors affecting its fertility
Week 7	Midterm Exam
Week 8	• Soil degradation and its causes
Week 9	• Soil salinity and its effect on agriculture
Week 10	• Desertification and ways to combat it
Week 11	• Soil suitability for agricultural crops

Week 12	• Definition of water resources, types of water (surface, groundwater, rainwater)
Week 13	• Water pollution and its causes
Week 14	• Impact of water quality on agricultural production
Week 15	• Global Challenges Facing Sustainable Development
Week 16	• Preparatory week before the final Exam

Delivery Plan (Weekly practical Syllabus)

	Material Covered
Week 1	• Collect soil, water samples, and prepare them for the laboratory.
Week 2	• Measure soil texture (percentage of sand, silt, and clay).
Week 3	• Determine the apparent density and porosity.
Week 4	• Measurement of soil's ability to hold water (field capacity).
Week 5	• Measurement of acidity and acidity (pH&EC).
Week 6	• Estimation of essential nutrients (N, P, K).
Week 7	Midterm Exam
Week 8	• Estimation of essential nutrients (Ca, Mg).
Week 9	• Organic carbon (OC) estimation
Week 10	• Carbonate and bicarbonate measurement
Week 11	• Calcium carbonate measurement.
Week 12	• Total dissolved salts (TDS) analysis.
Week 13	• Estimation of color, turbidity, and odor.
Week 14	• Temperature: Its effect on water quality.
Week 15	• Preparatory week before the final Exam

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	مبادئ علم التربة، تأليف الدكتور عبدالله العاني (1982) تحليل التربة والنبات-دليل مختبري، ايكاردا، جون راين وعبد الرشيد (2001)	yes
Recommended Texts	Soils and land suitability for arable farming of southeast central district, Food and Agriculture Organization of the United Nations, A. REMMELZWA (1989).	No
Websites		

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

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

MODULE DESCRIPTION

Module Information

Module Title	**WASTE TREATMENT AGRICULTURAL ENGINEERING**	**Module Delivery**	
Module Type	**Core learning activity**	☒Theory ☐ Lecture ☒T Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**AWE2210**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	**UGll**	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	**AGFO1964**
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	2026/2/1	**Version Number**	1.0

Relation with other Modules

Prerequisite module	APT2140	**Semester**	2
Co-requisites module	None	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1-Developing the concept of agricultural waste treatment engineering 2- Capacity development on creating clean, environmentally friendly, recycled projects 3- Promoting the positive attitudes of individuals towards agricultural waste treatment engineering and the use of modern technologies in treatment 4- Encouraging work on recycling and treating agricultural waste and using organic fertilizers
Module Learning Outcomes LOs	The student should be able to: LO#1: Knows the general concepts of agricultural waste treatment engineering LO#2: Determines appropriate means and methods for recycling and treating environmentally harmless agricultural waste LO#3: It proposes modern ideas and capabilities for clean and environmentally friendly projects in reprocessing agricultural waste LO#4: The student has ethical responsibilities in the production of new and recycled resources
Indicative Contents	The guiding content includes the following: Theoretica:l

	Developing agricultural waste treatment engineering skills and identifying appropriate means for treating solid, liquid and gaseous waste, as well as identifying the types of agricultural waste and how to employ them in creating clean, environmentally friendly projects to develop work in the field of agricultural engineering sciences and methods of using them efficiently to develop agricultural production and recycle and treat .environmentally non-harmful waste as an economic opportunity lab The most important modern means of obtaining and benefiting from recycling agricultural waste will be .addressed by conducting reviews and laboratory experiments to recycle some solid, liquid and gaseous waste Total hrs = 63 = SSWL - (Exam hrs) = 63-3= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	37	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	100		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (10)	4,,10 and 12	LO#1and LO#2
	Assignments	2	10% (10)	2, and 13	LO#1 andLO#3
	Projects/ lab	2	5% (10)	8 and 12	All
	Report	1	10% (10)	14	LO#1, LO#2and LO#4
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered

Week 1	The concept of agricultural waste treatment engineering and its importan
Week 2	Types of solid, liquid and gaseous agricultural waste
Week 3	Agricultural waste treatment objectives as an economic opportunity
Week 4	Classification of agricultural waste according to its components and composition
Week 5	Effects of agricultural waste on the environmental economy
Week 6	Agricultural waste sources .
Week 7	Mid exam
Week 8	gro-environmental management, policy and agro-environmental planning .
Week 9	Ways to benefit from organic agricultural waste
Week 10	Agricultural ecological footprint and its impacts.
Week 11	Waste disposal systems (Waste handling methods)
Week 12	Causes of the spread of hazardous toxic industrial waste, non-toxic waste and radioactive wast
Week 13	Production of organic fertilizer, biogas and biogas fertilizer
Week 14	Reducing greenhouse gas emissions and green nitrogen uses
Week 15	Animal feed production, use of liquid feed, solid molasses blocks and roughage grinding (mechanical processing) .
Week 16	Preparatory week before the final

Delivery Plan (Weekly LAB Syllabus) ing modern technology and discussing the most important means of transferring and adopting it by :farmers, as well as the obstacles and treatments that ensure adoption	
	Material Covered
Week 1	Organic fertilizer (improving the organic fertilizer properties of poultry manure by adding biochar)
Week 2	Biogas potential as a sustainable new energy source for rural livelihoods (green hydrogen and gas uses and greenhouse gas mitigation)
Week 3	Practical experiments to benefit from heat exchangers in drying fish farm waste and treating and recycling chicken litter .
Week 4	Methane production by anaerobic fermentation from cattle manure and poultry droppings under laboratory conditions.
Week 5	Hydroponics: Growing plants in a water solution instead of soil, which reduces water use.
Week 6	Some natural properties of apricot kernels and their recycling.
Week 7	Midterm Exam
Week 8	Agricultural Robots: The use of robots to perform tasks such as planting and harvesting.
Week 9	Utilization of heat exchangers in drying fish farm waste.
Week 10	Design and manufacture of a unit for cooking meals from poultry waste as a non-traditional feed
Week 11	Improving the properties of organic fertilizer of poultry waste by adding biochar
Week 12	Crushing of roughage (mechanical treatment of waste with urea solution, ammonia gas and silage)
Week 13	Organic fertilizer production as a successful, clean and environmentally friendly project
Week 14	Organic Farming: Agricultural techniques that rely on the use of natural materials instead of chemicals.

Week 15	Organic Fertilizer Production Systems Andrew's Method Classification of Organic Fertilizer Production Systems and Production Stages .

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Environmental Economics 2022lMustafa Youssef Kafi Book	YES
Recommended Texts	Agricultural Waste Treatment Engineering 2000, Kingdom of Saudi Arabia, King Saud University, College of Agricultural Engineering.	NO
Websites		

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

MODULE DESCRIPTION FORM

Module Information			
Module Title	**AGRICULTURE CAREER ETHICS**	**Module Delivery**	
Module Type	**Support or related learning activity**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**ACE1020-AM**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	UGI	**Semester of Delivery**	1
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/9/2025	**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- Teaching ethics and ethical concepts to the agricultural engineer. 2- Teaching the ethical rules of professional ethics and clarifying the ethics of agricultural engineering.
Module Learning Outcomes LOs	The student should be able to: LO#1: Know general concepts of morality and moral philosophies. LO#2: Learn the concept of occupational ethics and ethical rules in the agricultural engineering profession. LO#3: Respect the laws and regulations related to agricultural engineering projects. LO#4: Bear ethical responsibilities in the fields of the agricultural engineering profession.

Module Aims, Learning Outcomes and Indicative Contents	
Indicative Contents	Indicative content includes the following. Theoretical Ethical and professional ethics, which are moral philosophies, ethical rules in agricultural engineering. It includes distributing titles on agricultural professional ethics to students to give seminars on them. Total hrs = 63 = SSWL - (Exam hrs) = 63-3 = 60 hrs (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	1. Interactive lecture, Brainstorming 2. Dialogue and discussion 3. Assigning reports 4. Quizzes 5. Presentation of examples of professional, ethical cases in the field of scientific specialization by students and received in discussion seminars.

Student Workload (SWL)			
Structured SWL (h/sem)	62	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	63	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	Seminar	1	10% (10)	All	All
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to professional ethics and its importance in agricultural engineering
Week 2	Basic ethical theories in the profession Integrity and scientific honesty in agricultural research

Week 3	The agricultural engineer's commitment to environmental responsibility
Week 4	Professional interaction with society and the public
Week 5	Positively dealing with conflicts of interest
Week 6	Ethics of agricultural experiments and research
Week 7	Mid-term Exam
Week 8	Ethics of agricultural experiments and research
Week 9	Confidentiality and data protection
Week 10	Compliance with laws and instructions in agricultural engineering
Week 11	Cooperation and teamwork in agricultural projects
Week 12	Combating professional corruption in agricultural engineering
Week 13	Continuous learning and self-development in an ethical context
Week 14	Assessing commitment to professional ethics: strategies and tools
Week 15	Ethics of innovation in agricultural engineering
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Seminar. Syllabus)	
	Material Covered
Week 1	**Pesticide use and its impact on the health of farmers and consumers**
Week 2	**Crop price manipulation: the ethics of trade in agriculture**
Week 3	**Agricultural labour exploitation: workers' rights and working conditions**
Week 4	**The impact of industrial agriculture on biodiversity: is there ethics?**
Week 5	**Unsustainable agricultural practices: responsibility to future generations**
Week 6	**Marketing genetically modified products: transparency and ethic**
Week 7	**Water management in agriculture: the right to water and fair distribution**
Week 8	**Climate change and agriculture: ethical challenges for farmers**
Week 9	**Agriculture in protected areas: a balance between protection and production**
Week 10	**Agricultural research ethics: the limits of experiments on living organisms**
Week 11	**Unfair distribution of support allocated to farmers and its impact on small projects**
Week 12	**The impact of agriculture on local communities: benefits versus risks and ethical challenges**
Week 13	**Ethics in Cash Crop (traded as international trade) Farming and its impact on Food Security**
Week 14	**Modern technologies in agriculture: are we prepared to bear their ethical consequences**
Week 15	**Organic agriculture: ethical challenges in promotion and practice**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	N.A.	-
Recommended Texts	Professional Ethics	Yes
Websites		

Grading Scheme				
Group	**Grade**	**Appreciation**	**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	**middle**	60 - 69	Fair but with major shortcomings
	E - Sufficient	**acceptable**	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

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	**DEMOCRACY and HUMAN RIGHTS**			**Module Delivery**	
Module Type	**Basic learning activities**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM1040-AM**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UGI	**Semester of Delivery**		1	
Administering Department	AGME1986	**College**	AGFO1964		
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	N.A.	**e-mail**	N.A.		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/9/2025	**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- Enabling the student to understand and comprehend what is related to human rights, their types, and rights in the heavenly religions. 2- Enabling the student to recognize the types of human rights and human rights according to the Iraqi Constitution in 2005. 3- Enabling the student to recognize the types and types of governments. 4- Enabling the student to learn about democratic and dictatorial governments and the concept of freedom and the rights of others.
Module Learning Outcomes LOs	The student should be able to: LO#1: Understands everything related to human rights, his rights in divine religions, and the concept of democracy. LO#2: Familiar with the types of general human rights and human rights according to the Iraqi Constitution of 2005. LO#3: Bears the national responsibility to respect human rights, opinion, and the other opinions of the nation's partners. LO#4: Respects the freedoms and rights of others.
Indicative Contents	Indicative content includes the following. Theoretical

	Enriching the student with knowledge related to human rights and their types, and their relationship to peaceful coexistence with the nation's partners, and the concept of human rights and divine religions, as well as introducing the student to the concept of governments and their types, and making him familiar with the concept of individual freedom, democracy, and human rights in accordance with the Iraqi constitution. Total hrs = 32 = SSWL - (Exam hrs) = 32-2 = 30 hrs (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	1. Interactive lecture, Brainstorming 2. Dialogue and discussion 3. Assigning reports 4. Quizzes 5. Assigning group work to reveal leadership skills

Student Workload (SWL)			
Structured SWL (h/sem)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	**50**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	20% (20)	2 and 13	LO#1 and LO#3
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	History of human rights
Week 2	Human rights in heavenly religions
Week 3	Forms of human rights
Week 4	New or modern human rights

Week 5	Human rights in international governmental organizations
Week 6	Human rights in non-governmental organizations, human rights in the Iraqi constitution in 2005
Week 7	Mid-term Exam
Week 8	Types of governments
Week 9	Democratic government
Week 10	Characteristics of democracy
Week 11	Pictures of democratic government
Week 12	Indirect democracy
Week 13	Types of ballots
Week 14	Procedures preliminary elections
Week 15	Types of election
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Human rights, written by: Hafez Alwan Hammadi Al-Dulaimi. 2010	Yes
Recommended Texts	1. Universal human rights between theory and practice, written by Jack Donnelly. 2. Human Rights, Children and Democracy, written by: Maher Saleh Allawi Al-Jubouri and others. 3. Human Rights and Public Freedoms, written by: Ramez Muhammad Ammar. 4. The Genesis of Human Rights, written by: Lynn Hunt, translated by: Fayqa Girgis Hanna. 5. The Philosophy of Human Rights, written by Ansam Amer Al-Sudani. 6. The Concept of Contemporary Democracy, written by: Ali Khalifa Al Kuwari. 7. Democracy, written by Charles Tilly, translated by: Muhammad Fadel. 8. Rooted Democracy and the Problem of Implementation, written by: Muhammad Al-Ahmari. 9. Parliamentary Governments, written by: John Stuart Mill, translated by: Emile Al-Ghouri. 10. Electoral Systems, written by: a group of authors. 11. The Genesis of Human Rights, written by: Lynn Hunt, translated by: .Fayqa Girgis Hanna 12. -The Philosophy of Human Rights, written by Ansam Amer Al .Sudani 13. Human Rights in the Western Religious Heritage and Islam, written by: Muhammad Jalaa Idris and Amal Muhammad Abd al-Rahman Rabie.	No
Websites	1- The United Nations. 2- Office of the High Commissioner, United Nations High Commissioner for Human Rights. 3- Amnesty International. 4- UNICEF. 5- International Committee of the Red Cross.	

MODULE DESCRIPTION FORM

Module Information				
Module Title	**COMPUTER1**	**Module Delivery**		
Module Type	**Basic learning activities**	☐ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**		
Module Code	**UOM1031-AM**			
ECTS Credits	**3**			
SWL (hr/sem)	**75**			
Module Level	**UGI**	**Semester of Delivery**	1	
Administering Department	**AGME1986**	**College**	**AGFO1964**	
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**	**Ph.D.**	
Module Tutor	N.A.	**e-mail**	N.A.	
Peer Reviewer Name	N.A.	**e-mail**	N.A.	
Scientific Committee Approval Date	01/09/2025	**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. Introducing students to the basics of computers, including computer components, operating systems, and essential software, as well as providing.** **2. Teaching students how to collect and analyze data using Excel or statistical analysis software, creating documents with word processors, and developing presentations.** **3. Enhancing students' online research skills and how to use electronic resources for scientific research.** **4. Utilizing computer tools to enhance communication and collaboration skills among students, such as using e-mail and online learning platforms.**
Module Learning	**LO#1:** Identify and explain the components of a computer and their basic functions. **LO#2:** Analyze agricultural data using Excel and present findings through well-organized documents and presentations.

Outcomes	**LO#3:** Evaluate the credibility of online sources when conducting scientific research. **LO#4:** Students should be able to use computer tools to enhance communication with peers, such as e-mail and online learning platforms.
Indicative Contents	Indicative content includes the following. An introduction to the computer and its components, with basic operating systems and their interfaces, will be covered. [SSWL=9 hrs] Focus on the practical use of software for data analysis (Excel), presentations (PowerPoint), and basic troubleshooting techniques to resolve common computer issues. [SSWL=24 hrs] The semester also includes an introduction to the Internet, web browsers, networks, and the basics of e-mail, as well as methods for discovering computer errors and ways to fix them. [SSWL=9 hrs] Total hrs = 47 = SSWL - (Exam hrs) = 47 - 2 = 45 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	• **Practical Sessions**: Provide students with regular lab sessions where they can apply theoretical knowledge directly. Practical exercises such as creating documents, analyzing data using Excel, and troubleshooting common computer problems will enhance skill retention and understanding. • **Project-Based Learning**: Assign group projects where students must apply the tools learned (e.g., Excel, Word, PowerPoint) to solve real-world agricultural problems. For instance, they can analyze agricultural data and present their findings. This promotes collaboration, critical thinking, and problem-solving. • **Blended Learning**: Combine in-person teaching with online resources and platforms. Use e-learning tools, such as video tutorials, quizzes, and discussion forums, to provide additional support outside class. Students can learn at their own pace while reinforcing what they learn in the classroom. • **Discussion and Peer Learning**: Incorporate group discussions and peer review activities. For example, after a practical session, encourage students to present their solutions or projects to the class and give each other feedback. This fosters engagement, critical thinking, and communication skills.

Student Workload (SWL)			
Structured SWL (h/sem)	47	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	28	**Unstructured SWL (h/w)**	1.87
Total SWL (h/sem)	75		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	1,2, 3	LO #1
	Assignments	2	10% (10)	5 and 11	LO #1, #2
	Projects / Lab.	2	10% (10)	6 and 12	LO #1, #2

	Report	1	10% (10)	14	LO #3, #4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1, #2
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Lab 1: **Introduction to Computer**: Concepts of Hardware and Software with their components; Concept of Computing, Data, and Information; Applications of Information Electronics and Communication Technology (IECT); Connecting input-output devices and peripherals to CPU.
Week 2	Lab 2: **Computer Components**: Computer Portions, Hardware Parts, Memory Types, Basic CPU Components, Computer Ports, Personal Computer, Personal Computer (Features and Types).
Week 3	Lab 3: **Operating System and Graphical User Interface GUI**: Operating System, Basics of Common Operating Systems, The User Interface, Using Mouse Techniques; Use of Common icons, Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts.
Week 4	Lab 4: **Word Processing**: Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling: Spell check, language setting, and thesaurus.
Week 5	Lab 5: **Editing Documents**: Editing an agricultural project idea using Word, using all the program's commands and instructions, and with practical application.
Week 6	Lab 6: **Getting Started with Excel**: Formatting a Worksheet, Working with Formulas and Functions, Working with Charts.
Week 7	**Midterm Exam**
Week 8	Lab 8: **Spread Sheet**: Basics of Spreadsheet; Manipulation of cells, Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.
Week 9	Lab 9: **Excel Program in Statistical Analysis:** Collecting Agricultural Data, Organizing Data in Excel, Basic Functions in Statistical Analysis, Creating Graphs and Charts, How to Read Statistical Results, Understandably Presenting Results.
Week 10	Lab 10: Practical Example of Analyzing Agricultural Data Using Excel.
Week 11	Lab 11: **Presentation Software**: Basics of presentation software; Creating Presentation; Preparation and Presentation of Slides; Slide Show; Taking printouts of presentation/ handouts.
Week 12	Lab 12: Create a presentation of an agricultural project idea using PowerPoint, all the program's commands and instructions, and with practical application.
Week 13	Lab 13: **Introduction to Internet and web browsers**: Basic computer networks, LAN, WAN, Concept of Internet and its applications, connecting to the Internet, world wide web, web browsing software, search engines, understanding URL, Domain name, IP Address.
Week 14	Lab 14: **Communication and E-mails**: Basics of electronic mail, getting an e-mail account, sending and receiving e-mails, accessing sent e-mails, using e-mails, and document collaboration.
Week 15	Lab 15: **Computer Troubleshooting**: Identifying and solving common hardware and software problems that computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving issues.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Computer Fundamentals and Office Applications, Ministry of	Yes

	Higher Education and Scientific Research 2013.	
Recommended Texts	N.A.	-
Websites	▪ https://www.dawliatraining.com/training-packages-single/1025 ▪ https://edu.gcfglobal.org/en/tr_ar-misc/what-is-a-computer-/1/ https://www.edraak.org/programs/course-v1:Edraak+ICDL1+2019SP/	

Grading Scheme				
Group	**Grade**	**Appreciation**	**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	**Middle**	60 - 69	Fair but with major shortcomings
	E - Sufficient	**Acceptable**	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	**Failed(In progress)**	(45-49)	More work is required but credit awarded
	F – Fail	**Failed**	(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	**ENGINEERING DRAWING**	**Module Delivery**		
Module Type	Support or related learning activity	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**		
Module Code	END1030-AM			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	**UGI**	**Semester of Delivery**		1
Administering Department	AGME1986	**College**	**AGFO1964**	
Module Leader	YOUSIF YAKOUB HILAL	**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**		PhD
Module Tutor	Hussain abed hammod	**e-mail**	hu_hammod@uomosul.edu.iq	
Peer Reviewer Name	N.A.	**e-mail**	N.A.	
Scientific Committee Approval Date	1/9/2025	**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. To develop the Agricultural student's ability to imagine projections and their models. 2. Exercising hand movement in engineering drawing to complete quick sketches. 3. This course deals with the theory of Orthographic Projection and the basic subject of isometric drawing. 4. To teach students engineering drawings using the AutoCAD program, which includes both theoretical lectures and labs.
Module Learning Outcomes	**LO#1:** Absorbing all the engineering characteristics of an object or a product in a clear manner. **LO#2:** Know the tools used in engineering drawing and how to use them correctly, **LO#3:** Understand and apply the basics of engineering processes. **LO#4:** Conclude projections and isometrics for each geometric figure and recognize its dimensions.
Indicative Contents	Indicative content includes the following. **Part A: Engineering Drawing Basics and Tools** • Introduction and Definition of Engineering Drawing • Engineering Drawing Tools and Their Uses •

	Explanation of Sheet Dimensions, Information Table, and Letter Writing. • Types of Lines and Basic Geometric Operations: Introduction to different types of lines (continuous, dashed, center lines) and their specific uses in drawings. Performing basic geometric operations such as measuring, dividing, and marking. • Arcs and Tangents: Defining and drawing arcs and tangents in engineering drawings, including field applications. [20 hrs.] • Classwork: Practical Applications of Previous Topics Hands-on practice applying learned techniques (lines, arcs, sheet setup) [4 hrs.] **Part B: Engineering Projections and Operations:** • Engineering Projections: Understanding projection techniques, especially orthographic projections. Learning how to project an object's views from different angles. • Mid-term Exam: Assessment covering the topics learned in Part A and initial projection skills. • Deducing the Third Projection Based on Two Projections: Skill development in visualizing and drawing the third projection when given two views of an object. [12 hrs.] • Classwork: Practical Applications of Deducing the Third Projection: Applying concepts learned in projection drawing. [4 hrs.] **Part C: Advanced Drawing Techniques and CAD Software** • Drawing Engineering Perspective (Isometric): Introduction to isometric drawing techniques. Drawing objects in isometric view for accurate 3D representation. • Review of Isometric Engineering Perspective: Revisiting the principles of isometric drawing and its application in technical drawings. Understanding the connection between isometric drawings and orthographic projections. [8 hrs.] • Introduction to Computer-Aided Drawing (CAD): Overview of computer-aided drawing, emphasizing its importance in modern engineering. Introduction to software tools like AutoCAD and SolidWorks, including their hardware components and versions. • AutoCAD Interface and Main Commands: Learning the basic interface of AutoCAD, including the drawing and modification toolbar. Explanation of key commands and their uses. • Drawing Simple Geometric Shapes Using AutoCAD: Hands-on practice with AutoCAD to draw basic geometric shapes. [12 hrs] Total hrs = 63 = SSWL - (Exam hrs) = 63 - 3 = 60 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	**1. Lecture-based Teaching:** • Explaining concepts and demonstrating tools, techniques, and software in real time allows students to observe the process before applying it. **2. Hands-on Practice:** • **Lab Sessions:** Providing practical sessions where students use drawing tools and software like AutoCAD or SolidWorks to develop their skills. • **Guided Exercises:** Offering step-by-step instructions to complete tasks such as drawing isometric views or projections. **3. Interactive Class Discussions:** • **Question and Answer Sessions:** Actively engage students in discussions where they can ask questions and clarify doubts about topics like projection techniques or CAD tools. **4. Assessment and Evaluation:** • **Project-based Assessments:** Assigning projects requiring students to apply the concepts they've learned, like creating detailed engineering drawings using manual and software-based techniques.
Student Workload (SWL)	

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	5.8
Total SWL (h/sem)	**150**		

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	1	10% (10)	7	
	Assignments	10	20% (20)	3 to 14	
	Projects / Lab.	1	5% (5)	Continuous	All
	Reports	1	5% (5)	----	----------
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1, #2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly, Syllabus)	
	Material Covered
Week 1	Introduction and definition of engineering drawing
Week 2	Engineering drawing tools and their uses, knowing types of pens used, Drawing board layout.
Week 3	Explanation of sheet dimensions, information table, and letter writing
Week 4	Types of lines, their applications, and basic geometric operations
Week 5	Arcs and tangents
Week 6	Classwork: Practical applications of previous topics
Week 7	Engineering projections
Week 8	Mid-term Exam
Week 9	Deducing the third projection based on the other two
Week 10	Classwork: Practical applications of deducing the third projection
Week 11	Drawing engineering perspective (isometric)
Week 12	Review of isometric engineering perspective and its relation to deducing the third projection
Week 13	Introduction to the importance of computer-aided drawing and the types of software used for engineering drawing, such as AutoCAD and SolidWorks, including their components and versions.
Week 14	Introduction to the AutoCAD interface and main commands: (Drawing toolbar and its uses, modification toolbar and its uses).
Week 15	Drawing simple geometric shapes using AutoCAD.
Week 16	**Preparatory week before the Final Exam**

Delivery Plan (Weekly Practical Syllabus)	
	Material Covered
Week 1	Familiarization with different drawing tools, including pens, and setting up the drawing

	board layout.
Week 2	Practice drawing sheets according to standard dimensions, setting up an information table, and writing technical letters.
Week 3	Identify different line types and execute basic geometric operations (e.g., drawing straight lines, circles).
Week 4	Practice drawing arcs and tangents using drawing tools .
Week 5	Consolidate skills by applying learned techniques (lines, arcs, tangents) in a project or assignment.
Week 6	Start drawing orthographic projections of simple objects, projecting different views.
Week 7	Assessment based on skills acquired in previous weeks, focusing on projections, lines, and geometric operations.
Week 8	Visualize and draw the third projection based on two given views.
Week 9	Work on exercises that reinforce the ability to deduce the third projection, applying this to different objects.
Week 10	Learn to draw isometric projections, emphasizing proper axis alignment and scaling.
Week 11	Review and reinforce isometric drawing techniques and their connection to orthographic projections.
Week 12	Introduction to AutoCAD and SolidWorks; learning the basic interface, including drawing and modification toolbars.
Week 13	Practice using the AutoCAD interface, focusing on drawing commands (e.g., lines, circles) and modification commands (e.g., trim, extend).
Week 14	Create simple geometric drawings using AutoCAD, including 2D shapes like squares, rectangles, and circles.
Week 15	Work on exercises that reinforce the ability to Create simple geometric drawings using AutoCAD.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	الرسم الهندسي لطلبة كليات الزراعة، د. ناطق صبري حسن، 1990	Yes
Recommended Texts	Textbook of Engineering Drawing k. Venkata Reddy, 2008	No
Websites	-	

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 is 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.

MODULE DESCRIPTION FORM

Module Information

Module Title	**ENGLISH LANGUAGE 1**	**Module Delivery**	
Module Type	**Basic learning activities**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**UOM1021-AM**		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGI	**Semester of Delivery**	1
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/9/2025	**Version Number**	1.0

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1- To going on studying the English language in special the scientific language. 2- Widening student mind about scientific and literature English vocabularies. 3- Helping the students to think and write in English the scientific reports.
Module Learning Outcomes LOs	The student should be able to: LO#1: Gets to know simple sentences, Present Simple, Past simple and Future. LO #2: Gets to know formation of negative sentences and questions in the present and past tense. LO#3: Expresses in writing the active and passive forms in writing scientific reports. LO#4: He chooses appropriate punctuation marks when writing scientific texts in his specialty.
Indicative Contents	Indicative content includes the following. Theoretical Enriching the student with knowledge related to the parts and types of

	speech, parsing marks and their tools, knowledge of punctuation tools, and choosing the appropriate style and verbs for preparing scientific reports in the specialty in a correct scientific manner. Total hrs = 32 = SSWL - (Exam hrs) = 32-2= 30 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	**50**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	20% (10)	2 and 13	LO#1 and LO#31
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	A Paragraph on agricultural engineering sciences

Week 2	A Paragraph on agricultural engineering sciences
Week 3	Present Simple: affirmative sentences
Week 4	Present Simple: 3rd person singular (‘s)
Week 5	Present Simple: negation and yes\no question
Week 6	Present Simple: wh-questions
Week 7	Mid-term Exam
Week 8	Review the Present Simple
Week 9	Past Simple: affirmative sentences
Week 10	Past simple: irregular verbs inflections
Week 11	Past Simple: negation and yes\no question
Week 12	Past Simple: wh-questions
Week 13	Synonyms and Antonyms
Week 14	Reviewing the passage, Present and Past Tenses, and Synonyms + Antonyms
Week 15	Writing in the active and passive voice in scientific reports
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	New Headway Plus/Beginner part1	Yes
Recommended Texts	Rapid Review of English Grammar 2020−2021	No
Websites		

Grading Scheme

Group	**Grade**	**Appreciation**	**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	**middle**	60 - 69	Fair but with major shortcomings
	E - Sufficient	**acceptable**	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

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	**AGRICULTRAL ENGINEERING TECHNIQUES TRANSFER**			**Module Delivery**	
Module Type	**Core learning activity**			☒**Theory** ☐ **Lecture** ☐ **Lab** ☐**Tutorial** ☒**Practical** ☐**Seminar**	
Module Code	**AET1040-AM**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI	**Semester of Delivery**		1	
Administering Department	AGME1986	**College**	**AGFO1964**		
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	N.A.	**e-mail**	N.A.		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/9/2025	**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- Developing farm management among rural individuals 2- Developing a sense of responsibility towards the family and the rural community 3- Promoting positive attitudes of rural people towards agriculture, love of work, and use of modern technologies 4- Improving the marketing aspects of rural producers using modern technologies.
Module Learning Outcomes LOs	The student should be able to: LO#1: Know the general concepts of transferring agricultural engineering technologies. LO#2: Determines appropriate means to mobilize farmers in their love of work, development, and selection of agricultural engineering technologies. LO#3: Suggest appropriate technologies for agricultural engineering projects. LO#4: Bear ethical responsibilities in the areas of transferring agricultural engineering technologies.
Indicative Contents	Indicative content includes the following. Theoretical Developing the correct management skills to transfer and adopt agricultural technologies in the precise specialty and identifying appropriate means to guide the rural community to adopt modern and specialized technologies in the field of agricultural engineering, as well as identifying the types of technologies and how to employ them to develop work in the field of

	agricultural engineering sciences and methods of transferring them to society to reach high production and quality. Practical application The most important modern technologies in the field of agricultural engineering will be addressed, the most important reasons for their lack of spread will be discussed, and solutions will be put forward for adopting these technologies. Total hrs = 63 = SSWL - (Exam hrs) = 63-3= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	Projects/ Practical	3	10% (10)	4, 8 and 12	All
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to agricultural extension and technology transfer
Week 2	Elements of technology transfer and adoption process
Week 3	Factors that determine adoption rates and adopter categories

Week 4	Opinion leaders and agents of change
Week 5	Analyze farmers' needs
Week 6	Guidance methods (training and education methods)(
Week 7	Mid-term Exam
Week 8	Transfer of agricultural technologies: concept and methods
Week 9	Challenges facing the transfer of agricultural technologies
Week 10	Using communication and media in agricultural extension
Week 11	Innovating and adapting to modern agricultural techniques
Week 12	Evaluation and follow-up of extension and technology transfer programs
Week 13	Cooperation between agricultural extension workers and the local community
Week 14	Applications of smart technologies in agricultural extension
Week 15	Tools for measuring effectiveness in technology transfer and extension
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Practical Syllabus)

Reviewing modern technology and discussing the most important means of transferring and adopting it by farmers, as well as the obstacles and treatments that ensure adoption:

	Material Covered
Week 1	**Vertical Farming**: A technique that uses vertical spaces to grow crops, increasing productivity and reducing land use.
Week 2	**Smart Irrigation**: Advanced irrigation systems that rely on sensors to monitor soil moisture and distribute water efficiently.
Week 3	**Precision Agriculture**: The use of technology to analyze agricultural data and improve crop management.
Week 4	**Greenhouses**: Creating protected environments to enhance crop growth and shield them from harsh weather conditions.
Week 5	**Hydroponics**: Growing plants in a water solution instead of soil, which reduces water use.
Week 6	**Genetic Engineering**: The use of genetic engineering to develop disease-resistant and drought-tolerant crops.
Week 7	**Mobile Applications**: Tools that help farmers manage their farms, such as tracking crops and weather.
Week 8	**Agricultural Robots**: The use of robots to perform tasks such as planting and harvesting..
Week 9	**Remote Sensing Technology**: Used to monitor crop health and track changes in the agricultural environment..
Week 10	**Biological Control**: The use of living organisms to control pests and diseases instead of chemical pesticides..
Week 11	**Artificial Intelligence (AI)**: The application of AI technologies to analyze agricultural data and improve production..
Week 12	**Nanotechnology**: The use of nanomaterials to improve soil quality and enhance fertilizer effectiveness..
Week 13	**Geographic Information Systems (GIS)**: Used to analyze geographic data and improve agricultural land planning.
Week 14	**Organic Farming**: Agricultural techniques that rely on the use of natural materials instead of chemicals..
Week 15	**Drones**: Used for monitoring crops, collecting data, and spraying pesticides.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	N.A.	-
Recommended Texts	- Al-Tanoubi, Muhammad Muhammad Omar (d) (1998), Agricultural Guidance Reference, Arab Renaissance House for Printing and Publishing, Beirut. - Ghadeeb, Ali Ahmed. The size and importance of the problems of transferring agricultural technologies from the point of view of agricultural employees and farmers of irrigated areas in Nineveh Governorate. Doctoral thesis, College of Agriculture and Forestry - University of Mosul, 2006 - Al-Jubouri, Khattab Abdullah Muhammad (2006), The adoption rate of yellow maize farmers for modern agricultural technologies and its relationship to some variables in the Hawija District in Kirkuk Governorate, Master's thesis, College of Agriculture and Forestry, University of Mosul	Yes
Websites		

Grading Scheme				
Group	**Grade**	**Appreciation**	**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	**middle**	60 - 69	Fair but with major shortcomings
	E - Sufficient	**acceptable**	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

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	**Mathematics**	**Module Delivery**		
Module Type	**Support or related learning activity**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**		
Module Code	**MAT1010-AM**			
ECTS Credits	**7**			
SWL (hr/sem)	**175**			
Module Level	UGI	**Semester of Delivery**		**1**
Administering Department	AGME1986	**College**	**AGFO1964**	
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Shamil Mohammed Saleh Hassan	**e-mail**	Eng.sh.hassn@uomosul.edu.iq	
Peer Reviewer Name	Dr. Mohammed Hussin Ahmed Al-Mola	**e-mail**	dr.mohammedalmola@uomosul.edu.iq	
Scientific Committee Approval Date	01/09/2025	**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	- To enable students to acquire proficiency in performing differential calculus operations. - In the field of calculus, the fundamental methodologies used to examine and describe functions are limits, derivatives, and integrals. - Students will use these tools to address application problems across a wide range of disciplines, including physics, biology, business, and economics.
Module Learning Outcomes	LO#1: The student uses understanding and of the basic concepts of engineering mathematics. LO#2: The student can develop his mental abilities when solving exercises. LO#3: The student can make connections with information mental abilities when solving exercises to reach a solution and benefit from it in other transactions.
Indicative Contents	Indicative content includes the following. Theory and Tutorial: The focus will be on logarithms - the natural logarithm [SSWL=4 hrs], and applications and solutions will be taken for problems in the exponential function - the

	trigonometric function - trigonometric facts - complex angles [SSWL=4 hrs], and then the focus will be on differential calculus - derivative laws - derivatives from higher orders such as the equation of the straight line (tangent and perpendicular) and the derivative of trigonometric functions and the derivative of exponential functions - derivatives of logarithmic functions with applications on the derivative (velocity and acceleration) and applications on the derivative (points of inflection) and in hours [SSWL=24 hrs], then moving on to integration calculations - integration laws - definite integration and focusing on integration methods - integration by algebraic substitution - integration by parts and integration methods - integration by partial fractions and in hours [SSWL=12 hrs], then the focus will be on important applied aspects such as finding the area under the curve - the approximate method - by integration calculations and finding the area between two curves With applications of volume of a rotating body and numerical integration Trapezoidal rule and number of hours [SSWL=16 hrs]. Total hrs = 63 = SSWL - (Exam hrs) = 63 - 3 = 60 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	Quizzes, Homework, Discussion and solving exercises within the lecture, student interaction

Student Workload (SWL)			
Structured SWL (h/sem)	**63**	**Structured SWL (h/w)**	**4**
Unstructured SWL (h/sem)	**112**	**Unstructured SWL (h/w)**	**2**
Total SWL (h/sem)	**175**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	**2**	**10% (10)**	**6 and 9**	**LO #1, #2**
	Assignments	**2**	**10% (10)**	**3 and 10**	**All**
	Tutorial	**1**	**10% (10)**	**Continuous**	**All**
	Report	**1**	**10% (10)**	**12**	**All**
Summative assessment	**Midterm Exam**	**2hr**	**10% (10)**	**7**	**All**
	Final Exam	**3hr**	**50% (50)**	**16**	**All**
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Theory Syllabus)	
	Material Covered
Week 1	Logarithms and natural logarithms
Week 2	The exponential function - the trigonometric function - trigonometric facts compound angles
Week 3	Differential Calculus - Laws of Derivatives - Higher Order Derivatives

Week 4	Equation of a straight line (tangent and normal)
Week 5	Derivative of trigonometric functions
Week 6	Derivative of exponential functions - derivative of logarithmic functions
Week 7	Midterm exam
Week 8	Applications on the derivative (speed and acceleration)
Week 9	Applications to the derivative (inflection points)
Week 10	Introduction to integration calculations - laws of integration - definite integration
Week 11	Integration methods - integration by algebraic substitution - integration by Part.
Week 12	Integration methods - integration with partial fractions
Week 13	Finding the area under the curve - the approximate method - using integration Calculations
Week 14	Find the area under the curve
Week 15	Volume of solid revolution and Numerical integration
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Tutorial Syllabus)	
	Material Covered
Week 1	Solving exercises and mathematical applications in logarithms and natural logarithms
Week 2	Solving exercises and mathematical applications in the exponential function - the trigonometric function - trigonometric facts compound angles
Week 3	Solving exercises and mathematical applications in differential Calculus - Laws of Derivatives - Higher Order Derivatives
Week 4	Solving exercises and mathematical applications in equation of a straight line (tangent and normal)
Week 5	Solving exercises and mathematical applications in derivative of trigonometric functions
Week 6	Solving exercises and mathematical applications in derivative of exponential functions - derivative of logarithmic functions
Week 7	Midterm exam
Week 8	Solving exercises and mathematical applications in applications on the derivative (speed and acceleration)
Week 9	Solving exercises and mathematical applications in applications to the derivative (inflection points)
Week 10	Introduction to integration calculations - laws of integration - definite integration
Week 11	Solving exercises and mathematical applications in integration methods - integration by algebraic substitution - integration by Part.
Week 12	Solving exercises and mathematical applications in integration methods - integration with partial fractions
Week 13	Solving exercises and mathematical applications in finding the area under the curve - the approximate method - using integration Calculations
Week 14	Solving exercises and mathematical applications in find the area under the curve
Week 15	Solving exercises and mathematical applications in volume of solid revolution and Numerical integration (Trapezoidal rule)

Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Mathematics for Machine Learning author M. P. Deisenroth, A. A. Faisal and C. S. Ong	No
Recommended Texts	Mathematical Handbook of Formulas and Table 1300 Math Formulas	No
Websites	https://mathblog.com/mathematics-books/	

Grading Scheme				
Group	**Grade**	**Appreciation**	**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	**middle**	**60 - 69**	**Fair but with major shortcomings**
	E - Sufficient	**acceptable**	**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**

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	Integrated pest management			**Module Delivery**	
Module Type	**Core learning activity**			☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	IPM2110-AM				
ECTS Credits	5				
SWL (hr/sem)	**125**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	assistant professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	1/9/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	BSS1050-AM	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	• Introducing students to the common types of pest and their effect on crops, and explaining their transmission methods and infection mechanisms. • Provide an understanding of the basic biology and ecology of pest, with an emphasis on the impact of environmental factors on their spread and development. • Students learned the skills of diagnosing caecilian infections and analyzing the factors affecting them, using laboratory tests and field observation. • Study means and methods of prevention and control of pest , including the use of pesticides and advanced agricultural techniques such as biological control. • Analyze the economic and environmental impacts ofpest, and study sustainable and

	preventive management methods to reduce their impact on crops and the environment. • Enhancing students' skills in planning and implementing field experiments and scientific studies to effectively treat and control caecilian infestations. • Encouraging students to research and interact with modern literature and research in the field ofpest, and to contribute to developing innovative solutions to meet current challenges in this field
Module Learning Outcomes	LO#1 :Understand the basic concepts of integrated management and identify examples of integrated management patterns. LO#2: Identify the types of pests LO#3:Identify the critical economic limit and the factors affecting it LO#4:Designing programs to manage major pests in our environment
Indicative Contents	1:The student is introduced to the concept of the history of Integrated pest management 2:The student explains the importance of plant pest 3:Gives examples of losses and damage caused by plant pest 4: Learn about the concept of critical economic limit and the factors affecting it 5: Learn examples of global integrated pest management programs 6: Learn examples of integrated management programs for local pests

Learning and Teaching Strategies	
LO#2:The student explains the importance of plant diseases Discuss the Strategies	- Brainstorming • Teamwork • Discussion • Discovery learning • Problem solving or problem-based learning • E-Learning • Practical field training • Think, discuss, share

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Knows the pest, its divisions, and its harms
Week 2	knows a historical overview of agricultural pests
Week 3	Number of survey methods and factors affecting the samples
Week 4	Write a report on injury estimation methods
Week 5	Write a report on agricultural pest infections
Week 6	Write a report on agricultural pest infections
Week 7	Knows the factors that must be taken into account when determining the critical economic limit
Week 8	Exam
Week 9	An Introduction to the Concept of Integrated Pest Management (IPM) for Plant Diseases.
Week 10	Methods of Resistance to Pathogens (Natural Resistance).
Week 11	The Concept of Biological (Biological) Control, Its Key Features, the Main Biological Factors in Control, and the Conditions for a Biological Agent.
Week 12	Physical Control.
Week 13	Chemical Control.
Week 14	Exam.
Week 15	Agricultural Applications in Integrated Management.
Week 16	Application of an Integrated Management Program for a Significant Disease Affecting Wheat and Barley (such as Yellow Rust) or Verticillium Wilt in Olive Trees..

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Lab 1: Discuss the different definitions of management.
Week 2	Lab 2: Note the different manifestations of economic losses and damages of various pests in the field.
Week 3	Lab 3: lObserving the various manifestations of economic losses and damages of various pests in the warehouse
Week 4	Lab 4: Conducting a survey to determine the rates and levels of infection in the field in vegetable fields and seasonal crops
Week 5	Lab 5: Conducting a survey to determine the rates and levels of infection in the field in orchard fields.
Week 6	Lab 6: Visit different stores and determine the infection rates and the nature of the damage therein.
Week 7	Lab 7: Discussing reports written in the past weeks on the distribution of infections and their rates
Week 8	Lab 8:EXAM
WEEK 9	Lab 9: Discussing reports written in the past weeks on the distribution of infections and their rates
Week 10	Lab 10:Learn about some practical procedures within biological control
Week 11	Lab 11: Learn some practical procedures for chemical pest control
Week 12	Lab 12: View global programs in integrated pest management worldwide
Week 13	Lab 13: Learn about global programs to combat globally prevalent diseases.
Week 14	Lab14: Programming the available capabilities to build local insect pest control programs
Week 15	Lab 15: Programming the available capabilities to build local pest control programs
Week 16	Exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Integrated pest management	Yes
Recommended Texts	lectures.	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

Module Information					
Module Title	**DESIGN AND ANALYSIS OF EXPERIMENTS**			**Module Delivery**	
Module Type	**Core learning activity**			☒Theory ☐lecture ☐lab ☐Tutorial ☒Practical ☐Seminar	
Module Code	DAE2160-AM				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D	
Module Tutor	N.A.		**e-mail**	e-mail	
Peer Reviewer Name	N.A.		**e-mail**	E-mail	
Scientific Committee Approval Date	1/9/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	AGS1060-AM	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Enable the student to learn how to design experiments in the agricultural field in general and animal production in particular and understand and apply all laws related to analysis processes and testing results and choose the appropriate design for the experiment, how to distribute the parameters to the experimental units, and record the observations to be able to collect data, classify and analyze it, conduct a significance test.
Module Learning Outcomes	The student should be able to: **LO#1: Learn and comment on basic statistical topics and analysis** **LO#2: Statistical package learns data entry .** **LO#3: Performs statistical analyzes and interprets the results** **LO#4: Student Performs statistical analyses and comments**

Indicative Contents	Indicative content includes the following. Theoretical Enabling the student to learn how to read practical research data and analyze it well, and to understand how electronic statistical analysis programs such as SAS and SPSS work, Total hrs = 63= SSWL - (Exam hrs) = 63-3= 60 (Time table 4hrs x 15 weeks)

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

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**125**		

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Some statistical measures
Week 2	Chapter One (Introduction)
Week 3	Completely randomized design

Week 4	Comparing between averages
Week 5	Comparing between averages
Week 6	Some of Mistakes that Researcher may be do it in experiments.
Week 7	Randomized complete block design
Week 8	Mid-Term Exam.
Week 9	Randomized complete block design (relative efficiency comparing with Complete Randomize Design), estimating missing observation.
Week 10	Latin square design
Week 11	Latin square design (relative efficiency comparing with another two Designs [RCBD, and CRD])
Week 12	Latin square design (estimating the missing observation)
Week 13	Factorial experiments
Week 14	Factorial experiments
Week 15	Scientific visit
Week 16	Term Exams .

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Measures of concentration and measures of dispersion
Week 2	Completely randomized design (C.R.D.) solving method
Week 3	Completely randomized design (C.R.D.) some indirect questions and give homewok
Week 4	Dunnett test, least significant difference l.s.d.
Week 5	Duncan Multiple Range Test
Week 6	Some of General Mistakes that may be the researcher do it.
Week 7	completely randomized block design direct
Week8	completely randomized block design in direct
Week9	Relative efficiency and missing observations in a completely randomized block design
Week10	Direct questions in Latin square design
Week11	Indirect questions in the Latin square design
Week12	Relative efficiency of the Latin square design
Week13	missing observations in a Latin square design
Week14	Factorial experiments
Week15	Factorial experiments
Week16	Final practical test

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Design and Analysis of Agricultural Experiments Authored by: Dr. Khasha' Al-Rawi and Dr. Abdulaziz Muhammad	Yes
Recommended Texts	Some lectures published on the college website	Yes
Websites	Websites specialized in Statistics and Data Analysis .	

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	**FOOD TECHNOLOGIES and HEALTH AGRICULTRAL PRODUCTS**			**Module Delivery**	
Module Type	**Core learning activity**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	FTP2150-AM				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGII	**Semester of Delivery**		3	
Administering Department	AGME1986	**College**	**AGFO1964**		
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	N.A.	**e-mail**	N.A.		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/9/2025	**Version Number**	1.0		

Relation with other Modules			
Prerequisite module	BSS1050-AM	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- **To provide students with the fundamental concepts of food technology and its role in reducing agricultural losses and achieving food security.** 2- **To enable students to understand the impact of preservation and processing techniques on the quality and safety of agricultural and animal products within the framework of good agricultural practices.** 3- **To introduce students to the factors affecting the health and safety of food products, including genetic modification, pesticide residues, and relevant regulations.** 4- **To raise awareness of the importance of sustainable development in managing natural resources, protecting the environment, and ensuring the continuity of the food supply chain.**
Module Learning Outcomes LOs	**By the end of this course, the student will be able to:** **LO#1:** Explain the fundamental concepts of food technology, including food processing and preservation methods, and their role in achieving food security and sustainable development.

	LO#2: Evaluate the quality of agricultural and animal products, analyze sources of contamination, and propose solutions within the framework of good agricultural practices (GAP). **LO#3:** Distinguish between food safety regulations and standards, and apply them in analyzing the production chain to ensure consumer safety. **LO#4:** Demonstrate ethical and professional responsibility toward community health and environmental protection through the adoption of sustainable and safe food production practices.
Indicative Contents	The guidance content includes the following: **Guidance Content (Theoretical):** Introduce students to the fundamentals of food technology and its role in food security, explain how processing and preservation techniques affect product quality and safety, and reinforce concepts of sustainability and health regulations. **Guidance Content (Practical):** Simple applications of food processing techniques, with analysis of barriers to their adoption in local communities and proposing feasible solutions. Total hrs = 63 = SSWL - (Exam hrs) = 63-3= 60 (Time table4 hrs x 15 weeks)

Learning and Teaching Strategies

Strategies	1- **Interactive Lecture and Brainstorming** 2- **Dialogue and Discussion** 3- **Case Study** 4- **In-Class Experiments** 5- **Mini Field Visits (Real or Virtual)**

Student Workload (SWL)

الحمل الدراسي المنتظم للطالب خلال الفصل	63	الحمل الدراسي المنتظم للطالب أسبوعيا	4
الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	Projects/ Practical	3	10% (10)	4, 8 and 12	All

	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Food Technology and its objectives. The role of food processing in reducing post-harvest losses and achieving food security. Concepts of Sustainable Development in the agricultural and food sectors.
Week 2	Traditional and modern food preservation methods (drying, canning, refrigeration, smart packaging). Impact of preservation techniques on the sustainability of natural resources and product quality.
Week 3	Food processing technologies for field crops (grains, legumes) with a focus on sustainability and loss reduction. Extraction of vegetable oils and techniques for improving production efficiency.
Week 4	Processing horticultural products (fruits and vegetables): canning, juices, jams. The relationship between horticultural product quality and food security.
Week 5	Dairy and meat technology: preservation, processing, sustainable practices. Management of animal industrial waste according to environmental sustainability standards.
Week 6	Modern technologies in food industries (smart packaging, functional foods). The impact of the food industry on Sustainable Development Goals (SDGs).
Week 7	Mid-term Exam
Week 8	Introduction to the health and safety of food products (plant and animal origin). Regulations and standards to ensure food safety.
Week 9	Safety of animal products (dairy, meat, eggs): sources of contamination, zoonotic diseases. Management of animal supply chains within the framework of environmental and health sustainability.
Week 10	Safety of plant products: chemical and biological contamination (pesticides, fungi, mycotoxins). Good Agricultural Practices (GAP) to achieve sustainable quality and safety of agricultural products.
Week 11	Genetic modification (GMOs) in agricultural crops: objectives, risks, opportunities. The relationship between biotechnology and achieving food security within sustainability frameworks.
Week 12	Quality management of horticultural products from farm to consumer. Applications of modern technologies in monitoring the health of plant products.
Week 13	The concept of agricultural protection as an entry point to ensure the quality and safety of agricultural products. Impact of Integrated Pest Management (IPM) on reducing pesticide residues in products. How sound preventive practices help maintain product characteristics (color, texture, flavor, and absence of contaminants).
Week 14	Types of agricultural pesticides and their direct effects on product quality. Methods to reduce pesticide residues in food products (washing, thermal treatments,

	biotechnological techniques). Regulations and controls to limit pesticide residues in foods (standards, Good Agricultural Practices - GAP). The relationship between environmental sustainability and food product safety in pesticide use.
Week 15	Managing natural resources (water, soil, energy) to ensure healthy and safe agricultural products. The impact of sustainability in agricultural practices on food product health (low-impact technologies). Sustainable food security: the relationship between (product health – environmental protection – resource conservation). Practical examples (International projects, case studies from Iraq).
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Practical Syllabus)

	Material Covered
Week 1	Introductory tour of the food laboratory (or theoretical explanation supported by images/videos) + discussion of basic practical skills
Week 2	Food preservation experiment using drying (with local vegetables or fruits)
Week 3	Preservation using salt or sugar (making jam or pickles)
Week 4	Oil extraction from sesame seeds (preparing tahini)
Week 5	Sensory evaluation of natural juice or preserved horticultural product
Week 6	Inspection of preserved meat or dairy products (sensory analysis + spoilage signs)
Week 7	Hands-on application: reading nutrition labels and health data of canned food products
Week 8	Visual inspection and analysis of contamination residues in a plant-based product (comparing market samples)
Week 9	Case study on a genetically modified product (video presentation or booklet + scientific discussion)
Week 10	Educational field visit to a food or dairy factory
Week 11	Theoretical and practical classification of spoilage types in plant and animal food products
Week 12	Interactive assessment: linking preservation methods to environmental impact (sustainability perspective)
Week 13	Practical model of quality control in the production chain (from farm to consumer)
Week 14	Student mini-project presentations (e.g., idea for a safe food product + packaging design)
Week 15	Final practical exam + self-assessment of the practical course

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	N.A.	-
Recommended Texts	- *Principles of Food Industries* - Food Safety – Printed Lectures	Yes
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.

Course Description Form

Course information					
Module Title	**agricultural production technology**			**Module Delivery**	
Module Type	**Core learning activity**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	APT2140-AM				
ECTS Credits	**5**				
SWL (hr / sem)	**125**				
Module Level	UGII	**Semester of Delivery**		3	
Administration Department	AGME1986	**College**	**AGFO1964**		
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	NA	**e-mail**	NA		
Peer Reviewer Name	NA	**e-mail**	NA		
Scientific Committee Approval Date	1/9/2025	**Version Number**	1.0		

with other subjects Relationship			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Course objectives, learning outcomes, and guiding content	
Course objectives	1- Introducing the basic concepts and principles underlying agricultural animal husbandry techniques and methods to improve productivity, and instilling values of ethical and safe handling of animals to ensure the safety and health of . consumers 2. Introduce students to the types of farm animals and their classification. Enhance students' skills in field operations related to farm animals and problem-solving in the field of animal production. 3-pes of Providing the student with basic knowledge in horticulture and ty horticultural plants, including fruits, vegetables, and ornamental plants, as well as soil preparation, modern irrigation techniques, and pest and disease control, .enabling him to understand all stages of production 4-plant nutrition and focuses on modern techniques such It includes the basics of harvest operations and marketing, -as hydroponics, protected agriculture, post .giving the student a comprehensive view of the production process

Learning outcomes for the subject	: be able to The student will LO#1 Identify the types of economic animals and their production stages and cycles, and : . develop and apply the cognitive and emotional abilities related to animal production LO#2 Acquire practical skills in establishing and managing fields, caring for animals :, and handling production records, using modern technologies. LO#3 Identify the basics of plant production, starting with soil characteristics and : progressing to mastering methods of propagation and plant plant nutrition, and .care LO#4 harvest -post Gain skills for production from farm to market and understand : . and marketing processes to ensure crop quality and economic value
Guidance contents	. : The guidance content includes theoretical to the economic importance of livestock, animal species and Introducing students classification, and field, administrative, and technical operations on animal farms, agricultural engineers capable of dealing with the aim of preparing specialized . with animal production problems using modern technologies It provides the student with a comprehensive view of all stages of plant nt production, from soil preparation, irrigation techniques, modern agriculture, pla plant management. Harvest-propagation, plant care, and post

Learning and teaching strategies	
Strategies	,Interactive lecture .1brainstorming Dialogue and .2discussion Case .3study Classroom .4experiments visits-Mini .5, .real or virtual

.weeks The student's academic load is calculated as 15			
Regular student load during the semester	63	Regular weekly student workload	4
Irregular student load during the semester	62	Irregular student study load per week	4
The student's total academic load during the semester	**125**		

Course material evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	Projects/ Practical	3	10% (10)	5, 10and 14	All
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	3 hours	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	3 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

curriculum Theoretical weekly

	Material Covered
Week 1	Definition of horticulture, its importance, and its main :Horticultural Plant Production Basics of (divisions (vegetables, fruits, ornamental plants
Week 2	types of greenhouses, and , of protected agriculture The importance modern agricultural techniques the concept and types of hydroponics
Week 3	Methods of plant propagation: sexual propagation, vegetative propagation, and tissue .culture
Week 4	pruning and appropriate times Pruning trees and plants, pruning objectives, types of
Week 5	Pests and diseases, their control, harvesting and marketing of horticultural products
Week 6	Definition of field crops, types of field crops, divisions of field crop science, importance of field crops .food security in providing
Week 7	Environmental factors in Iraq and the world and their relationship to the growth of field crops, .location and surface, climate, soil, water resources Mid-term Exam
Week 8	.Classification of field crops, according to life cycle
Week 9	.Major crops in the world and Iraq
Week 10	modern methods of field crop management , Agricultural rotations
Week 11	The economic importance of livestock, challenges and future prospects for expanding production
Week 12	purpose cows, Iraqi cows and calf breeding-beef cows, dual ,Cattle types, dairy cows
Week 13	Global and local sheep and goat breeds, as well as methods of establishing sheep flocks.
Week 14	.farms Poultry, its economic importance, and the conditions for establishing and types of poultry Classification of chicken breeds
Week 15	Buffalo, general characteristics of buffalo and types of buffalo
Week 16	**Preparatory week before the final exam**

for practical application Weekly curriculum	
	Material Covered
Week 1	the horticultural facilities and learning about the horticultural facilities Field visit to
Week 2	.Learn about basic tools and equipment and prepare suitable soil mixes for planting
Week 3	Practical application of plant propagation methods, planting seeds and cuttings
Week 4	Carry out pruning of some plants and trees and identify the objectives of each type of pruning
Week 5	Determine the maturity signs of some crops, such as tomatoes or cucumbers, and .harvest the crop
Week 6	– harvesting – irrigation – pest control – seeding – Crop service operations (land preparation (harvest operations-post
Week 7	**crops** Botanical description of the most important field
Week 8	.Design of agricultural rotations and their types
Week 9	methods of field crop management and the use of smart agriculture Modern
Week 10	.How to deal with climate change in field crop production
Week 11	Field operations in livestock farms
Week 12	Milking, milking methods
Week 13	Suckling, caring for young animals, and weaning methods.
Week 14	Animal housing and construction methods
Week 15	Types of records, methods of organizing, and their importance in managing production projects

Learning and teaching resources		
	Text	**Available in the Library?**
Required Texts	NA	-
Recommended Texts	- Principles of Animal Production - Principles of gardening - Theoretical :Fundamentals of Field Crop Production and Practical	yes
Websites		

Grading scheme				
Group		Appreciation	**Marks %**	**Definition**
Success Group (50 - 100)		privilege	90 - 100	Outstanding Performance
		very good	80 - 89	Above average with some errors
		good	70 - 79	Sound works with notable errors
		middle	60 - 69	Fair but with major shortcomings
		acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)		in) Precipitate (process	(45-49)	More work required but credit awarded
		Failed	(0-44)	Considerable amount of work required

Module Description

Module Information					
Module Title	**CRIMES of the BAATH REGIME in IRAQ**			**Module Delivery**	
Module Type	**Basic learning activities**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM2050-AM**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UGII	**Semester of Delivery**		3	
Administering Department	AGME1986	**College**	AGFO1964		
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**		Ph.D.	
Module Tutor	N.A.	**e-mail**	N.A.		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/9/2025	**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 أهداف المادة الدراسية	1. The learner will understand what a crime is and its types. 2. The learner will be able to explain and clarify the crimes committed by the Ba'ath regime in Iraq. 3. The students will be familiar with international and local laws criminalizing the actions of the Ba'ath regime in Iraq. 4. The student will understand the extent of the crimes committed by the Ba'ath regime in Iraq by highlighting these crimes. 5. The learner will be able to provide examples of these crimes and the locations where they occurred. 6. The learner will understand the psychological and social effects of the crimes committed by the Ba'ath regime on the personality of the Iraqi citizen. 7. The learner will understand the environmental effects of the crimes committed by the Ba'ath regime on the Iraqi environment. 8.The learner will identify the graves left behind by the former Ba'ath regime, identifying their location and time of occurrence.
Module Learning	The student should be able to:

Outcomes LOs مخرجات التعلم للمادة الدراسية	LO#1: Understanding and identifying crimes LO#2: Understanding the dimensions and effects of crimes LO#3: Legal framework for crimes LO#4: Documenting crimes
Indicative Contents	Indicative content includes the following. Theoretical Enriching students' knowledge about understanding crime and its types, with a focus on the crimes committed by the Ba'ath regime in Iraq. Delving into the extent of the crimes committed by the regime, providing examples and identifying the locations of their occurrences, and understanding their psychological, social, and environmental impacts. It also explores local and international laws criminalizing these acts, identifying mass graves left behind by the regime, and identifying their locations and times Total hrs = 32 = SSWL - (Exam hrs) = 32-2 = 30 hrs (Time table 2hrs x 15 weeks)
Learning and Teaching Strategies	
Strategies	1. Interactive lecture, Brainstorming 2. Dialogue and discussion 3. Assigning reports 4. Quizzes 5. Assigning group work to reveal leadership skills

Student Workload (SWL)			
Structured SWL (h/sem)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	**50**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	20% (20)	2 and 13	LO#1 and LO#3
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	The Concept of Crimes and Their Categories

Week 2	Crimes of the Ba'ath Regime According to the Documentation of the Iraqi Criminal Court Law of 2005
Week 3	Militarization of Society
Week 4	The Ba'ath Regime's Position on Religion and Its Violations of Iraqi Law
Week 5	Some Decisions Concerning Political and Military Violations of the Former Ba'ath Regime
Week 6	Prison and Detention Facilities of the Ba'ath Regime in Iraq
Week 7	Mid-term Exam
Week 8	Environmental Crimes of the Ba'ath Regime
Week 9	1. War and Radioactive Pollution and Mine Explosions 2. Destruction of Cities and Villages (Scorched Earth Policy)
Week 10	Draining the Marshes in Southern Iraq Destroying Orchards, Palm Trees, Trees, and Crops
Week 11	Mass Grave Crimes ,The Events of 1963 and Their Relationship to Mass Graves
Week 12	1- The Events of 1979 to 1988 and Their Relationship to Mass Graves 2- The Events of 1987 to 1988 and Their Relationship to Mass Graves
Week 13	The Events of the 1991 Sha'ban Uprising and Their Relationship to Mass Graves
Week 14	Chronological Classification of Mass Graves and Genocide in Iraq 1963 to 2003
Week 15	1: Mass Graves Against the Kurds 1983 2: The Anfal Massacre 1987-1988 3: Graves of the Sha'ban Uprising in Iraq 1991
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Crimes of the Ba'ath Regime in Iraq, 2023	Yes
Recommended Texts	1-Ihsan Hindi, Military Occupation. 2- Jundi Abdulmalik, Criminal Encyclopedia. 3- Mass Graves in Iraq, by Human Rights Watch. 4- Journal of Human Rights and Public Liberties. 5- Antonio Cassese, International Criminal Law.	No
Websites	https://iraqicenter-fdec.org/archives/5146	

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

MODULE DESCRIPTION

Module Information					
Module Title	**ARABIC LANGUAGE 2**			**Module Delivery**	
Module Type	**Basic learning activities**			☒Theory ☐Lecture ☐Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	UOM1012-AM				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Asist. Prof. Dr. Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1/9/2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	UOM1011	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Introducing students to the basics of the Arabic language. Also breaking the barrier of shyness and increasing their confidence inside and outside the classroom. 2. Engaging them in short discussions where they can write or express themselves orally. 3. Improving their reading, writing, listening and speaking skills as students, and strengthening students' literary ability to appreciate the styles of the language and realize its beauty.
Module Learning Outcomes	The student should be able to: LO#1: Create a full awareness of the correct use of Arabic grammar in writing and speaking. LO#2: Students will improve their ability to speak Arabic in terms of fluency and comprehension. LO#3: Students will review the grammatical forms of Arabic and use these forms in specific communicative contexts, which include: classroom activities, homework, reading texts, and writing. LO#4: Students will enhance their ability to write short paragraphs and summaries .using a process approach

Indicative Contents	Indicative content includes the following. Theoretical Introduction to communication in general and the Arabic language in particular, with an introduction to word categories (parts of speech) in Arabic {4 hours}. Explanation of each part of speech in Arabic such as nouns, pronouns, verbs, adjectives, adverbs, prepositions, conjunctions and conjunctions {16 hours}. Basic skills in learning Arabic: reading and writing are gradually introduced over the past weeks {6 hours}. The last part is dedicated to some error correction and feedback sessions {4 hours}. -Total hrs = 32 = SSWL - (Exam hrs) = 32 - 2 = 30 hr (Time table2 hrs x 15 weeks)

Learning and Teaching Strategies	
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)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	50		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	4,6,9	LO#1, LO#3
	Home Assignments	2	10% (10)	2 and 12	LO#1, LO#4
	Collage Assignments	1	5% (5)	10 and 11	LO#2
	Report	1	10% (10)	13	LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Arabic Language / Word Types and Definitions
Week 2	Pronouncing the Hamzat al-Qat' and al-Wasl
Week 3	Rules for Writing the Hamza
Week 4	Writing the Ta' at the End of a Word
Week 5	How to Look Up Words in Arabic Dictionaries
Week 6	Constructed and Inflected Words and Original and Secondary Inflectional Marks

Week 7	midterm exam
Week 8	Nominal Sentences and Punctuation
Week 9	Verbs of Approximation, Hope, and Initiation
Week 10	Number Rules in terms of Syntax and Structure, and in terms of Definiteness and Indefiniteness
Week 11	Linguistic Errors
Week 12	Defective Verbs
Week 13	Pronunciation and Writing of the Letters Ḍād and Ḍād
Week 14	Morphological Variation
Week 15	Poetry and Its Types
Week 16	Preparing the student for the final exam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Comprehensive Grammar - Abbas Hassan	No
Recommended Texts	Simplified Grammar, by Sheikh Adham Al-Asami	No
Websites	-	

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	General Mechanics Engineering			**Module Delivery**	
Module Type	**Basic learning activity**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	GME3530-AM				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Firas Salah Yahya		**e-mail**	Firas.alkhayatt@uomosul.edu.iq	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1 / 9 / 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	- The student's familiarity with states of rest and the forces affecting bodies, through which he will have a broad understanding of the balance of bodies in a state of rest, and also, The student's familiarity with the different states of motion of bodies and their various applications in order to gain a broad understanding of the movement of agricultural equipment and machinery.
Module Learning Outcomes	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Remember and understand the basics of engineering mechanics and methods of forces analysis. 2. Understand moments and couples on bodies. 3. Understand equilibrium of rigid bodies. 4. Understand friction. 5. Remembers and understands the basics of dynamics and understand

	Kinematics: rectilinear motion of bodies. 6. Understand general curvilinear motion. 7. Understand rotation of bodies about fixed axis 8. Understand Kinetics of a particle: force and acceleration.
Indicative Contents	Indicative content includes the following. Chapter 1: Introduction to engineering mechanics, forces analysis by using vector and scalar methods [SSWL=12 hrs] Chapter 2: Moments and couples. [SSWL=4 hrs] Chapter 3: Equilibrium of rigid bodies. [SSWL=4 hrs] Chapter 4: Friction. [SSWL=4 hrs] Chapter 5: Introduction to dynamics and Kinematic: rectilinear motion of bodies. [SSWL=8 hrs] Chapter 6: General Curvilinear motion of bodies, curvilinear motion using Cartesian coordinate, curvilinear motion using normal and tangential coordinates. [SSWL=12 hrs] Chapter 7: Rotation of bodies about fixed axis. [SSWL=4 hrs] Chapter 8: Kinetics of a particle: force and acceleration. [SSWL=8 hrs]

Learning and Teaching Strategies	
Strategies	- **Lecture-based Teaching:** Explaining concepts then solve illustrated examples that achieves with student interaction and discussion. - **Tutorial Teaching:** Solve problems related to the theory lecture topic that achieves with student interaction and discussion, after solve or try to solve these problems by students as homework.

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**150**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to engineering mechanics
Week 2	Forces analysis by using vector method
Week 3	Forces analysis by using scalar method
Week 4	Moments and couples
Week 5	Equilibrium of rigid bodies
Week 6	Friction
Week 7	Mid-term Exam
Week 8	Introduction to dynamics and Kinematic: Rectilinear motion of bodies with variable acceleration
Week 9	Rectilinear motion of bodies with constant acceleration
Week 10	General curvilinear motion of bodies
Week 11	Curvilinear motion using Cartesian coordinate
Week 12	Curvilinear motion using normal and tangential coordinates
Week 13	Rotation of bodies about fixed axis
Week 14	Kinetics of a particle: force and acceleration using Cartesian coordinate
Week 15	Kinetics of a particle: force and acceleration using normal and tangential coordinates

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	مبادئ ميكانيك، سعد الدين محمد امين، الطبعة الاولى، دار الكتب للطباعة والنشر- الموصل ، 1991	Yes
Recommended Texts	- Engineering Mechanics-Statics, R.C.Hibbeler, 13th ed., Pearson Prentice Hall, 2013. - Engineering Mechanics-Dynamics, R.C.Hibbeler, 12 ed., Pearson Prentice Hall, 2010. - Vector Mechanics for Engineers, by Beer,Johnstton, Mazurek, and Cornwell, 10th ed., McGraw-Hill, 2013.	No
Websites		

Delivery Plan (Weekly Tutorial Syllabus)	
	Material Covered
All Weeks	Solve problems related to the topics that explained by the theory lectures

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	AGRICULTURAL STATISTICS			**Module Delivery**	
Module Type	**Core learning activity**			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**AGS1060**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	Yousif.Yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026		**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- Knows statistics and its types, and differentiates between descriptive statistics and inferential or inferential statistics 2- Explains what descriptive variables are, and recognizes the difference between a sample and a population 3- Organizes and draws a frequency distribution table and identifies its parts 4- Organizes a relative frequency distribution table and ascending and

	descending summation 5−Finds the arithmetic mean − and recognizes the properties of the arithmetic mean 6− Works on how to find the range, mean deviation, variance, and standard deviation
Module Learning Outcomes	LO#1: Is able to compile and classify data, and present it with tables and graphics LO#2: Is able to calculate descriptive statistics of numerical data. LO#3: Can build hypothesis and test the hypothesis, and can make a statistical deduction. LO#4: Can build relation between the data using statistics and make interpretations on them in order to make decisions.
Indicative Contents	Enriching the student with knowledge regarding the conduct and benefit of the agricultural statistical process, and learning how to measure the measurement of centering, mediation and correlation and how to employ them in the field of agricultural engineering sciences and techniques for implementing integration correctly to reach quantity and quality Total hrs = 125 = SSWL - (Exam hrs) = 125-3= 122 (Time table hrs x 15 weeks)

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

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

Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO#2
	Collage Assignments	2	10% (10)	2 and 12	LO#1, LO#2 and LO#3
	Home Assignments	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO#3
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to the nature of statistics and the most important sections of statistics - the nature of data and statistical symbols
Week 2	The nature of statistical data - the difference between quantitative and descriptive variables, with examples of each type
Week 3	The difference between society and sample with mathematical examples
Week 4	Tabular and Graphing - Frequency Distribution Table - How to Create Classes and Find Class Length
Week 5	Clustered Distributions - Descending Cumulative Frequency Distribution Table - Frequency Curve - Graph of Cumulative Frequency Distribution Table
Week 6	Measures of mediation and centering - arithmetic mean - geometric mean
Week 7	Measures of centering and centering - harmonic mean - squared mean - median - mode
Week 8	Measures of dispersion or variation - range - mean deviation - variance and standard deviation
Week 9	Measures of dispersion or variation - the most important properties of variation or standard deviation - standard error - standard score
Week 10	Principles of probability theory - factorial - permutations - combinations - random experiment
Week 11	Discrete Probability Distributions - Binomial Distribution - Properties of Binomial Distribution
Week 12	Hypothesis Testing - Statistical Hypothesis - Null Hypothesis - Alternative Hypothesis
Week 13	Types of Error - General Steps in Hypothesis Testing
Week 14	T-test - Z-test
Week 15	Simple Correlation and Regression - Correlation Coefficient
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	The natural of statistical data
Week 2	The natural of statistical data
Week 3	Statistical symbol

Week 4	Graphical represent and display of data
Week 5	Graphical represent and display of data
Week 6	Measures of mediation and centering
Week 7	Measures of mediation and centering
Week 8	Measure of dispersion or different
Week 9	Measure of dispersion or different
Week 10	Midterm exam
Week 11	Probability theory
Week 12	Statistical test
Week 13	Statistical test
Week 14	Correlation coefficient data analysis
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	introduction to Statistics - Principles of Statistics	Yes
Recommended Texts	Statistics and Statistical Methods Book	No
Websites	https://www.udemy.com/course/bmwqjwxb/?srsltid=AfmBOooesbV6jEmBd_tAQSa288D__QY0Hc1yK1i3seCLaNtYAT4ckpyn	

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	**AGRICULTURAL MARKETING TECHNIQUES**	**Module Delivery**	
Module Type	**Core learning activity**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	AMT1100		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	**Ph.D.**
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/2/2026	**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. The student gains a basic understanding of the food marketing system in the country. 2. The student describes the agricultural marketing chain. 3. The student identifies various economic principles and how they relate to agricultural marketing. 4. The student discusses consumer demand and the impact of marketing on consumer demand. 5. The student discusses specialty products and value-added products. 6. The student understands the importance of agricultural cooperatives. 7. The student describes the structure of agricultural marketing. 8. The student develops a marketing plan for an agricultural product

Module Learning Outcomes	The student should be able to: LO#1: Explain the basic marketing functions of buying, selling, transportation, storage, financing, standardization, pricing, and risk bearing. LO#2: Apply economic principles to the marketing of agricultural products. LO#3: Identify alternatives in the marketing of agricultural commodities/products. LO#4: Study the structure of agricultural markets.
Indicative Contents	Indicative content includes the following. Part A - Circuit Theory Developing the correct management skills for agricultural marketing in the precise specialization and determining the appropriate means for marketing agricultural products in the fastest time, highest marketing efficiency and lowest costs, and working to transport agricultural commodities through good and fast transportation methods to ensure transportation in the fastest times because agricultural crops are susceptible to rapid spoilage if they are not transported and stored in storage methods. Various types, and work on packing agricultural products in glass, cardboard, plastic or wooden boxes. The most important modern means of shopping will be discussed, such as electronic marketing via the Internet. Students will also be taught how to shop practically by visiting wholesale marketing places and teaching students how a merchant or broker works in shopping. Total hrs = 32 = SSWL - (Exam hrs) = 32 - 2 = 30 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	93	**Unstructured SWL (h/w)**	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	4,6,9	LO#2, LO#4
	Home Assignments	2	10% (10)	2 and 12	LO#1, LO#4
	Collage Assignments	1	5% (5)	10 and 11	LO#3
	Report	1	10% (10)	13	LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introductions and Course Overview; Types of Markets, Role of Agriculture Marketing in economic development.
Week 2	Agricultural Marketing system, Marketing system productivity.
Week 3	Analysis of Agricultural Marketing system and approaches.
Week 4	Market organizations.
Week 5	Marketing tools.
Week 6	Market Efficiency and Margins and costs.
Week 7	**Midterm Exam**.
Week 8	Agricultural Marketing in Iraq.
Week 9	Agricultural Marketing problems and solutions.
Week 10	Role of Private and public sector in agricultural marketing.
Week 11	Government Marketing services, Agricultural Marketing information system.
Week 12	Agricultural Extension services, Marketing legislation, Agricultural prices, Agricultural price policy in Iraq, Agricultural wholesale markets.
Week 13	Development and Characteristics of Wholesales Markets, Commodity Marketing in Iraq.
Week 14	International Agricultural Marketing.
Week 15	Methods of exporting, Export process, WTO and its implementation in Iraq.
Week 16	Preparing the student for the final exam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Principles of Agricultural Marketing, Abu Saeed Al-Duwaihji, Al-Hamid Publishing House, 2001, Amman.	Yes
Recommended Texts	– Ali Faleh Al-Zaib, "Marketing Management - A Strategic Applied Perspective," Dar Al-Yazouri Scientific, 2019. - Ali Faleh Al-Zouaib, "Marketing Communications: An Applied Methodological Approach," 9th Edition, Dar Al-Masiriya for Publishing and Distribution, Amman-Jordan, 2191 – Issa Hammoud Al-Hassan, "Commercial Promotion of Goods and Services," 9th edition, Zahran Publishing and Distribution House, Oman, .2191 - Ghassan Qasim Daoud Al-Almi, "Marketing Management New Ideas and Directions," 9th edition, Safaa Publishing House. Distribution, Amman	No
Websites	-	

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

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	**SUSTANIBLE DEVELOPMENT**			**Module Delivery**	
Module Type	**Core learning activity**			☒Theory ☐Lecture ☐Lab ☐Tutorial ☐Practical ☒Seminar	
Module Code	**SUD1090**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI	**Semester of Delivery**		2	
Administering Department	AGME1986	**College**	AGFO1964		
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	N.A.	**e-mail**	N.A.		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/2/2026	**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. Understand the concept of sustainable development and its various dimensions. 2. Analyze the impact of environmental and social changes on achieving sustainability. 3. Study the role of government policies and innovation in supporting sustainable development. 4. Raise awareness of the importance of achieving social justice within the goals of sustainability.
Module Learning Outcomes	LO#1: How sustainability considerations can actually be embedded within an individual's and community's day to day activities and decision-making

	processes. LO#2: How existing sustainable development tools and methods can be adjusted/fine-tuned accordingly, and how to design sustainability performance metric to assess the impact on community's sustainable development. LO#3: How to design feedback systems that can readjust the pathways of processes and procedures to ensure success in implementing sustainable development initiatives. LO#4: How to empower communities set sustainability targets using appropriate metrics.
Indicative Contents	The theoretical and cognitive foundation of the concept of sustainable development will be developed and an experiential understanding of emerging global challenges for sustainable environmental and community governance systems will be gained through theoretical lectures in the fifteen weeks. By focusing on seminars related to sustainable development and simulating successful country experiences, the capacity of communities and students will be enhanced and their research role and development in establishing the necessary information links and feedback loops within the system will be raised to allow system actors to have a sound understanding of developing sustainable solutions. This will enable visualization of the different factors that affect sustainability and proposing an action plan for building sustainable communities. Total hrs = 62 = SSWL - (Exam hrs) = 62-2= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	62	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	63	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation				
	Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning**

					Outcome
Formative assessment	**Quizzes**	3	15% (15)	3, 9 ,11	LO#1, LO#2, LO#3 and LO#4
	Collage Assignments	2	10% (10)	2 and 12	LO#1 and LO#3
	Projects	1	10% (10)	Continuous	All
	Report	1	5% (5)	14	LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Theory Syllabus)	
	Material Covered
Week 1	Introduction to Sustainable Development
Week 2	Economic, Social, and Environmental Dimensions of Sustainable Development
Week 3	History and Evolution of the Concept of Sustainable Development
Week 4	(Sustainable Development Goals (SDGs
Week 5	Sustainability in Natural Resource Management
Week 6	Climate Change and Its Impact on Sustainable Development
Week 7	Midterm Exam
Week 8	The Role of Education and Awareness in Achieving Sustainable Development
Week 9	Renewable Energy and Sustainability
Week 10	Sustainability in the Agricultural and Food Sector
Week 11	Government Policies and Their Role in Achieving Sustainable Development

Week 12	Innovation and Technology in Supporting Sustainability
Week 13	Social Justice and Equality in Sustainable Development
Week 14	Global Challenges Facing Sustainable Development
Week 15	The Future of Sustainable Development
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Seminars Syllabus)	
	Material Covered
Week 1	• Analysis of environmental challenges and opportunities in sustainable development.
Week 2	• Analyzing the role of technology in supporting sustainability.
Week 3	• Workshop on sustainability applications in local projects.
Week 4	• Netherlands: Circular farming in the dairy sector, reusing animal waste for energy and bioplastics, using bioreactor technology integrated with IoT sensors
Week 5	• Smart Pastures project in Mongolia, rotational grazing systems based on satellite monitoring, to restore 15% of degraded pastures annually
Week 6	• Intensive Rice Project in Madagascar, implementing SRI (System of Rice Intensification) to increase production by 50% while saving water in a geography: highland areas in Antananarivo
Week 7	• Smart Sustainable Farms in Ethiopia, integrating conservation agriculture with drought early warning systems: to increase crop resilience by 40% in Tigray regions.
Week 8	• Brazil: Low Carbon Agriculture Model (ABC Program), reducing methane emissions by 38% through integrated livestock waste management
Week 9	• China: Loess Plateau Rehabilitation, largest ecological restoration project (35,000 km²), using terraced terraces + water harvesting + selective afforestation.

Week 10	• Jordan: “Water Rationing” project, micro-drip irrigation technology with big data analysis, by reducing water consumption by 70% in vegetable cultivation.
Week 11	• Zambia: Conservation agriculture with FAO, zero tillage + permanent mulch + crop rotation, to increase maize production by 120% in 5 years
Week 12	• “Palm Oasis” project in Morocco, combating desertification through solar drip irrigation systems.
Week 13	• African Drylands Program (Senegal), cultivation of salt-resistant sorghum with fog harvesting, to reduce rural youth migration by 55%
Week 14	• “Integrated Farming” project in the Niger Delta, fish farming with rice cultivation in the same water body, to increase income by 300% while improving biological fertility
Week 15	Project presentations and discussions on feasibility and conclusions. •

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Omar bin Akhdar Khalfawi "Sustainable Development" عمر بن اخضر خلفاوي " التنمية المستدامة"	No
Recommended Texts	Abdullah bin Abdulrahman Al-Baridi "Sustainable Development: An Integrated Approach to Sustainability Concepts and Applications" عبدالله بن عبد الرحمن البريدي " التنمية المستدامة : مدخل تكاملي لمفاهيم الاستدامة وتطبيقاتها"	

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

Websites	

MODULE DESCRIPTION FORM

Module Information					
Module Title	**BIODIVERSITY**		**Module Delivery**		
Module Type	**Core learning activity**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**		
Module Code	**BIO1070**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI		**Semester of Delivery**		2
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	Yousif.Yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**		**Ph.D.**
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026		**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. Enable students to appreciate the importance of biodiversity conservation in addressing environmental challenges and climate change.** **2. Provide students with fundamental concepts of biological diversity and the role of living organisms in ecosystems..**
Module Learning Outcomes LOs	The student should be able to: LO#1: **Identify classifications of living organisms and patterns of biological diversity in various environments.** LO#2: **Understand the evolutionary and genetic mechanisms that contribute to**

Module Aims, Learning Outcomes and Indicative Contents	
	the emergence of biodiversity over time. LO#3: **Evaluate threats to biodiversity and analyze the impact of human activities on ecosystems.** LO#4: **Propose suitable strategies for biodiversity conservation and the sustainable use of natural resources.**
Indicative Contents	Indicative content includes the following. Theoretical The course covers fundamental concepts of biological diversity and taxonomic classifications, extending to ecosystem studies and methods for species and habitat conservation, with a focus on current threats and future challenges. Total hrs = 125 = SSWL - (Exam hrs) = 63-3 = 60 hrs (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	**1. (Interactive Lectures)** **2. (Project-Based Learning)** **3. (Case Studies)** **4. (Field Trips)** **5. (Group Discussions and Presentations)**

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Home Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	College Assignments	2	10% (10)	All	All
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4

Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Biological Diversity
Week 2	Taxonomy and Scientific Nomenclature
Week 3	Genetic Diversity and Evolution
Week 4	Ecological Diversity and Ecosystems
Week 5	Measuring Biodiversity and Its Indicators
Week 6	Factors Affecting Biological Diversity
Week 7	Mid-term Exam
Week 8	Environmental and Economic Value of Biodiversity
Week 9	Current Threats to Biodiversity
Week 10	Species Extinction and Conservation Strategies
Week 11	Biodiversity in Aquatic Ecosystems
Week 12	Biodiversity in Terrestrial Ecosystems
Week 13	Climate Change and Its Impact on Biodiversity
Week 14	Biodiversity and Sustainable Development
Week 15	Natural Resource Management and Sustainable Use
Week 16	Future Directions in Biodiversity Enhancement

Delivery Plan (Weekly Laboratory Syllabus)	
	Material Covered
Week 1	Future Directions in Biodiversity Enhancement
Week 2	Collection and Classification of Plant and Animal Samples
Week 3	Practical Applications of Scientific Nomenclature in the Lab
Week 4	Genetic Diversity Measurements and DNA Analysis Techniques

Week 5	Field Survey of Ecosystems (Forest or Agricultural)
Week 6	Biodiversity Assessment in Soil and Water Samples
Week 7	Monitoring Environmental Threats (e.g., Pollution and Biological Invasions)
Week 8	Community Analysis of Biotic Assemblages
Week 9	In-situ and Ex-situ Conservation Techniques
Week 10	Studying the Impact of Climate Change on Biotic Communities
Week 11	Field Visit to High-Biodiversity Areas
Week 12	Data Documentation and Analysis Using Statistical Software
Week 13	Designing Models for Biodiversity Conservation and Sustainable Use
Week 14	Developing Management Plans for Species Protection
Week 15	Presentation and Discussion of Research Findings and Practical Reports

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Gaston, K. (2010) Chapter 2: Biodiversity. In N.S. Sodhi & P. R. Ehrlich, Conservation Biology for All (pp. 27 - 43). Society for Conservation Biology.	-
Recommended Texts		-
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

MODULE DESCRIPTION FORM

Module Information					
Module Title	**BIOSAFETY and SECURITY**		**Module Delivery**		
Module Type	**Suport learning activity**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**		
Module Code	**BSS1050**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	UGI		**Semester of Delivery**		2
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	Yousif.Yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**		**Ph.D.**
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	ACE1020	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Equip students with fundamental knowledge of biosafety and biosecurity principles and their practical application in agricultural, forestry, and food-related settings. 2. Enable students to develop the skills necessary to identify, assess, and manage biological hazards, ensuring the protection of human health, the environment, and food products.
Module Learning	The student should be able to:

Module Aims, Learning Outcomes and Indicative Contents	
Outcomes LOs	LO#1: Identify common biological hazards in agriculture, forestry, and food sectors, and assess their level of risk. LO#2: Apply biosafety and biosecurity principles and practices in accordance with recognized international standards and levels. LO#3: Design and implement prevention and control programs for biological hazards in laboratories and agricultural/food production facilities. LO#4: Adhere to ethical and legal considerations when handling biological materials, ensuring public health and environmental protection.
Indicative Contents	Indicative content includes the following. Theoretical The course covers the concepts of biosafety and biosecurity, risk assessment, regulations, and safe laboratory techniques, with practical training on using personal protective equipment, sterilization, and waste disposal. It also enhances understanding of emergency response and designing biosecurity protocols in agricultural and food sectors, aiming to ensure worker safety and protect products and the environment. Total hrs = 75 = SSWL - (Exam hrs) = 47-2 = 28 hrs (Time table hrs x 15 weeks)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. **(Interactive Lectures)** 2. **(Project-Based Learning)** 3. **(Case Studies)** 4. **(Workshops and Hands-On Training)** 5. **(Group Discussions and Presentations)**

Student Workload (SWL)			
Structured SWL (h/sem)	47	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	28	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	**75**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Home Assignments	2	10% (10)	2 and 13	LO#1 and LO#3
	College Assignments	2	10% (10)	All	All
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4

Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Biosafety and Biosecurity
Week 2	Types of Biological Hazards in the Agricultural and Food Sectors
Week 3	Risk Assessment and Management
Week 4	Biosafety Levels and International Standards
Week 5	Personal Protective Equipment (PPE) and Safe Work Practices
Week 6	Sterilization, Disinfection, and Biological Waste Disposal
Week 7	Mid-term Exam
Week 8	Safe Storage, Handling, and Transport of Biological Materials
Week 9	Good Laboratory Practices (GLP) and Quality Standards
Week 10	Biosecurity in Agriculture and Protection of Plant and Animal Resources
Week 11	Emergencies and Rapid Response to Biological Incidents
Week 12	Local and International Regulations on Biosafety and Biosecurity
Week 13	Ethical Considerations and Dual-Use of Biological Technologies
Week 14	Case Studies and Practical Applications in Biosafety and Biosecurity
Week 15	Workshops and Simulations for Biosafety Protocol Design
Week 16	Comprehensive Review and Final Assessment

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Biosafety and Biosecurity
Week 2	Types of Biological Hazards in the Agricultural and Food Sectors
Week 3	Risk Assessment and Management

Week 4	Biosafety Levels and International Standards
Week 5	Personal Protective Equipment (PPE) and Safe Work Practices
Week 6	Sterilization, Disinfection, and Biological Waste Disposal
Week 7	Safe Storage, Handling, and Transport of Biological Materials
Week 8	Good Laboratory Practices (GLP) and Quality Standards
Week 9	Biosecurity in Agriculture and Protection of Plant and Animal Resources
Week 10	Emergencies and Rapid Response to Biological Incidents
Week 11	Local and International Regulations on Biosafety and Biosecurity
Week 12	Ethical Considerations and Dual-Use of Biological Technologies
Week 13	Case Studies and Practical Applications in Biosafety and Biosecurity
Week 14	Workshops and Simulations for Biosafety Protocol Design
Week 15	Comprehensive Review and Final Assessment

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Basics of Biological and Occupational Safety in Laboratories and Scientific Institutions / Ministry of Higher Education - University of Kufa / College of Agriculture - Department of Food Sciences.	-
Recommended Texts	Biosafety and Biosecurity Training and Education Materials/Biorisk Management Guide May 2020 - This guide was issued in cooperation with the Ministry of Higher Education and the Iraqi Ministry of Health.	-
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	**FX –** Fail	(45-49)	More work required but credit awarded

MODULE DESCRIPTION FORM

Module Information

Module Title	ARABIC LANGUAGE 1	**Module Delivery**	
Module Type	**Basic learning activities**	☒Theory ☐Lecture ☐Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	UOM1011		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGI	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	**Ph.D.**
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/2/2026	**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. Introducing students to the basics of the Arabic language. Also breaking the barrier of shyness and increasing their confidence inside and outside the classroom. 2. Engaging them in short discussions where they can write or express themselves orally. 3. Improving their reading, writing, listening and speaking skills as students, and strengthening students' literary ability to appreciate the styles of the language and realize its beauty . . 1

Module Learning Outcomes	The student should be able to: LO#1: Create a full awareness of the correct use of Arabic grammar in writing and speaking. LO#2: Students will improve their ability to speak Arabic in terms of fluency and

	comprehension. LO#3: Students will review the grammatical forms of Arabic and use these forms in specific communicative contexts, which include: classroom activities, homework, reading texts, and writing. LO#4: Students will enhance their ability to write short paragraphs and summaries .using a process approach
Indicative Contents	Indicative content includes the following. Theoretical Introduction to communication in general and the Arabic language in particular, with an introduction to word categories (parts of speech) in Arabic {4 hours}. Explanation of each part of speech in Arabic such as nouns, pronouns, verbs, adjectives, adverbs, prepositions, conjunctions and conjunctions {16 hours}. Basic skills in learning Arabic: reading and writing are gradually introduced over the past weeks {6 hours}. The last part is dedicated to some error correction and feedback sessions {4 hours}. -Total hrs = 32 = SSWL - (Exam hrs) = 32 - 2 = 30 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)

	32		2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	50		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	4,6,9	LO#1, LO#3
	Home Assignments	2	10% (10)	2 and 12	LO#1, LO#4
	Collage Assignments	1	5% (5)	10 and 11	LO#2
	Report	1	10% (10)	13	LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Speech and its parts
Week 2	Punctuation marks
Week 3	Subject and predicate
Week 4	An and its sisters
Week 5	Kan and its sisters
Week 6	Rules for writing numbers
Week 7	Midterm exam
Week 8	Surat Al-Fajr
Week 9	Its importance and explanation in addition to rhetorical, grammatical and semantic images
Week 10	The medial hamza and the extreme hamza
Week 11	The difference between the letter Ḍād and the letter Ḍād
Week 12	Literature Nazik Al-Malaika with her collections
Week 13	Prose styles Al-Jahiz and Abu Hayyan Al-Tawhidi
Week 14	The difference between the open taa and the closed taa
Week 15	Say and do not say
Week 16	Preparing the student for the final exam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	ين ذريل، عدنان " اللغة والأسلو ب دراسة" الطبعة الثانية ، 2006	No
Recommended Texts	بحيري، سعيد حسن، "الاساس في فقه اللغة العربية 2000	No
Websites	-	

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**				
SWL (hr/sem)	**125**				
Module Level	1	**Semester of Delivery**		2	
Administering Department	AGME1986	**College**	**AGFO1964**		
Module Leader	YOUSIF YAKOUB HILAL	**e-mail**	yousif.yakoub@uomosul.edu.iq		
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**		**Ph.D.**	
Module Tutor	Hussain abed hammod	**e-mail**	hu_hammod@uomosul.edu.iq		
Peer Reviewer Name	N.A.	**e-mail**	N.A.		
Scientific Committee Approval Date	1/2/2026	**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 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	The student should be able to: LO#1. Understand the Role of IT in Agriculture and Forestry LO#2. Identify Key Digital Technologies for Modern Farming and Forestry LO#3. Recognize Foundational Concepts in Data Security and E-Commerce LO#4. Explore Future Innovations in Agricultural Informatics
Indicative Contents المحتويات الإرشادية	The Agricultural Informatics module links information technology with agriculture, emphasizing modern tools such as IoT, GIS, AI, and big data to improve productivity and sustainability. It encompasses data management, precision farming, remote sensing, and decision support systems. Students acquire hands-on experience with GIS mapping, IoT configurations, and AI models, preparing them to address challenges like resource efficiency, climate adaptation, and food security through innovative, data-driven approaches. This module equips graduates to deploy advanced solutions in agriculture for a sustainable future.

Learning and Teaching Strategies

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

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4,11	LO#1, LO#3
	Assignments	2	10% (10)	9,13	LO#2, LO#4
	Projects/ Seminar	1	10% (10)	All	All
	Report	1	10% (10)	15	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO#1, LO#2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Agricultural Informatics
Week 2	Agricultural Data Management Systems (ADMS)
Week 3	Internet of Things (IoT) in Agriculture
Week 4	Machine Learning and Artificial Intelligence in Agriculture
Week 5	Decision Support Systems (DSS) in Agriculture
Week 6	Using Drones in Agriculture
Week 7	Data Analysis in Agriculture
Week 8	**Mid-term Exam**
Week 9	Blockchain Technology and Food Traceability
Week 10	Mobile Applications in Agricultural Extension
Week 11	Forest Monitoring and Desertification Control Using Remote Sensing
Week 12	Agricultural Machinery Management and Robotics: Self-Driving Tractors
Week 13	E-Commerce in the Agricultural Sector
Week 14	Data Security and Protection in Smart Agriculture
Week 15	The Future of Agricultural Informatics: Prospects and Innovations
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Projects/Seminar Syllabus)

	Material Covered
Week 1	Discussion on Agricultural Informatics Applications in Iraq.
Week 2	Designing a Simple Database for a Virtual Farm

Delivery Plan (Weekly Projects/Seminar Syllabus)

	Material Covered
Week 3	Using Spreadsheets for Yield Analysis
Week 4	Automated Pest and Disease Detection Using AI Algorithms
Week 5	Setting up a Simple Soil Monitoring Device Using Local Tools and Creating a Simple Irrigation DSS Model Using Excel
Week 6	Aerial Drone Surveys and Spectral Image Analysis
Week 7	Simulating GPS Use for Agricultural Mapping and Creating a Local Agricultural Map Using GIS
Week 8	Simulating Crop Tracking from Farm to Market
Week 9	Prototyping a Mobile Application for Agricultural Extension
Week 10	Designing a Simple Prototype of a Manual Robot
Week 11	Building a Small Greenhouse Using Local Materials
Week 12	Developing an E-Commerce Marketing Plan for an Agricultural Product
Week 13	Applications of Data Security in Smart Farming
Week 14	The Future and Innovations in Agricultural Informatics
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.	No
Websites		

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 is required, but credit awarded
	F – Fail	(0-44)	Considerable amount of work required

- **Note: Marks at decimal points above or below 0.5 will be rounded to the nearest full mark (e.g., 54.5 to 55, 54.4 to 54). The University does NOT condone "near-pass fails"; adjustments to marks will only involve the automatic rounding stated above.**

MODULE DESCRIPTION FORM

Module Information				
Module Title	**INDUSTRIAL ENGINERING DROWING**	**Module Delivery**		
Module Type	C	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**		
Module Code	IED3500			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	**4**	**Semester of Delivery**	2	
Administering Department	AGME1986	**College**	**AGFO1964**	
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.	
Module Tutor	Hussain Abed Hammod	**e-mail**	hu_hamood@uomosul.edu.iq	
Peer Reviewer Name	N.A.	**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026	**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	END1030	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Developing the ability of students of the Department of Agricultural Machinery and Equipment to comprehend engineering and industrial drawing using the computer. 2- Training the student to draw using the computer to complete the drawings in a perfect and fast manner. 3- Developing the student's ability to comprehend and visualize to draw shapes of different degrees of difficulty. 4- Using advanced object modeling programs after mastering the use of the AutoCAD program.
Module Learning Outcomes	1: The student should understand all the engineering characteristics of graphical interfaces for drawing using the computer. 2: The student should learn how to use the tools required for two-dimensional and three-dimensional drawing correctly.

	3: The student should understand and apply the drawing, modification, dimensions, layers, printing, etc. commands. 4: The student should be able to draw isometric perspectives for each geometric shape in terms of the two-dimensional drawing and draw its three projections.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A: Computer Aided Drafting Basics</u> • Introduction to Computer Aided Drafting (CAD): An overview of computer aided drafting, with an emphasis on its importance in modern engineering. An introduction to software commands such as AutoCAD and SolidWorks, including their hardware components and versions. • AutoCAD Interface and Basic Commands: Learn the basic interface of AutoCAD, including the toolbar for drawing and editing, and explain the basic commands and their uses. • Dimensions. <u>Part B: Geometric Projections</u>: • Geometric Projections: Understand projection techniques, especially orthogonal projection. • Midterm Exam: An assessment covering topics learned in Part A and basic projection skills. • Classroom Work: Practical Applications for Deducing the Third Projection: Apply the concepts learned in drawing projections. <u>Part C: Advanced Drafting Techniques and Computer Aided Design (CAD) Programs</u> • Geometric Perspective Drawing (Isometric): An introduction to isometric drawing techniques. Drawing objects in isometric view for a three-dimensional representation. • Isometric Drawing Review: A review of the principles of isometric drawing and its application in technical drawings. • Drawing simple geometric shapes using AutoCAD: Practical practice using AutoCAD to draw simple geometric shapes. Total hrs = 48 = SSWL - (Exam hrs) = 48 - 3 = 45 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	• Lecture-based teaching: Explain concepts and demonstrate tools, techniques and software during lecture time so that students can observe the process before applying it themselves. • Practical training: Practical lectures: Provide practical sessions where students use software such as AutoCAD and SolidWorks to develop their skills. • Guided exercises: Provide step-by-step instructions to complete 2D and 3D drawing tasks such as projections and isometric perspective. • Interactive class discussions: Actively engage students in discussions where they can ask questions and clarify doubts on topics such as projection techniques or computer-aided design (CAD) tools. • Project-based assessments: Assign students projects that require them to apply the concepts they have learned, such as creating detailed engineering drawings using computer-based software.

Student Workload (SWL)			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	77	**Unstructured SWL (h/w)**	5
Total SWL (h/sem)	**125**		

Module Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	7	
	Assignments	10	20% (20)	3 to 14	
	Projects / Lab.	1	5% (5)	Continuous	All
	Reports	1	5% (5)	----	----------
Summative assessment	Midterm Exam	2hr	10% (10)	7	1, 2
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly, Syllabus)	
	Material Covered
Week 1	Introduction about computer and AutoCAD Component of AutoCAD screen, Title bar, Menu bar, Tool Bar, properties.
Week 2	Make a new drawing, saving, Unite, boundary of paper ,Command line.
Week 3	Draw list: Line, Xline, circle, arc, polyline.
Week 4	Draw list: point (dividing, measures), Ellipse, Text, block.
Week 5	Modify list: Erase, offset, copy, Rotate, Array, Trim, Extend.
Week 6	Modify list: Mirror, Move, Explode, Fillet, Chamfer+ quiz.
Week 7	Object snap, Polar tracking +mid-term exam.
Week 8	Dimensions.
Week 9	Projections: Introduction about projections, types of projections, projections in third angle, Projections of Object contain perpendicular surface only.
Week 10	projection of object contains include surface, projections of curved surface.
Week 11	finding a missing view, section.
Week 12	Isometric drawing: Introduction about isometric drawing.
Week 13	Isometric drawing: isometric drawing for perpendicular surface include surface, curved surface.
Week 14	3D in AutoCAD: Introduction about three dimensions in AutoCAD.
Week 15	Assembly (finding the 3D viewing from projection) + final-term exam.

Delivery Plan (Weekly Practical Syllabus)	
	Material Covered
Week 1	Component of AutoCAD screen, Title bar, Menu bar, Tool Bar, properties.
Week 2	new drawing, saving, Unite, boundary of paper, Command line.
Week 3	Draw Line, Xline, circle, arc, polyline.
Week 4	Draw point (dividing, measures), Ellipse, Text, block.
Week 5	Modify Erase, offset, copy, Rotate, Array, Trim, Extend.

Week 6	Modify Mirror, Move, Explode, Fillet, Chamfer +quiz.
Week 7	Object snap, Polar tracking +mid-term exam.
Week 8	Dimensions.
Week 9	projections, types of projections, projections in third angle, Projections of Object contain perpendicular surface only.
Week 10	projection of object contains include surface, projections of curved surface.
Week 11	finding a missing view, section.
Week 12	isometric drawing.
Week 13	isometric drawing for perpendicular surface includes surface, curved surface.
Week 14	three dimensions in AutoCAD.
Week 15	Assembly (finding the 3D viewing from projection) +final-term ezam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Mastering AutoCAD 2010 and AutoCAD LT 2010 1st Edition **1990**.	NO
Recommended Texts	AutoCAD 2010 Command Reference, AutoCAD tutorial2011	-
Websites	Getting Started with the Basics in AutoCAD 2017	

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 is 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.

MODULE DESCRIPTION

Module Information

Module Title	**ENGLISH LANGUAGE 2**	**Module Delivery**	
Module Type	**Basic learning activities**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOM2022		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGll	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/2/2026	**Version Number**	1.0

Relation with other Modules

Prerequisite module	UOM1021	**Semester**	2
Co-requisites module	None	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1-(Scientific Structural Competence) 2-(Analytical Reading & ESP Terminology) 3-(Translation Accuracy) 4-(Critical Communication & Fluency)
Module Learning Outcomes LOs	The student should be able to: LO#1: **Demonstrate grammatical accuracy** by using advanced verb aspects (Progressive & Perfect) and Passive Voice to describe agricultural processes and scientific experiments effectively. LO#2: **Analyze specialized agricultural and literary texts** to identify main ideas, deduce the meaning of technical terms within context, and deconstruct complex sentence structures. LO#3: **Apply translation techniques** to accurately transfer scientific concepts and texts from English into Arabic, maintaining terminological precision and appropriate scientific style. LO#4: **Engage in critical discussions** and debates regarding cultural and controversial topics, demonstrating the ability to articulate opinions and evaluate arguments confidently.
Indicative Contents	Indicative content includes the following.

	Theoretical • **Advanced Grammar & Diagrams: Progressive and Perfect Tenses, Passive Voice, and Morphology.** • **ESP Reading: Analysis of specialized agricultural texts and scientific reports.** • **Translation: English-to-Arabic translation of scientific and geographical concepts.** • **Oral Skills & Culture: Debates, cultural discussions, and media analysis to enhance fluency.** Total hrs = 32 = SSWL - (Exam hrs) = 32-2= 30 (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	20% (10)	2 and 13	LO#1 and LO#3
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Continuous Aspect & Verb Types
Week 2	The Perfect Aspect
Week 3	Scientific Voice (Passive)
Week 4	Logical Connectives & Cohesion
Week 5	Terminology & First Reading
Week 6	Deep Analysis
Week 7	Mid-term Exam
Week 8	Translation & Application
Week 9	Practical workshop on translation techniques (from and into Arabic)
Week 10	Identity & Culture
Week 11	English for Agriculture
Week 12	Debate & Argumentation
Week 13	Literature & Analysis
Week 14	Science & Business
Week 15	Media & Lifestyle
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	New Headway Plus/Beginner part1	Yes
Recommended Texts	Rapid Review of English Grammar 2020–2021	No
Websites		

Grading Scheme

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

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	AGRICULTURAL PRODUCTION MECHANIZATION TECHNIQUES			**Module Delivery**	
Module Type	Core			☒Theory ☐ Lecture ☐Lab ☐Tutorial ☒ Practical ☐Seminar	
Module Code	APT2130				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Nofal Issa Mohamed		**e-mail**	nofelemh@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	MSc.	
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	01/02/2025		**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-Teaching students the fundamentals of agricultural machinery and equipment and their applications in the agricultural sector. 2-Practically applying these fundamentals in various agricultural fields. 3-Preparing advanced personnel in this field who can utilize these tools in different agricultural sectors. 4-Understanding the theories behind the design and operation of specialized agricultural equipment, as well as maintenance methods to ensure the sustainability of agricultural operations. 5-Keeping up with the rapid advancements in the agricultural sector to meet local market demands and export surplus production to global markets.
Module Learning Outcomes	**LO#1:** Clarify the fundamentals and principles of agricultural machinery and equipment and their applications in various agricultural fields. **LO#2:** Acquire knowledge of the maintenance, repair, and servicing methods of

	agricultural machinery and equipment. **LO#3:** Develop the ability to keep up with agricultural development and expansion plans, including land cultivation and the adoption of modern agricultural techniques. **LO#4:** Gain knowledge in optimizing the use of resources, such as water resources, and making the most of available reserves through the implementation of efficient irrigation methods. **LO#5:** Develop both theoretical and practical expertise in establishing small-scale agricultural production projects in the fields of crop and livestock production. **LO#6:** Acquire skills in managing agricultural machinery and equipment in the field. LO#7: Develop skills in improving crop harvesting processes to minimize both quantitative and qualitative losses. **LO#8:** Enhance plant production through the adoption of modern seeding techniques and crop management practices.
Indicative Contents	**Introduction to Agricultural Tractors: Definition and Classification** Agricultural tractors serve as the primary source of power on farms, used for various agricultural operations such as towing and hauling equipment. They are classified based on their size, horsepower, and the type of tasks they perform, including wheeled and tracked tractors. **Tractor Engines and Farm Power Sources** Agricultural tractors rely on internal combustion engines powered by diesel or gasoline. Other power sources on farms include electricity, solar energy, and mechanical power derived from animals. **Engine Operation: Four-Stroke and Two-Stroke Cycles** Engines operate using either a four-stroke cycle (intake, compression, power, exhaust) or a two-stroke cycle, with the choice affecting fuel efficiency and overall engine performance. **Power Transmission Systems in Agricultural Tractors** Power is transmitted from the engine to the wheels or equipment through components such as the gearbox (manual or automatic), clutch, and hydraulic transmission systems, allowing for precise control of speed and power. **Ground Contact Mechanisms, Hydraulic System, and Power Take-Off (PTO)** Ground contact mechanisms include wheels or tracks to ensure stability and traction. The hydraulic system is used for raising and lowering implements, while the PTO drives mechanical attachments. **Primary Soil Preparation Equipment** This category includes various plows such as the moldboard plow, chisel plow, disc plow, vertical disc plow, and rotary plow, all designed to break up and turn the soil, improving aeration and preparing it for planting. **Secondary and Specialized Soil Preparation Equipment** Equipment such as harrows and leveling tools are used after plowing to refine the soil surface and optimize growing conditions. Other tools include subsoilers, cultivators, furrow openers, and undercut cultivators. **Seeding Equipment** Seeding machinery includes conventional and precision seeders that ensure uniform seed distribution at the proper depth for optimal germination. **Planting and Transplanting Equipment** These machines are used for planting seedlings and crops that require systematic placement, such as vegetables and field crops. **Fertilization Equipment** This includes manure spreaders and chemical fertilizer applicators, which help distribute nutrients efficiently across fields. **Sprinkler Irrigation Equipment** Sprinkler irrigation systems, either stationary or mobile, deliver water evenly to crops, enhancing water use efficiency.

	Drip Irrigation Systems and Pumps Drip irrigation systems provide a slow and steady water supply directly to plant roots through perforated pipes, while pumps transfer water from various sources to agricultural fields. **Pest and Fire Control Equipment** This category includes sprayers and dusters used to combat agricultural pests and diseases, along with fire control equipment for fields and forests. **Grain Harvesting and Fruit Picking Equipment** This includes combine harvesters and their functional units, which are essential for efficient harvesting operations. **Post-Harvest Equipment** post-harvest operations involve drying, sorting, storage, and packaging systems designed to maintain crop quality and minimize losses before marketing.

Learning and Teaching Strategies

Strategies	Quizzes Reports Homework Discussion and solving exercises within the lecture, student interaction. .

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Agricultural Tractors: Definition, Classification, and Power Sources Used on Farms, Agricultural Tractor Engines and Power Sources.
Week 2	Engine Operation Mechanism: Four-Stroke and Two-Stroke Cycles
Week 3	Power Transmission and Drive Systems in Agricultural Tractors
Week 4	Ground Engagement Systems, Hydraulic System, and Power Take-Off (PTO) Shaft
Week 5	Primary Soil Preparation Equipment
Week 6	Secondary and Specialized Soil Preparation Equipment
Week 7	Seeding Equipment
Week 8	Planting and Transplanting Equipment
Week 9	Fertilization Equipment
Week 10	Sprinkler Irrigation Equipment and Pumps
Week 11	Drip Irrigation Equipment
Week 12	Weed, Pest and Fire Control Equipment
Week 13	Grain Harvesting and Fruit Picking Equipment
Week 14	Mechanization of animal farm
Week 15	Final Examination

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Components and Assembly of Internal Combustion Engines
Week 2	Training on Operating Agricultural Tractors
Week 3	Timing System and Fuel System
Week 4	Cooling System and Lubrication System
Week 5	Field Training on Equipment Usage
Week 6	Field Training on Equipment Usage
Week 7	Field Training on Equipment Usage
Week8	Field Training on Equipment Usage
Week9	Field Training on Equipment Usage
Week10	Field Training on Equipment Usage
Week11	Field Training on Equipment Usage
Week12	Field Training on Equipment Usage
Week13	Field Training on Equipment Usage

Week14	Field Training on Equipment Usage
Week15	Final Examination

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	- **Agricultural Machinery and Equipment**, authored by Dr. Yassin Hashim Al-Tahan and Dr. Mohammed Jasim Al-Naama. **Mechanization of animal farm,** authored by Dr. Mohammed Jasim Al-Naama	Yes
Recommended Texts	- **CIGR Handbook of Agricultural Engineering. Vol., 1, 2, 3, 4, 5. American Society of Agricultural Engineers. USA**	NO
Websites	https://asabe.org/ , https://www.fao.org/home/ar	

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

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MODULE DESCRIPTION

Module Information

Module Title	**Beneficial insects**	**Module Delivery**	
Module Type	**Core learning activity**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**
Module Code	PE12180		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		

Module Level	UGII	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	assistant professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	2026/2/1	**Version Number**	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Introduce the concept of beneficial insects and their agricultural and environmental importance. 2- Understand honeybee biology, social organization, and economic value. 3- Develop skills in honeybee colony management and seasonal care. 4- Identify honeybee products and apply proper methods for harvesting and utilization. 5- Diagnose honeybee diseases and pests and apply prevention and control methods. 6- Explain the role of honeybees and other insects in pollination and crop yield improvement. 7- Apply methods of honeybee reproduction and queen rearing. 8- Understand silkworm biology, rearing practices, and silk production. 9- Learn principles of biological control using predators and parasitoids. 10- Distinguish beneficial insects from agricultural pests in the field. 11- Build practical skills in field collection, observation, and evaluation. 12- Promote awareness of the role of beneficial insects in ecological balance and sustainable agriculture.
Module Learning Outcomes	LO#1 Understand the scientific and ecological principles of beneficial insects and their roles in agro-ecosystems. LO#2. Know honeybee biology, colony social organization, and roles of colony members. LO#3. Identify honeybee and silkworm diseases and pests, and relevant prevention and control measures. LO#4. Apply skills in apiary management, queen rearing, and natural and artificial reproduction. LO#5. Appreciate the roles of pollinators, predators, parasitoids, and scavenger insects in pollination, biological control, and sustainability.
Indicative Contents	The first four weeks focus on introducing honeybees in terms of their economic and environmental importance, common races, and social organization within the colony. The course then covers honeybee biology, life cycle, external and internal anatomy, and the roles of different colony members. Students learn the principles of establishing and managing an apiary, including essential tools, equipment, and seasonal care, with practical training in hive inspection. In addition, the course addresses honeybee products, their importance, and practical methods for harvesting and utilization. [SSWL=15 hrs]. Weeks five to eight cover honeybee diseases and pests, including their identification, diagnosis, and methods of prevention and control. The course highlights the role of honeybees in pollination and their importance in increasing agricultural productivity,

	with field visits to observe pollinators. It also addresses natural and artificial methods of honeybee reproduction, such as swarming and colony division. In addition, students learn the principles and practical steps of queen rearing and artificial insemination through applied training. [SSWL=15 hrs] . Week nine focuses on introducing the silkworm and its economic importance. It covers the silkworm life cycle, rearing practices, and feeding methods, with practical training on cocoon identification, silk extraction, and prevention of common diseases.. [SSWL=10 hrs] Weeks ten, eleven, and twelve focus on the concepts and applications of biological control. These weeks cover the role of predatory and parasitic insects in controlling agricultural pests, including their types and mechanisms of predation and parasitism. The content also addresses biological control of weeds using insects, with practical training in field sampling, observation of feeding behavior, and evaluation of field effectiveness. [SSWL=10 hrs] Weeks thirteen and fourteen focus on pollinating insects and decomposer insects and their environmental roles. The content covers the concept of pollination, types of pollinating insects, and their importance in biodiversity and agricultural production, with field observation of pollination behavior. It also introduces scavenger and decomposer insects, their common examples, and their role in organic matter decomposition, soil fertility improvement, and ecological balance, supported by practical sampling and activity assessment**.** [SSWL=10 hrs] Total hrs = 63 = SSWL - (Exam hrs) = 63 = 63 hr (Time table hrs x 15 weeks)
Learning and Teaching Strategies	
Strategies	1- Interactive lecture 2- Brainstorming 3- Dialogue and discussion 4-Field Training 5- Practical exercises 6- Field project 7- Self-education

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	125		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to honeybees, including their economic and environmental importance, common races, and social organization within the colony.
Week 2	Honeybee biology, including the life cycle, external and internal anatomy, and the functions of workers, the queen, and drones.
Week 3	Honeybee colony management, including apiary establishment, tools and equipment, and seasonal feeding and care.
Week 4	Honeybee products, including honey, beeswax, royal jelly, pollen, propolis, and bee venom.
Week 5	Honeybee diseases and pests, including bacterial, fungal, and viral diseases, insect and non-insect pests, and methods of prevention and control.
Week 6	The role of honeybees in pollination, their importance in increasing agricultural productivity, and the management of honeybee colonies for pollination purposes.

Week 7	Methods of honeybee reproduction, including natural reproduction, swarming and its types, and artificial colony division.
Week 8	.Queen rearing and artificial insemination in honeybees
Week 9	Silkworms: introduction and economic importance, life cycle, rearing practices, silk production, and common diseases with methods of prevention.
Week 10	Predators: the concept of biological control, types of predatory insects, mechanisms of predation, use of predators in controlling agricultural pests, and applied examples from agricultural fields.
Week 11	Parasitoids: the concept of biological control, types of parasitic insects, mechanisms of parasitism, use of parasitoids in controlling agricultural pests, and applied examples from agricultural fields.
Week 12	Biological control of weeds, including weed-feeding insects, their types, and their importance.
Week 13	Pollinating insects: the concept of pollination, types of pollinating insects, their role in biodiversity, their impact on agricultural crops, and methods for their conservation.
Week 14	Scavenger and decomposer insects: definition, common examples, their role in organic matter decomposition, and their importance in soil fertility.
Week 15	General review and monthly examination.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Apiary visit to identify honeybee colonies and races.
Week 2	Laboratory dissection of honeybee colony members and identification of the main internal organs and structures.
Week 3	Identification of essential tools and equipment used in beekeeping and honeybee colony inspection.
Week 4	Practical application of methods for collecting honeybee products.
Week 5	Diagnosis of diseases and pests affecting honeybees.
Week 6	Apiary visit and identification of different types of pollinating insects.
Week 7	Methods of handling, hiving swarms, and artificial colony division.

Week 8	Practical application of queen rearing and artificial insemination methods.
Week 9	Silkworm stages, feeding and rearing practices, identification of cocoons, and silk extraction.
Week 10	Collection of predatory insects and their identification in comparison with agricultural pests.
Week 11	Parasitic insects, observation of parasitism, and applications of biological control.
Week 12	Field sample collection, observation of feeding behavior, and evaluation of field activity.
Week 13	Collection of pollinating insects, observation of pollination behavior, and evaluation of their field activity.
Week 14	Collection of scavenger insects, study of their role in decomposition, and their relationship to soil fertility.
Week 15	General review, final practical examination, and submission of reports.

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Beekeeping and Silkworms Book / Written by Dr. Louay Karim Al-Naji	
Recommended Texts	The bees of the world /Charles D. Michener	
Websites	https://www.google.com/search?q=%D9%83%D8%AA%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&oq=%D9%83%D8%AA%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&aqs=chrome..69i57j0i22i30l2j0i15i22i30l2.6551j0j15&sourceid=chrome&ie=UTF-8	

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	**SOIL and WATER SUITBILTY**			**Module Delivery**	
Module Type	**Core learning activity**			☒Theory ☐Lecture ☐Lab ☐Tutorial ☒Practical ☐Seminar	
Module Code	**SWS2190**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	2	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	assistant professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2026/2/1		**Version Number**		

Relation with other Modules			
Prerequisite module	APT2130	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Understand the concept of soil and water suitability. 2. Analyze the impact of environmental and social changes on achieving sustainability. 3. Study the role of government policies and innovation in supporting sustainable development. 4. Raise awareness of the importance of achieving social justice within the goals of sustainability.
Module Learning Outcomes	1. Interpret the concepts and goals of sustainable development. 2. Assess the impact of climate and policies on resource sustainability. 3. Analyze the role of education and technology in achieving sustainable development. 4. Propose innovative strategies to enhance sustainability in various sectors.
Indicative Contents	1. Introduction to the Sustainable Development Goals and Global Challenges. 2. Natural Resource Management and Climate Change. 3. Policies Supporting Sustainability in the Fields of Energy and Agriculture. 4. Innovation and Social Justice in Achieving a Sustainable Future.

	Total hrs = 62 = SSWL - (Exam hrs) = 62-2= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	5.8
Total SWL (h/sem)	150		

Module Evaluation

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

Delivery Plan (Weekly Theory Syllabus)

	Material Covered
Week 1	• Definition of soil, components and types of soils
Week 2	• Physical properties of soil (texture, density, permeability)
Week 3	• Physical properties of soil (structure, color, texture)
Week 4	• Soil chemical properties (pH, Electrical Conductivity, Nutrients)
Week 5	• Chemical properties of soil (Soil Colloids, Cation Exchange)
Week 6	• Fertile soil and factors affecting its fertility
Week 7	Midterm Exam
Week 8	• Soil degradation and its causes
Week 9	• Soil salinity and its effect on agriculture
Week 10	• Desertification and ways to combat it
Week 11	• Soil suitability for agricultural crops

Week 12	• Definition of water resources, types of water (surface, groundwater, rainwater)
Week 13	• Water pollution and its causes
Week 14	• Impact of water quality on agricultural production
Week 15	• Global Challenges Facing Sustainable Development
Week 16	• Preparatory week before the final Exam

Delivery Plan (Weekly practical Syllabus)

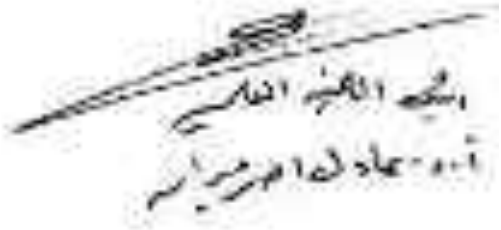
	Material Covered
Week 1	• Collect soil, water samples, and prepare them for the laboratory.
Week 2	• Measure soil texture (percentage of sand, silt, and clay).
Week 3	• Determine the apparent density and porosity.
Week 4	• Measurement of soil's ability to hold water (field capacity).
Week 5	• Measurement of acidity and acidity (pH&EC).
Week 6	• Estimation of essential nutrients (N, P, K).
Week 7	Midterm Exam
Week 8	• Estimation of essential nutrients (Ca, Mg).
Week 9	• Organic carbon (OC) estimation
Week 10	• Carbonate and bicarbonate measurement
Week 11	• Calcium carbonate measurement.
Week 12	• Total dissolved salts (TDS) analysis.
Week 13	• Estimation of color, turbidity, and odor.
Week 14	• Temperature: Its effect on water quality.
Week 15	• Preparatory week before the final Exam

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	مبادئ علم التربة، تأليف الدكتور عبدالله العاني (1982) تحليل التربة والنبات-دليل مختبري، ايكاردا، جون راين وعبد الرشيد (2001)	yes
Recommended Texts	Soils and land suitability for arable farming of southeast central district, Food and Agriculture Organization of the United Nations, A. REMMELZWA (1989).	No
Websites		

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

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



MODULE DESCRIPTION

Module Information

Module Title	**WASTE TREATMENT AGRICULTURAL ENGINEERING**	**Module Delivery**	
Module Type	**Core learning activity**	☒Theory ☐ Lecture ☒T Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**AWE2210**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	**UGll**	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	**AGFO1964**
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	2026/2/1	**Version Number**	1.0

Relation with other Modules

Prerequisite module	APT2140	**Semester**	2
Co-requisites module	None	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1-Developing the concept of agricultural waste treatment engineering 2- Capacity development on creating clean, environmentally friendly, recycled projects 3- Promoting the positive attitudes of individuals towards agricultural waste treatment engineering and the use of modern technologies in treatment 4- Encouraging work on recycling and treating agricultural waste and using organic fertilizers
Module Learning Outcomes LOs	The student should be able to: LO#1: Knows the general concepts of agricultural waste treatment engineering LO#2: Determines appropriate means and methods for recycling and treating environmentally harmless agricultural waste LO#3: It proposes modern ideas and capabilities for clean and environmentally friendly projects in reprocessing agricultural waste LO#4: The student has ethical responsibilities in the production of new and recycled resources
Indicative Contents	The guiding content includes the following: Theoretica:l

	Developing agricultural waste treatment engineering skills and identifying appropriate means for treating solid, liquid and gaseous waste, as well as identifying the types of agricultural waste and how to employ them in creating clean, environmentally friendly projects to develop work in the field of agricultural engineering sciences and methods of using them efficiently to develop agricultural production and recycle and treat .environmentally non-harmful waste as an economic opportunity lab The most important modern means of obtaining and benefiting from recycling agricultural waste will be .addressed by conducting reviews and laboratory experiments to recycle some solid, liquid and gaseous waste Total hrs = 63 = SSWL - (Exam hrs) = 63-3= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	37	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	100		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (10)	4,,10 and 12	LO#1and LO#2
	Assignments	2	10% (10)	2, and 13	LO#1 andLO#3
	Projects/ lab	2	5% (10)	8 and 12	All
	Report	1	10% (10)	14	LO#1, LO#2and LO#4
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered

Week 1	The concept of agricultural waste treatment engineering and its importan
Week 2	Types of solid, liquid and gaseous agricultural waste
Week 3	Agricultural waste treatment objectives as an economic opportunity
Week 4	Classification of agricultural waste according to its components and composition
Week 5	Effects of agricultural waste on the environmental economy
Week 6	Agricultural waste sources .
Week 7	Mid exam
Week 8	gro-environmental management, policy and agro-environmental planning .
Week 9	Ways to benefit from organic agricultural waste
Week 10	Agricultural ecological footprint and its impacts.
Week 11	Waste disposal systems (Waste handling methods)
Week 12	Causes of the spread of hazardous toxic industrial waste, non-toxic waste and radioactive wast
Week 13	Production of organic fertilizer, biogas and biogas fertilizer
Week 14	Reducing greenhouse gas emissions and green nitrogen uses
Week 15	Animal feed production, use of liquid feed, solid molasses blocks and roughage grinding (mechanical processing) .
Week 16	Preparatory week before the final

Delivery Plan (Weekly LAB Syllabus) ing modern technology and discussing the most important means of transferring and adopting it by :farmers, as well as the obstacles and treatments that ensure adoption	
	Material Covered
Week 1	Organic fertilizer (improving the organic fertilizer properties of poultry manure by adding biochar)
Week 2	Biogas potential as a sustainable new energy source for rural livelihoods (green hydrogen and gas uses and greenhouse gas mitigation)
Week 3	Practical experiments to benefit from heat exchangers in drying fish farm waste and treating and recycling chicken litter .
Week 4	Methane production by anaerobic fermentation from cattle manure and poultry droppings under laboratory conditions.
Week 5	Hydroponics: Growing plants in a water solution instead of soil, which reduces water use.
Week 6	Some natural properties of apricot kernels and their recycling.
Week 7	Midterm Exam
Week 8	Agricultural Robots: The use of robots to perform tasks such as planting and harvesting.
Week 9	Utilization of heat exchangers in drying fish farm waste.
Week 10	Design and manufacture of a unit for cooking meals from poultry waste as a non-traditional feed
Week 11	Improving the properties of organic fertilizer of poultry waste by adding biochar
Week 12	Crushing of roughage (mechanical treatment of waste with urea solution, ammonia gas and silage)
Week 13	Organic fertilizer production as a successful, clean and environmentally friendly project
Week 14	Organic Farming: Agricultural techniques that rely on the use of natural materials instead of chemicals.

Week 15	Organic Fertilizer Production Systems Andrew's Method Classification of Organic Fertilizer Production Systems and Production Stages .

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Environmental Economics 2022lMustafa Youssef Kafi Book	YES
Recommended Texts	Agricultural Waste Treatment Engineering 2000, Kingdom of Saudi Arabia, King Saud University, College of Agricultural Engineering.	NO
Websites		

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

MODULE DESCRIPTION FORM

Module Information				
Module Title	**INDUSTRIAL ENGINERING DROWING**	**Module Delivery**		
Module Type	C	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**		
Module Code	IED3500			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	**4**	**Semester of Delivery**	2	
Administering Department	AGME1986	**College**	**AGFO1964**	
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.	
Module Tutor	Hussain Abed Hammod	**e-mail**	hu_hamood@uomosul.edu.iq	
Peer Reviewer Name	N.A.	**e-mail**	N.A.	
Scientific Committee Approval Date	1/2/2026	**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	END1030	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Developing the ability of students of the Department of Agricultural Machinery and Equipment to comprehend engineering and industrial drawing using the computer. 2- Training the student to draw using the computer to complete the drawings in a perfect and fast manner. 3- Developing the student's ability to comprehend and visualize to draw shapes of different degrees of difficulty. 4- Using advanced object modeling programs after mastering the use of the AutoCAD program.
Module Learning Outcomes	1: The student should understand all the engineering characteristics of graphical interfaces for drawing using the computer. 2: The student should learn how to use the tools required for two-dimensional and three-dimensional drawing correctly.

	3: The student should understand and apply the drawing, modification, dimensions, layers, printing, etc. commands. 4: The student should be able to draw isometric perspectives for each geometric shape in terms of the two-dimensional drawing and draw its three projections.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A: Computer Aided Drafting Basics</u> • Introduction to Computer Aided Drafting (CAD): An overview of computer aided drafting, with an emphasis on its importance in modern engineering. An introduction to software commands such as AutoCAD and SolidWorks, including their hardware components and versions. • AutoCAD Interface and Basic Commands: Learn the basic interface of AutoCAD, including the toolbar for drawing and editing, and explain the basic commands and their uses. • Dimensions. <u>Part B: Geometric Projections</u>: • Geometric Projections: Understand projection techniques, especially orthogonal projection. • Midterm Exam: An assessment covering topics learned in Part A and basic projection skills. • Classroom Work: Practical Applications for Deducing the Third Projection: Apply the concepts learned in drawing projections. <u>Part C: Advanced Drafting Techniques and Computer Aided Design (CAD) Programs</u> • Geometric Perspective Drawing (Isometric): An introduction to isometric drawing techniques. Drawing objects in isometric view for a three-dimensional representation. • Isometric Drawing Review: A review of the principles of isometric drawing and its application in technical drawings. • Drawing simple geometric shapes using AutoCAD: Practical practice using AutoCAD to draw simple geometric shapes. Total hrs = 48 = SSWL - (Exam hrs) = 48 - 3 = 45 hr (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
Strategies	• Lecture-based teaching: Explain concepts and demonstrate tools, techniques and software during lecture time so that students can observe the process before applying it themselves. • Practical training: Practical lectures: Provide practical sessions where students use software such as AutoCAD and SolidWorks to develop their skills. • Guided exercises: Provide step-by-step instructions to complete 2D and 3D drawing tasks such as projections and isometric perspective. • Interactive class discussions: Actively engage students in discussions where they can ask questions and clarify doubts on topics such as projection techniques or computer-aided design (CAD) tools. • Project-based assessments: Assign students projects that require them to apply the concepts they have learned, such as creating detailed engineering drawings using computer-based software.

Student Workload (SWL)			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	77	**Unstructured SWL (h/w)**	5
Total SWL (h/sem)	**125**		

Module Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	7	
	Assignments	10	20% (20)	3 to 14	
	Projects / Lab.	1	5% (5)	Continuous	All
	Reports	1	5% (5)	----	----------
Summative assessment	Midterm Exam	2hr	10% (10)	7	1, 2
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly, Syllabus)	
	Material Covered
Week 1	Introduction about computer and AutoCAD Component of AutoCAD screen, Title bar, Menu bar, Tool Bar, properties.
Week 2	Make a new drawing, saving, Unite, boundary of paper ,Command line.
Week 3	Draw list: Line, Xline, circle, arc, polyline.
Week 4	Draw list: point (dividing, measures), Ellipse, Text, block.
Week 5	Modify list: Erase, offset, copy, Rotate, Array, Trim, Extend.
Week 6	Modify list: Mirror, Move, Explode, Fillet, Chamfer+ quiz.
Week 7	Object snap, Polar tracking +mid-term exam.
Week 8	Dimensions.
Week 9	Projections: Introduction about projections, types of projections, projections in third angle, Projections of Object contain perpendicular surface only.
Week 10	projection of object contains include surface, projections of curved surface.
Week 11	finding a missing view, section.
Week 12	Isometric drawing: Introduction about isometric drawing.
Week 13	Isometric drawing: isometric drawing for perpendicular surface include surface, curved surface.
Week 14	3D in AutoCAD: Introduction about three dimensions in AutoCAD.
Week 15	Assembly (finding the 3D viewing from projection) + final-term exam.

Delivery Plan (Weekly Practical Syllabus)	
	Material Covered
Week 1	Component of AutoCAD screen, Title bar, Menu bar, Tool Bar, properties.
Week 2	new drawing, saving, Unite, boundary of paper, Command line.
Week 3	Draw Line, Xline, circle, arc, polyline.
Week 4	Draw point (dividing, measures), Ellipse, Text, block.
Week 5	Modify Erase, offset, copy, Rotate, Array, Trim, Extend.

Week 6	Modify Mirror, Move, Explode, Fillet, Chamfer +quiz.
Week 7	Object snap, Polar tracking +mid-term exam.
Week 8	Dimensions.
Week 9	projections, types of projections, projections in third angle, Projections of Object contain perpendicular surface only.
Week 10	projection of object contains include surface, projections of curved surface.
Week 11	finding a missing view, section.
Week 12	isometric drawing.
Week 13	isometric drawing for perpendicular surface includes surface, curved surface.
Week 14	three dimensions in AutoCAD.
Week 15	Assembly (finding the 3D viewing from projection) +final-term ezam.

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Mastering AutoCAD 2010 and AutoCAD LT 2010 1st Edition **1990**.	NO
Recommended Texts	AutoCAD 2010 Command Reference, AutoCAD tutorial2011	-
Websites	Getting Started with the Basics in AutoCAD 2017	

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 is 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.

MODULE DESCRIPTION

Module Information

Module Title	**ENGLISH LANGUAGE 2**	**Module Delivery**	
Module Type	**Basic learning activities**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOM2022		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGll	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	1/2/2026	**Version Number**	1.0

Relation with other Modules

Prerequisite module	UOM1021	**Semester**	2
Co-requisites module	None	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1-(Scientific Structural Competence) 2-(Analytical Reading & ESP Terminology) 3-(Translation Accuracy) 4-(Critical Communication & Fluency)
Module Learning Outcomes LOs	The student should be able to: LO#1: **Demonstrate grammatical accuracy** by using advanced verb aspects (Progressive & Perfect) and Passive Voice to describe agricultural processes and scientific experiments effectively. LO#2: **Analyze specialized agricultural and literary texts** to identify main ideas, deduce the meaning of technical terms within context, and deconstruct complex sentence structures. LO#3: **Apply translation techniques** to accurately transfer scientific concepts and texts from English into Arabic, maintaining terminological precision and appropriate scientific style. LO#4: **Engage in critical discussions** and debates regarding cultural and controversial topics, demonstrating the ability to articulate opinions and evaluate arguments confidently.
Indicative Contents	Indicative content includes the following.

	Theoretical • **Advanced Grammar & Diagrams: Progressive and Perfect Tenses, Passive Voice, and Morphology.** • **ESP Reading: Analysis of specialized agricultural texts and scientific reports.** • **Translation: English-to-Arabic translation of scientific and geographical concepts.** • **Oral Skills & Culture: Debates, cultural discussions, and media analysis to enhance fluency.** Total hrs = 32 = SSWL - (Exam hrs) = 32-2= 30 (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)	32	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	18	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4 and 11	LO#1 and LO#2
	Assignments	2	20% (10)	2 and 13	LO#1 and LO#3
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	14	LO#1, LO#2 and LO#4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Continuous Aspect & Verb Types
Week 2	The Perfect Aspect
Week 3	Scientific Voice (Passive)
Week 4	Logical Connectives & Cohesion
Week 5	Terminology & First Reading
Week 6	Deep Analysis
Week 7	Mid-term Exam
Week 8	Translation & Application
Week 9	Practical workshop on translation techniques (from and into Arabic)
Week 10	Identity & Culture
Week 11	English for Agriculture
Week 12	Debate & Argumentation
Week 13	Literature & Analysis
Week 14	Science & Business
Week 15	Media & Lifestyle
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	New Headway Plus/Beginner part1	Yes
Recommended Texts	Rapid Review of English Grammar 2020–2021	No
Websites		

Grading Scheme

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

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	AGRICULTURAL PRODUCTION MECHANIZATION TECHNIQUES			**Module Delivery**	
Module Type	Core			☒Theory ☐ Lecture ☐Lab ☐Tutorial ☒ Practical ☐Seminar	
Module Code	APT2130				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Nofal Issa Mohamed		**e-mail**	nofelemh@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	MSc.	
Module Tutor	N.A.		**e-mail**	N.A.	
Peer Reviewer Name	N.A.		**e-mail**	N.A.	
Scientific Committee Approval Date	01/02/2025		**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-Teaching students the fundamentals of agricultural machinery and equipment and their applications in the agricultural sector. 2-Practically applying these fundamentals in various agricultural fields. 3-Preparing advanced personnel in this field who can utilize these tools in different agricultural sectors. 4-Understanding the theories behind the design and operation of specialized agricultural equipment, as well as maintenance methods to ensure the sustainability of agricultural operations. 5-Keeping up with the rapid advancements in the agricultural sector to meet local market demands and export surplus production to global markets.
Module Learning Outcomes	**LO#1:** Clarify the fundamentals and principles of agricultural machinery and equipment and their applications in various agricultural fields. **LO#2:** Acquire knowledge of the maintenance, repair, and servicing methods of

	agricultural machinery and equipment. **LO#3:** Develop the ability to keep up with agricultural development and expansion plans, including land cultivation and the adoption of modern agricultural techniques. **LO#4:** Gain knowledge in optimizing the use of resources, such as water resources, and making the most of available reserves through the implementation of efficient irrigation methods. **LO#5:** Develop both theoretical and practical expertise in establishing small-scale agricultural production projects in the fields of crop and livestock production. **LO#6:** Acquire skills in managing agricultural machinery and equipment in the field. LO#7: Develop skills in improving crop harvesting processes to minimize both quantitative and qualitative losses. **LO#8:** Enhance plant production through the adoption of modern seeding techniques and crop management practices.
Indicative Contents	**Introduction to Agricultural Tractors: Definition and Classification** Agricultural tractors serve as the primary source of power on farms, used for various agricultural operations such as towing and hauling equipment. They are classified based on their size, horsepower, and the type of tasks they perform, including wheeled and tracked tractors. **Tractor Engines and Farm Power Sources** Agricultural tractors rely on internal combustion engines powered by diesel or gasoline. Other power sources on farms include electricity, solar energy, and mechanical power derived from animals. **Engine Operation: Four-Stroke and Two-Stroke Cycles** Engines operate using either a four-stroke cycle (intake, compression, power, exhaust) or a two-stroke cycle, with the choice affecting fuel efficiency and overall engine performance. **Power Transmission Systems in Agricultural Tractors** Power is transmitted from the engine to the wheels or equipment through components such as the gearbox (manual or automatic), clutch, and hydraulic transmission systems, allowing for precise control of speed and power. **Ground Contact Mechanisms, Hydraulic System, and Power Take-Off (PTO)** Ground contact mechanisms include wheels or tracks to ensure stability and traction. The hydraulic system is used for raising and lowering implements, while the PTO drives mechanical attachments. **Primary Soil Preparation Equipment** This category includes various plows such as the moldboard plow, chisel plow, disc plow, vertical disc plow, and rotary plow, all designed to break up and turn the soil, improving aeration and preparing it for planting. **Secondary and Specialized Soil Preparation Equipment** Equipment such as harrows and leveling tools are used after plowing to refine the soil surface and optimize growing conditions. Other tools include subsoilers, cultivators, furrow openers, and undercut cultivators. **Seeding Equipment** Seeding machinery includes conventional and precision seeders that ensure uniform seed distribution at the proper depth for optimal germination. **Planting and Transplanting Equipment** These machines are used for planting seedlings and crops that require systematic placement, such as vegetables and field crops. **Fertilization Equipment** This includes manure spreaders and chemical fertilizer applicators, which help distribute nutrients efficiently across fields. **Sprinkler Irrigation Equipment** Sprinkler irrigation systems, either stationary or mobile, deliver water evenly to crops, enhancing water use efficiency.

	Drip Irrigation Systems and Pumps Drip irrigation systems provide a slow and steady water supply directly to plant roots through perforated pipes, while pumps transfer water from various sources to agricultural fields. **Pest and Fire Control Equipment** This category includes sprayers and dusters used to combat agricultural pests and diseases, along with fire control equipment for fields and forests. **Grain Harvesting and Fruit Picking Equipment** This includes combine harvesters and their functional units, which are essential for efficient harvesting operations. **Post-Harvest Equipment** post-harvest operations involve drying, sorting, storage, and packaging systems designed to maintain crop quality and minimize losses before marketing.

Learning and Teaching Strategies

Strategies	Quizzes Reports Homework Discussion and solving exercises within the lecture, student interaction. .

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	**125**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Agricultural Tractors: Definition, Classification, and Power Sources Used on Farms, Agricultural Tractor Engines and Power Sources.
Week 2	Engine Operation Mechanism: Four-Stroke and Two-Stroke Cycles
Week 3	Power Transmission and Drive Systems in Agricultural Tractors
Week 4	Ground Engagement Systems, Hydraulic System, and Power Take-Off (PTO) Shaft
Week 5	Primary Soil Preparation Equipment
Week 6	Secondary and Specialized Soil Preparation Equipment
Week 7	Seeding Equipment
Week 8	Planting and Transplanting Equipment
Week 9	Fertilization Equipment
Week 10	Sprinkler Irrigation Equipment and Pumps
Week 11	Drip Irrigation Equipment
Week 12	Weed, Pest and Fire Control Equipment
Week 13	Grain Harvesting and Fruit Picking Equipment
Week 14	Mechanization of animal farm
Week 15	Final Examination

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Components and Assembly of Internal Combustion Engines
Week 2	Training on Operating Agricultural Tractors
Week 3	Timing System and Fuel System
Week 4	Cooling System and Lubrication System
Week 5	Field Training on Equipment Usage
Week 6	Field Training on Equipment Usage
Week 7	Field Training on Equipment Usage
Week8	Field Training on Equipment Usage
Week9	Field Training on Equipment Usage
Week10	Field Training on Equipment Usage
Week11	Field Training on Equipment Usage
Week12	Field Training on Equipment Usage
Week13	Field Training on Equipment Usage

Week14	Field Training on Equipment Usage
Week15	Final Examination

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	- **Agricultural Machinery and Equipment**, authored by Dr. Yassin Hashim Al-Tahan and Dr. Mohammed Jasim Al-Naama. **Mechanization of animal farm,** authored by Dr. Mohammed Jasim Al-Naama	Yes
Recommended Texts	- **CIGR Handbook of Agricultural Engineering. Vol., 1, 2, 3, 4, 5. American Society of Agricultural Engineers. USA**	NO
Websites	https://asabe.org/ , https://www.fao.org/home/ar	

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.

MODULE DESCRIPTION

Module Information

Module Title	**Beneficial insects**	**Module Delivery**	
Module Type	**Core learning activity**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**
Module Code	PE12180		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		

Module Level	UGII	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	AGFO1964
Module Leader	Yousif Yakoub Hilal	**e-mail**	yousif.yakoub@uomosul.edu.iq
Module Leader's Acad. Title	assistant professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	2026/2/1	**Version Number**	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Introduce the concept of beneficial insects and their agricultural and environmental importance. 2- Understand honeybee biology, social organization, and economic value. 3- Develop skills in honeybee colony management and seasonal care. 4- Identify honeybee products and apply proper methods for harvesting and utilization. 5- Diagnose honeybee diseases and pests and apply prevention and control methods. 6- Explain the role of honeybees and other insects in pollination and crop yield improvement. 7- Apply methods of honeybee reproduction and queen rearing. 8- Understand silkworm biology, rearing practices, and silk production. 9- Learn principles of biological control using predators and parasitoids. 10- Distinguish beneficial insects from agricultural pests in the field. 11- Build practical skills in field collection, observation, and evaluation. 12- Promote awareness of the role of beneficial insects in ecological balance and sustainable agriculture.
Module Learning Outcomes	LO#1 Understand the scientific and ecological principles of beneficial insects and their roles in agro-ecosystems. LO#2. Know honeybee biology, colony social organization, and roles of colony members. LO#3. Identify honeybee and silkworm diseases and pests, and relevant prevention and control measures. LO#4. Apply skills in apiary management, queen rearing, and natural and artificial reproduction. LO#5. Appreciate the roles of pollinators, predators, parasitoids, and scavenger insects in pollination, biological control, and sustainability.
Indicative Contents	The first four weeks focus on introducing honeybees in terms of their economic and environmental importance, common races, and social organization within the colony. The course then covers honeybee biology, life cycle, external and internal anatomy, and the roles of different colony members. Students learn the principles of establishing and managing an apiary, including essential tools, equipment, and seasonal care, with practical training in hive inspection. In addition, the course addresses honeybee products, their importance, and practical methods for harvesting and utilization. [SSWL=15 hrs]. Weeks five to eight cover honeybee diseases and pests, including their identification, diagnosis, and methods of prevention and control. The course highlights the role of honeybees in pollination and their importance in increasing agricultural productivity,

	with field visits to observe pollinators. It also addresses natural and artificial methods of honeybee reproduction, such as swarming and colony division. In addition, students learn the principles and practical steps of queen rearing and artificial insemination through applied training. [SSWL=15 hrs] . Week nine focuses on introducing the silkworm and its economic importance. It covers the silkworm life cycle, rearing practices, and feeding methods, with practical training on cocoon identification, silk extraction, and prevention of common diseases.. [SSWL=10 hrs] Weeks ten, eleven, and twelve focus on the concepts and applications of biological control. These weeks cover the role of predatory and parasitic insects in controlling agricultural pests, including their types and mechanisms of predation and parasitism. The content also addresses biological control of weeds using insects, with practical training in field sampling, observation of feeding behavior, and evaluation of field effectiveness. [SSWL=10 hrs] Weeks thirteen and fourteen focus on pollinating insects and decomposer insects and their environmental roles. The content covers the concept of pollination, types of pollinating insects, and their importance in biodiversity and agricultural production, with field observation of pollination behavior. It also introduces scavenger and decomposer insects, their common examples, and their role in organic matter decomposition, soil fertility improvement, and ecological balance, supported by practical sampling and activity assessment**.** [SSWL=10 hrs] Total hrs = 63 = SSWL - (Exam hrs) = 63 = 63 hr (Time table hrs x 15 weeks)
Learning and Teaching Strategies	
Strategies	1- Interactive lecture 2- Brainstorming 3- Dialogue and discussion 4-Field Training 5- Practical exercises 6- Field project 7- Self-education

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	62	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	125		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to honeybees, including their economic and environmental importance, common races, and social organization within the colony.
Week 2	Honeybee biology, including the life cycle, external and internal anatomy, and the functions of workers, the queen, and drones.
Week 3	Honeybee colony management, including apiary establishment, tools and equipment, and seasonal feeding and care.
Week 4	Honeybee products, including honey, beeswax, royal jelly, pollen, propolis, and bee venom.
Week 5	Honeybee diseases and pests, including bacterial, fungal, and viral diseases, insect and non-insect pests, and methods of prevention and control.
Week 6	The role of honeybees in pollination, their importance in increasing agricultural productivity, and the management of honeybee colonies for pollination purposes.

Week 7	Methods of honeybee reproduction, including natural reproduction, swarming and its types, and artificial colony division.
Week 8	.Queen rearing and artificial insemination in honeybees
Week 9	Silkworms: introduction and economic importance, life cycle, rearing practices, silk production, and common diseases with methods of prevention.
Week 10	Predators: the concept of biological control, types of predatory insects, mechanisms of predation, use of predators in controlling agricultural pests, and applied examples from agricultural fields.
Week 11	Parasitoids: the concept of biological control, types of parasitic insects, mechanisms of parasitism, use of parasitoids in controlling agricultural pests, and applied examples from agricultural fields.
Week 12	Biological control of weeds, including weed-feeding insects, their types, and their importance.
Week 13	Pollinating insects: the concept of pollination, types of pollinating insects, their role in biodiversity, their impact on agricultural crops, and methods for their conservation.
Week 14	Scavenger and decomposer insects: definition, common examples, their role in organic matter decomposition, and their importance in soil fertility.
Week 15	General review and monthly examination.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Apiary visit to identify honeybee colonies and races.
Week 2	Laboratory dissection of honeybee colony members and identification of the main internal organs and structures.
Week 3	Identification of essential tools and equipment used in beekeeping and honeybee colony inspection.
Week 4	Practical application of methods for collecting honeybee products.
Week 5	Diagnosis of diseases and pests affecting honeybees.
Week 6	Apiary visit and identification of different types of pollinating insects.
Week 7	Methods of handling, hiving swarms, and artificial colony division.

Week 8	Practical application of queen rearing and artificial insemination methods.
Week 9	Silkworm stages, feeding and rearing practices, identification of cocoons, and silk extraction.
Week 10	Collection of predatory insects and their identification in comparison with agricultural pests.
Week 11	Parasitic insects, observation of parasitism, and applications of biological control.
Week 12	Field sample collection, observation of feeding behavior, and evaluation of field activity.
Week 13	Collection of pollinating insects, observation of pollination behavior, and evaluation of their field activity.
Week 14	Collection of scavenger insects, study of their role in decomposition, and their relationship to soil fertility.
Week 15	General review, final practical examination, and submission of reports.

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Beekeeping and Silkworms Book / Written by Dr. Louay Karim Al-Naji	
Recommended Texts	The bees of the world /Charles D. Michener	
Websites	https://www.google.com/search?q=%D9%83%D8%AA%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&oq=%D9%83%D8%AA%D8%A8+%D8%AA%D8%B1%D8%A8%D9%8A%D8%A9+%D8%A7%D9%84%D9%86%D8%AD%D9%84&aqs=chrome..69i57j0i22i30l2j0i15i22i30l2.6551j0j15&sourceid=chrome&ie=UTF-8	

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	**SOIL and WATER SUITBILTY**			**Module Delivery**	
Module Type	**Core learning activity**			☒Theory ☐Lecture ☐Lab ☐Tutorial ☒Practical ☐Seminar	
Module Code	**SWS2190**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	2	
Administering Department	AGME1986		**College**	AGFO1964	
Module Leader	Yousif Yakoub Hilal		**e-mail**	yousif.yakoub@uomosul.edu.iq	
Module Leader's Acad. Title	assistant professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2026/2/1		**Version Number**		

Relation with other Modules			
Prerequisite module	APT2130	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Understand the concept of soil and water suitability. 2. Analyze the impact of environmental and social changes on achieving sustainability. 3. Study the role of government policies and innovation in supporting sustainable development. 4. Raise awareness of the importance of achieving social justice within the goals of sustainability.
Module Learning Outcomes	1. Interpret the concepts and goals of sustainable development. 2. Assess the impact of climate and policies on resource sustainability. 3. Analyze the role of education and technology in achieving sustainable development. 4. Propose innovative strategies to enhance sustainability in various sectors.
Indicative Contents	1. Introduction to the Sustainable Development Goals and Global Challenges. 2. Natural Resource Management and Climate Change. 3. Policies Supporting Sustainability in the Fields of Energy and Agriculture. 4. Innovation and Social Justice in Achieving a Sustainable Future.

	Total hrs = 62 = SSWL - (Exam hrs) = 62-2= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies	
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)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	5.8
Total SWL (h/sem)	150		

Module Evaluation

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

Delivery Plan (Weekly Theory Syllabus)

	Material Covered
Week 1	• Definition of soil, components and types of soils
Week 2	• Physical properties of soil (texture, density, permeability)
Week 3	• Physical properties of soil (structure, color, texture)
Week 4	• Soil chemical properties (pH, Electrical Conductivity, Nutrients)
Week 5	• Chemical properties of soil (Soil Colloids, Cation Exchange)
Week 6	• Fertile soil and factors affecting its fertility
Week 7	Midterm Exam
Week 8	• Soil degradation and its causes
Week 9	• Soil salinity and its effect on agriculture
Week 10	• Desertification and ways to combat it
Week 11	• Soil suitability for agricultural crops

Week 12	• Definition of water resources, types of water (surface, groundwater, rainwater)
Week 13	• Water pollution and its causes
Week 14	• Impact of water quality on agricultural production
Week 15	• Global Challenges Facing Sustainable Development
Week 16	• Preparatory week before the final Exam

Delivery Plan (Weekly practical Syllabus)

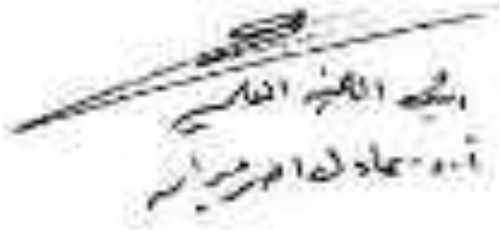
	Material Covered
Week 1	• Collect soil, water samples, and prepare them for the laboratory.
Week 2	• Measure soil texture (percentage of sand, silt, and clay).
Week 3	• Determine the apparent density and porosity.
Week 4	• Measurement of soil's ability to hold water (field capacity).
Week 5	• Measurement of acidity and acidity (pH&EC).
Week 6	• Estimation of essential nutrients (N, P, K).
Week 7	Midterm Exam
Week 8	• Estimation of essential nutrients (Ca, Mg).
Week 9	• Organic carbon (OC) estimation
Week 10	• Carbonate and bicarbonate measurement
Week 11	• Calcium carbonate measurement.
Week 12	• Total dissolved salts (TDS) analysis.
Week 13	• Estimation of color, turbidity, and odor.
Week 14	• Temperature: Its effect on water quality.
Week 15	• Preparatory week before the final Exam

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	مبادئ علم التربة، تأليف الدكتور عبدالله العاني (1982) تحليل التربة والنبات-دليل مختبري، ايكاردا، جون راين وعبد الرشيد (2001)	yes
Recommended Texts	Soils and land suitability for arable farming of southeast central district, Food and Agriculture Organization of the United Nations, A. REMMELZWA (1989).	No
Websites		

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

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



MODULE DESCRIPTION

Module Information

Module Title	**WASTE TREATMENT AGRICULTURAL ENGINEERING**	**Module Delivery**	
Module Type	**Core learning activity**	☒Theory ☐ Lecture ☒T Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**AWE2210**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	**UGll**	**Semester of Delivery**	2
Administering Department	AGME1986	**College**	**AGFO1964**
Module Leader	Yousif Yakoub Hilal	**e-mail**	Yousif.Yakoub@uomosul.edu.iq
Module Leader's Acad. Title	**Assistant Professor**	**Module Leader's Qualification**	Ph.D.
Module Tutor	N.A.	**e-mail**	N.A.
Peer Reviewer Name	N.A.	**e-mail**	N.A.
Scientific Committee Approval Date	2026/2/1	**Version Number**	1.0

Relation with other Modules

Prerequisite module	APT2140	**Semester**	2
Co-requisites module	None	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1-Developing the concept of agricultural waste treatment engineering 2- Capacity development on creating clean, environmentally friendly, recycled projects 3- Promoting the positive attitudes of individuals towards agricultural waste treatment engineering and the use of modern technologies in treatment 4- Encouraging work on recycling and treating agricultural waste and using organic fertilizers
Module Learning Outcomes LOs	The student should be able to: LO#1: Knows the general concepts of agricultural waste treatment engineering LO#2: Determines appropriate means and methods for recycling and treating environmentally harmless agricultural waste LO#3: It proposes modern ideas and capabilities for clean and environmentally friendly projects in reprocessing agricultural waste LO#4: The student has ethical responsibilities in the production of new and recycled resources
Indicative Contents	The guiding content includes the following: Theoretica:l

	Developing agricultural waste treatment engineering skills and identifying appropriate means for treating solid, liquid and gaseous waste, as well as identifying the types of agricultural waste and how to employ them in creating clean, environmentally friendly projects to develop work in the field of agricultural engineering sciences and methods of using them efficiently to develop agricultural production and recycle and treat .environmentally non-harmful waste as an economic opportunity lab The most important modern means of obtaining and benefiting from recycling agricultural waste will be .addressed by conducting reviews and laboratory experiments to recycle some solid, liquid and gaseous waste Total hrs = 63 = SSWL - (Exam hrs) = 63-3= 60 (Time table hrs x 15 weeks)

Learning and Teaching Strategies

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)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	37	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	100		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (10)	4,,10 and 12	LO#1and LO#2
	Assignments	2	10% (10)	2, and 13	LO#1 andLO#3
	Projects/ lab	2	5% (10)	8 and 12	All
	Report	1	10% (10)	14	LO#1, LO#2and LO#4
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO#1, LO#2 and LO#3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered

Week 1	The concept of agricultural waste treatment engineering and its importan
Week 2	Types of solid, liquid and gaseous agricultural waste
Week 3	Agricultural waste treatment objectives as an economic opportunity
Week 4	Classification of agricultural waste according to its components and composition
Week 5	Effects of agricultural waste on the environmental economy
Week 6	Agricultural waste sources .
Week 7	Mid exam
Week 8	gro-environmental management, policy and agro-environmental planning .
Week 9	Ways to benefit from organic agricultural waste
Week 10	Agricultural ecological footprint and its impacts.
Week 11	Waste disposal systems (Waste handling methods)
Week 12	Causes of the spread of hazardous toxic industrial waste, non-toxic waste and radioactive wast
Week 13	Production of organic fertilizer, biogas and biogas fertilizer
Week 14	Reducing greenhouse gas emissions and green nitrogen uses
Week 15	Animal feed production, use of liquid feed, solid molasses blocks and roughage grinding (mechanical processing) .
Week 16	Preparatory week before the final

Delivery Plan (Weekly LAB Syllabus) ing modern technology and discussing the most important means of transferring and adopting it by :farmers, as well as the obstacles and treatments that ensure adoption	
	Material Covered
Week 1	Organic fertilizer (improving the organic fertilizer properties of poultry manure by adding biochar)
Week 2	Biogas potential as a sustainable new energy source for rural livelihoods (green hydrogen and gas uses and greenhouse gas mitigation)
Week 3	Practical experiments to benefit from heat exchangers in drying fish farm waste and treating and recycling chicken litter .
Week 4	Methane production by anaerobic fermentation from cattle manure and poultry droppings under laboratory conditions.
Week 5	Hydroponics: Growing plants in a water solution instead of soil, which reduces water use.
Week 6	Some natural properties of apricot kernels and their recycling.
Week 7	Midterm Exam
Week 8	Agricultural Robots: The use of robots to perform tasks such as planting and harvesting.
Week 9	Utilization of heat exchangers in drying fish farm waste.
Week 10	Design and manufacture of a unit for cooking meals from poultry waste as a non-traditional feed
Week 11	Improving the properties of organic fertilizer of poultry waste by adding biochar
Week 12	Crushing of roughage (mechanical treatment of waste with urea solution, ammonia gas and silage)
Week 13	Organic fertilizer production as a successful, clean and environmentally friendly project
Week 14	Organic Farming: Agricultural techniques that rely on the use of natural materials instead of chemicals.

Week 15	Organic Fertilizer Production Systems Andrew's Method Classification of Organic Fertilizer Production Systems and Production Stages .

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Environmental Economics 2022lMustafa Youssef Kafi Book	YES
Recommended Texts	Agricultural Waste Treatment Engineering 2000, Kingdom of Saudi Arabia, King Saud University, College of Agricultural Engineering.	NO
Websites		

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