University of Mosul

جامعة الموصل

First Cycle – Bachelor's degree (B.Sc.) – Agricultural Machines and Equipment Science

بكالوريوس علوم زراعة – المكائن والآلات الزراعية

Table of Contents

1. Overview

This catalogue is about the courses (modules) given by the program of Agricultural sciences to gain the Bachelor of Agricultural Machines and Equipment sciences degree. The program delivers (56) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج العلوم الزراعية للحصول على درجة بكالوريوس علوم المكائن والآلات الزراعية. يقدم البرنامج (56) مادة دراسية، على سبيل المثال، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على مسار بولونيا.

2. Undergraduate Courses 2024-2025

Module 1

Code	Course/Module Title	ECTS	Semester
UOM1031	**COMPUTER**	3	1
Class (hr/w)	**Lab. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	47	28
Description			
The "Computer " module is designed to equip students with essential computing knowledge and practical skills needed for academic and professional success. It covers key areas such as basic computer operations, word processing, spreadsheet management, and presentation software. Students will also gain familiarity with internet navigation, email usage, and data management tools. The module introduces fundamental concepts in computer security, cloud computing, and the use of collaborative tools for teamwork. By the end of the course, students will be able to effectively use software applications to organize, analyze, and present information, while also understanding the ethical and secure use of technology in a modern digital environment			

Module 2

Code	Course/Module Title	ECTS	Semester
UOM1040	**DEMOCRACY and HUMAN RIGHTS**	2.00	1

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	32	18
Description			
The "Democracy and Human Rights" module explores the fundamental principles and concepts underlying democratic governance and the protection of human rights. Students will study the evolution of democracy, different democratic systems, and the roles of institutions in promoting participation, transparency, and accountability. The course also addresses key human rights issues, including civil, political, social, and economic rights, as well as international frameworks that protect these rights. Through case studies and discussions, students will analyze the challenges facing democracy and human rights in different regions and contexts. By the end of the module, students will have a deeper understanding of the interconnection between democratic values and human rights, and the importance of safeguarding these principles in modern society			

Module 3

Code	Course/Module Title	ECTS	Semester
UOM1021	**ENGLISH LANGUAGE**	2.00	1
Class (hr/w)	**Lect/Lab./Prac. /Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	32	18
Description			
The "English Language" module is designed to enhance students' proficiency in English, focusing on the four essential language skills: listening, speaking, reading, and writing. It provides a comprehensive approach to language learning, covering grammar, vocabulary, pronunciation, and sentence structure. Through interactive activities, such as discussions, presentations, and written assignments, students will improve their ability to communicate effectively in academic, professional, and social contexts. The module also emphasizes comprehension and analysis of texts, both written and spoken, to develop critical thinking skills. By the end of the course, students will have gained confidence in using English in various settings and will be better prepared for further academic studies and global communication.			

Module 4

Code	Course/Module Title	ECTS	Semester
MAT1010	**MATHEMATICS**	7.00	1
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	112
Description			

The "Mathematics" module provides students with a strong foundation in essential mathematical concepts and problem-solving techniques. Covering topics such as algebra, geometry, calculus, and statistics, the course emphasizes both theoretical understanding and practical application. Students will develop critical thinking and analytical skills, enabling them to tackle complex mathematical problems in various fields. Through exercises and real-world examples, the module aims to enhance logical reasoning and quantitative skills, preparing students for further studies and professional applications in science, engineering, economics, and more.

Module 5

Code	Course/Module Title	ECTS	Semester
ACE1020	**AGRICULTURE CAREER ETHICS**	5.00	1
Class (hr/w)	**Semn. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	62	63
Description			
The " AGRICULTURE CAREER ETHICS " module introduces students to the ethical principles and responsibilities relevant to agricultural professionals. The course covers topics such as sustainability, environmental stewardship, tree welfare, and fair labor practices. Students will explore the ethical challenges faced in modern agriculture, including the impact of agricultural practices on ecosystems and society. Through case studies and discussions, the module encourages critical thinking about moral issues and promotes a commitment to ethical decision-making in agricultural practices. By the end of the course, students will understand the importance of ethics in fostering sustainable and responsible agricultural development.			

Module 6

Code	Course/Module Title	ECTS	Semester
END1030	**ENGINEERING DRAWING**	6	1
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	3	63	87
Description			
The "Engineering Drawing" module 1To 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 7

Code	Course/Module Title	ECTS	Semester
AET1040	**AGRICULTRAL ENGINEERING TECHNIQUES TRANSFER**	5.00	1
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Agricultural Engineering Techniques Transfer" module focuses on the application and dissemination of modern engineering solutions in agriculture. It covers the principles of technology transfer, including the adoption of advanced machinery, irrigation systems, and precision farming tools. Students will learn how to assess and implement engineering techniques that enhance agricultural productivity and sustainability. The module emphasizes communication skills for effectively transferring knowledge to farmers and agricultural stakeholders. By the end of the course, students will be prepared to bridge the gap between agricultural research and practical field applications, promoting innovation in the agricultural sector.			

Module 8

Code	Course/Module Title	ECTS	Semester
UOM1011	**ARABIC LANGUAGE**	2.00	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	32	18
Description			
The "Arabic Language" module is designed to develop students' proficiency in reading, writing, speaking, and listening in Arabic. It covers essential grammar, vocabulary, and sentence structure while emphasizing both classical and modern Arabic. Through various texts, writing exercises, and oral activities, students will enhance their communication skills and cultural understanding. The course also focuses on improving comprehension of complex texts and refining formal and informal writing styles. By the end of the module, students will have strengthened their ability to use Arabic effectively in academic, professional, and social contexts.			

Module 9

Code	Course/Module Title	ECTS	Semester
BSS1050	**BIOSAFETY and SECURITY**	3.00	2
Class (hr/w)	**Lab. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	47	28

Description
The "Biosafety and Security" module provides students with an understanding of the principles and practices necessary to ensure safety in biological research and biotechnology. It covers topics such as risk assessment, containment strategies, and the safe handling of biological materials. Students will explore the ethical and legal frameworks governing biosafety, as well as the potential threats of biological hazards and biosecurity risks. The module emphasizes the importance of implementing proper protocols to protect both public health and the environment. By the end of the course, students will be equipped with the knowledge to manage biosafety in laboratory and field settings.

Module 10

Code	Course/Module Title	ECTS	Semester
AGS1060	**AGRICULTURAL STATISTICS**	5.00	2
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
The "Agricultural Statistics" module introduces students to the statistical methods and tools used in agricultural research and data analysis. Topics covered include data collection, probability, hypothesis testing, regression analysis, and experimental design. Students will learn how to apply statistical techniques to solve real-world agricultural problems, such as crop yield analysis, soil quality assessment, and livestock management. The course emphasizes the interpretation of statistical results to inform decision-making in agricultural practices. By the end of the module, students will be able to analyze and interpret agricultural data, supporting evidence-based approaches in farming and research.			

Module 11

Code	Course/Module Title	ECTS	Semester
BIO1070	**BIODIVERSITY**	5.00	2
Class (hr/w)	**Lab. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Biodiversity" module explores the variety of life forms on Earth and their ecological significance. Students will study the different levels of biodiversity, including genetic, species, and ecosystem diversity, and their roles in maintaining ecosystem health and resilience. The course covers key concepts such as habitat conservation, the impacts of human activities on biodiversity, and strategies for sustainable management. Through case studies and fieldwork, students will learn about the importance of preserving biodiversity for food security, environmental stability, and human well-being. By the end of the module, students will appreciate the complex interrelationships among species and the need for conservation efforts.			

Module 12

Code	Course/Module Title	ECTS	Semester
AGI1080	**AGRICULTURAL INFORMATICS**	5.00	2
Class (hr/w)	**Lab./ Semn. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1/1	63	62
Description			
The "Agricultural Informatics" module focuses on the integration of information technology and data management in the agricultural sector. Students will learn about the tools and techniques used to collect, analyze, and interpret agricultural data, including Geographic Information Systems (GIS), remote sensing, and data analytics. The course emphasizes the role of informatics in improving decision-making, enhancing productivity, and promoting sustainable agricultural practices. Through practical exercises and case studies, students will develop skills in managing agricultural information systems and utilizing technology for precision farming and resource management. By the end of the module, students will be equipped to leverage informatics in addressing contemporary agricultural challenges.			

Module 13

Code	Course/Module Title	ECTS	Semester
SUD1090	**SUSTANIBLE DEVELOPMENT**	5.00	2
Class (hr/w)	**Semn. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	62	63
Description			
The "Sustainable Development" module explores the principles and practices essential for achieving a balance between environmental, social, and economic sustainability. Students will study key concepts such as the United Nations Sustainable Development Goals (SDGs), resource management, and community engagement. The course examines the interconnections between human activities and environmental health, focusing on strategies to address challenges such as climate change, biodiversity loss, and poverty. Through case studies and project-based learning, students will develop critical thinking and problem-solving skills to promote sustainable practices in various sectors. By the end of the module, students will be prepared to contribute to sustainable development initiatives locally and globally.			

Module 14

Code	Course/Module Title	ECTS	Semester
AMT1100	**AGRICULTURAL MARKETING TECHNIQUES**	5.00	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	32	93
Description			
The "Agricultural Marketing Techniques" module provides students with a comprehensive understanding of marketing principles specific to the agricultural sector. It covers key topics such as market analysis, consumer behavior, pricing strategies, and distribution channels for agricultural products. Students will learn effective techniques for promoting and selling crops, livestock, and other agricultural goods in domestic and international markets. The course emphasizes the importance of branding, quality assurance, and sustainable practices in marketing. Through case studies and practical exercises, students will develop skills to create effective marketing plans and strategies that enhance competitiveness and profitability in the agricultural industry.			

Module 15

Code	Course/Module Title	ECTS	Semester
UOM1012	**ARABIC LANGUAGE2**	2.00	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	32	18
Description			
The "Arabic Language" module is designed to develop students' proficiency in reading, writing, speaking, and listening in Arabic. It covers essential grammar, vocabulary, and sentence structure while emphasizing both classical and modern Arabic. Through various texts, writing exercises, and oral activities, students will enhance their communication skills and cultural understanding. The course also focuses on improving comprehension of complex texts and refining formal and informal writing styles. By the end of the module, students will have strengthened their ability to use Arabic effectively in academic, professional, and social contexts.			

Module 16

Code	Course/Module Title	ECTS	Semester
UOM2050	**The CRIMES of the BATH REGIME in IRAQ**	2.00	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	32	18

Description
The "Crimes of the Ba'ath Regime in Iraq" module examines the human rights abuses and atrocities committed during the rule of the Ba'ath Party. Students will explore key events such as the Anfal Campaign, chemical attacks, mass executions, and the suppression of political dissent. The module also delves into the legal, social, and historical context of the regime's actions, analyzing the impact on various ethnic and religious groups. By studying testimonies, legal documents, and historical accounts, students will gain a deeper understanding of the regime's legacy and its consequences for Iraq and the wider region.

Module 17

Code	Course/Module Title	ECTS	Semester
IPM2110	**INTEGRATED PEST MANAGEMENT**	5.00	3
Class (hr/w)	**Lab. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Integrated Pest Management" (IPM) module focuses on sustainable and environmentally friendly approaches to managing agricultural pests. Students will learn about the principles of IPM, which combines biological, cultural, mechanical, and chemical methods to control pests while minimizing harm to ecosystems. The course covers pest identification, monitoring techniques, and decision-making processes to implement effective pest control strategies. Emphasis is placed on reducing pesticide use and promoting natural predators. By the end of the module, students will be equipped with the knowledge and skills to design and apply integrated pest management plans that enhance crop production and protect the environment.			

Module 18

Code	Course/Module Title	ECTS	Semester
AEM2120	**AGRICULTRAL ENGINEERING PROJECT MANAGEMENT**	6	3
Class (hr/w)	**Prac./ Semn. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2/1	78	72
Description			
The "Agricultural Engineering Project Management" module provides students with the skills and knowledge necessary to plan, execute, and manage engineering projects in the agricultural sector. Topics covered include project planning, resource allocation, budgeting, risk management, and the use of modern project management tools. The course emphasizes effective communication, leadership, and decision-making skills to ensure successful project outcomes. Students will learn how to manage various agricultural projects, such as irrigation systems, farm infrastructure, and machinery			

installation. By the end of the module, students will be capable of overseeing complex agricultural engineering projects from conception to completion.

Module 19

Code	Course/Module Title	ECTS	Semester
DAE2160	DESIGN AND ANALYSIS of EXPERIMENTS	5.00	3
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Design and Planning of Agricultural Facilities" module focuses on the principles of designing and developing efficient and sustainable infrastructure for agricultural operations. Students will learn how to plan and design key facilities such as storage buildings, greenhouses, irrigation systems, livestock housing, and processing units. The course emphasizes factors like cost-efficiency, environmental impact, and functionality in agricultural production. Topics also include site selection, layout optimization, and the use of modern materials and technologies. By the end of the module, students will be equipped to plan and design agricultural facilities that enhance productivity and sustainability.			

Module 20

Code	Course/Module Title	ECTS	Semester
APT2140	**AGRICULTURAL PRODUCTION TECHNOLOGIES**	5.00	3
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Agricultural Production Technologies" module introduces students to the latest innovations and technologies used to enhance agricultural productivity and sustainability. Topics include precision farming, advanced irrigation systems, greenhouse technologies, and the use of biotechnology in crop and livestock production. Students will explore how these technologies optimize resource use, improve yields, and reduce environmental impacts. The course also covers the integration of digital tools like drones, sensors, and data analytics to monitor and manage agricultural processes. By the end of the module, students will be equipped with practical knowledge of cutting-edge technologies to improve efficiency in agricultural production.			

Module 21

Code	Course/Module Title	ECTS	Semester
FTP2150	**FOOD TECHNOLOGIES and HEALTH AGRICULTRAL PRODUCTS**	5.00	3
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Food Technologies and Health Agricultural Products" module focuses on the processing, preservation, and safety of agricultural products to ensure high nutritional value and quality. Students will learn about modern food technologies used in the production of healthy and safe food, including techniques like pasteurization, canning, drying, and packaging. The course also covers the impact of these technologies on the nutritional content of food, as well as regulations and standards for food safety. By the end of the module, students will understand how to apply advanced food technologies to produce health-focused agricultural products that meet consumer demands.			

Module 22

Code	Course/Module Title	ECTS	Semester
UOM2022	**ENGLISH LANGUAGE2**	2.00	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	32	18
Description			
The "English Language" module is designed to enhance students' proficiency in English, focusing on the four essential language skills: listening, speaking, reading, and writing. It provides a comprehensive approach to language learning, covering grammar, vocabulary, pronunciation, and sentence structure. Through interactive activities, such as discussions, presentations, and written assignments, students will improve their ability to communicate effectively in academic, professional, and social contexts. The module also emphasizes comprehension and analysis of texts, both written and spoken, to develop critical thinking skills. By the end of the course, students will have gained confidence in using English in various settings and will be better prepared for further academic studies and global communication.			

Module 23

Code	Course/Module Title	ECTS	Semester
UOM2032	**COMPUTER SKILLS2**	3.00	4
Class (hr/w)	**Lab. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	47	28

Description
The "Computer Skills" module is designed to equip students with essential computing knowledge and practical skills needed for academic and professional success. It covers key areas such as basic computer operations, word processing, spreadsheet management, and presentation software. Students will also gain familiarity with internet navigation, email usage, and data management tools. The module introduces fundamental concepts in computer security, cloud computing, and the use of collaborative tools for teamwork. By the end of the course, students will be able to effectively use software applications to organize, analyze, and present information, while also understanding the ethical and secure use of technology in a modern digital environment

Module 24

Code	Course/Module Title	ECTS	Semester
APT2130	**AGRICULTURAL PRODUCTION MECHANIZATION TECHNIQUES**	5.00	4
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Design and Analysis of Experiments" module introduces students to the principles and methodologies used in planning, conducting, and analyzing scientific experiments. The course covers key topics such as experimental design, randomization, replication, and the analysis of variance (ANOVA). Students will learn how to create experiments that yield valid, reliable results and how to analyze data using statistical methods to draw meaningful conclusions. Emphasis is placed on practical applications in agricultural and biological research. By the end of the module, students will be able to design robust experiments and interpret experimental data for research and decision-making.			

Module 25

Code	Course/Module Title	ECTS	Semester
DPF2170	**DESIGN and PLANNING of AGRICULTURAL FACILITIES**	5.00	4
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Agricultural Production Mechanization Techniques" module focuses on the use of machinery and technology to enhance the efficiency and productivity of agricultural operations. Students will study various mechanization techniques, including the use of tractors, harvesters, irrigation systems, and planting equipment. The course covers the principles of machine operation, maintenance, and safety, along with the economic and environmental impacts of mechanization. Emphasis is placed on selecting appropriate machinery for different farming tasks to optimize production. By the end of the module, students will be able to apply modern mechanization techniques to improve agricultural			

processes and sustainability.

Module 26

Code	Course/Module Title	ECTS	Semester
PEI2180	**BENEFICIAL INSECTS**	5.00	4
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62

Description

Beneficial insects, starting with their identification, types, products and their impact on humans. At the end of the course, the student is expected to be able to achieve the following learning outcomes:
Learn about the concept of beekeeping, its benefits, an introduction and definition of beekeeping, and the historical development of bee science.
Identify the economic importance and benefits of bee and silkworm products.
It defines the standard characteristics of the bee colony, the types of bees, and the specifications that must be available in a good bee breed and their effect on production.
It determines the information the beekeeper needs about bees and silkworms and what is available to him to master his work.
It draws plans and programs to develop bee breeds and methods of producing silk from silkworms, which helps in increasing income and increasing the process of pollinating flowers and other crops.
Determines the appropriate times for feeding bees and silkworms.
Planning the necessary needs for feeding bees and silkworms and the most important alternatives used in feeding.
Identifies new ways to strengthen bee colonies and signs of pesticide poisoning.
Identifies innovative and new methods for raising queen bees and silkworms.
Various bee products and silk are used to increase individual income.
Identify the most important and dangerous diseases that affect bees and silkworms.
Uses innovative and modern methods to detect honey and silk fraud.
Identify signs of pesticide poisoning.
Able to prepare scientific research and study in his field of specialization.
The student adopts awareness among workers in the agricultural sector about the dangers of using chemical pesticides against beneficial insects.

Module 27

Code	Course/Module Title	ECTS	Semester
SWS2190	**SOIL and WATER SUITBILITY**	5.00	4
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62

Description

The " SOIL and WATER SUITBILITY" module focuses on evaluating soil and water resources for optimal agricultural use. Students will learn techniques for assessing soil properties, water availability, and quality to determine their suitability for different crops and farming systems. The course covers topics

such as soil classification, irrigation design, drainage systems, and sustainable water management practices. Students will also explore the environmental impact of agricultural activities on soil and water resources. By the end of the module, students will be able to design effective land-use strategies that maximize productivity while preserving soil and water health.

Module 28

Code	Course/Module Title	ECTS	Semester
AWE2210	**AGRICULTURAL WASTE TREATMENT ENGINEERING**	5.00	4
Class (hr/w)	**Lab. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " AGRICULTURAL WASTE TREATMENT ENGINEERING " module introduces students to			

Module 29

Code	Course/Module Title	ECTS	Semester
IED3500	**INDUSTRIAL ENGINERING DROWING**	2.00	5
Class (hr/w)	**Lab. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	48	2
Description			
The "INDUSTRIAL ENGINERING DROWING" - Graduating agricultural engineers and researchers to serve the agricultural sector. - Scientific cooperation with agricultural directorates and other parties with the aim of improving agricultural production in quantity and quality. - Investing in modern technology in the field of Industrial Drawing in order to develop education, training and research programmers. - Qualifying students to work according to the modern production system that relies on computers and information technology to operate. - Preparing an advanced technical staff in the field of engineering design and drawing to meet the needs of society.			

Module 30

Code	Course/Module Title	ECTS	Semester
TIE3510	**TILLAGE EQUIPMENTS**	3.00	5

Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	12
Description			
The " TILLAGE EQUIPMENTS" module 1- Explaining the basics and principles of engineering sciences and their applications in the field of soil preparation equipment 2- Gaining knowledge in improving soil treatments and preparing it with machines in a way that suits agricultural reality and development 3- The ability to develop modern soil preparation systems in line with the general trend in production and the requirements of human resources capable of dealing with those systems			

Module 31

Code	**Course/Module Title**	**ECTS**	**Semester**
PMM3520	**PRICIPLES of METALLURGY**	5.00	5
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " **PRICIPLES of METALLURGY** " module 1.To develop problem solving skills and understanding of circuit theory through the application of techniques. 2.To understand the mechanical properties of metals. 3.Student should be able to analyze thermal equilibrium diagrams and microstructure. 4.Student should be able to understand relation between properties with the heat treatments and its applications.			

Module 32

Code	**Course/Module Title**	**ECTS**	**Semester**
GME3530	**GENRAL MECHANICS ENGINERING**	5.00	5
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " **GENRAL MECHANICS ENGINERING** " module -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.			

-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 33

Code	Course/Module Title	ECTS	Semester
THE3540	**THERMODYNAMICS**	5.00	5
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " THERMODYNAMICS " module To study the relationship between heat, work, and the properties of materials, such as gases and vapors, within the boundaries of the thermal system, so that the student will later have a broad understanding of the work of thermal systems, whether thermal systems that produce or consume energy.			

Module 34

Code	Course/Module Title	ECTS	Semester
SFE3550	**SOWING and FERTILIZER EQUIPMENTS**	5.00	5
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " SOWING and FERTILIZER EQUIPMENTS " module - Graduating agricultural engineers and researchers to serve the agricultural sector. - Scientific cooperation with agricultural directorates and other parties with the aim of improving agricultural production in quantity and quality. - Investing in modern technology in the field of sowing and fertilizing equipment in order to develop education, training and research programmers. - Qualifying students to work according to the modern production system that relies on computers and information technology to operate. - Preparing an advanced technical staff in the field of sowing and fertilizing equipment design to meet the needs of society.			

Module 35

Code	Course/Module Title	ECTS	Semester
AGT3560	**AGRICULTURAL TRACTORS**	5.00	5

Class (hr/w)	Prac. (hr/w)	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62

Description

The "AGRICULTURAL TRACTORS" module
That the learner be able to identify the parts of agricultural workers
Differentiation between the types of motors (diesel and gasoline)
• Distinguishing between the types of agricultural workers, according to which they were made
• Knowledge of what the engine needs to work in the best conditions
• The learner's awareness of the factors affecting the performance of the withdrawal

Module 36

Code	Course/Module Title	ECTS	Semester
IDE3570	**IRRIGATION and DRAINAGE ENGINEERING**	4.00	6
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	48	52

Description

The " IRRIGATION and DRAINAGE ENGINEERING " module focuses
- Enable the student to understand what is the science of irrigation and what is the irrigation process
- Enabling the student to become familiar with the classification of irrigation water
- Enabling students to appreciate irrigation competencies
- Enable the student to schedule irrigation and know the water needs of the crop
- Enabling the student to know the different irrigation methods
- Enable the student to learn about the characteristics of sprinkler and drip irrigation
practical:
- Enable the student to recognize the mathematical relationships between soil parameters and knowledge of the depth of water in the soil
- The student will be able to estimate the moisture content of the soil - work on the pressure device and estimate the ready water
- He can estimate the tip
- The student is able to estimate and calculate water consumption.
- The student estimates the volume of water and drainage in the canals

Module 37

Code	Course/Module Title	ECTS	Semester
FLM3580	**FLUID MECHANICS**	5.00	6
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**

2	2	63	62
Description			
1- Introducing the student to how to use conversion tables (energy, pressure, mass, momentum...) And use it in designs, analyses, and flow sciences 2- Increasing the student's knowledge of how pressure occurs and knowing the types and measuring devices 3- Study losses in pipes and curves and develop correct designs for drainage in pipes 4- The student's understanding, complete knowledge, and familiarity with the subject of pumps, their types and parts, how they work and operate, finding their costs and pressures, and the ability necessary for that.			

Module 38

Code	Course/Module Title	ECTS	Semester
MCC3590	**MEASURE and CONTROL**	5.00	6
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " MEASURE and CONTROL " module			

Module 39

Code	Course/Module Title	ECTS	Semester
EMT3600	**EQUIBMENT and MACHINERY DESIGN THEORIES**	5.00	6
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Theoretical: - - Enabling the student to know the style of design philosophy - Introducing the student to the importance and role of designing machine parts in practical life - Delve deeper into the concepts of optimal design through a study - Special scientific concepts for designing equipment and machines for machines - Agricultural to achieve optimal quality and performance of machine parts agricultural Practical:			

- Enabling the student to solve problems using mathematical concepts related to engineering problems regarding the load on the machine or piece through stresses, strains, shocks, torsion, and other influencing factors.

Module 40

Code	Course/Module Title	ECTS	Semester
ICE3610	**INTERNAL COMBUSTION ENGINE**	5.00	6
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The student's familiarity with reciprocating internal combustion engines, their parts, and them operating mechanism, and understands the theoretical foundations of their operation, through which their performance standards are understood to distinguish between different engines to perform a specific task. Pollutants emitted from these engines are also studied.			

Module 41

Code	Course/Module Title	ECTS	Semester
TPM3620	**TRACTOR PERFORMANCE MECHANICS**	5.00	6
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
- Graduating agricultural engineers and researchers to serve the agricultural sector. - Scientific cooperation with agricultural directorates and other parties with the aim of improving agricultural production in quantity and quality. - Investing in modern technology in the field of Mechanics of tractor performance in order to develop education, training and research programmers. - Qualifying students to work according to the modern production system that relies on computers and information technology to operate. - Preparing an advanced technical staff in the field of Mechanics of tractor performance design to meet the needs of society.			

Module 42

Code	Course/Module Title	ECTS	Semester
SEM3260	**SEMINARS**	1.00	6
Class (hr/w)	**Semn. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**

0	1	17	8
Description			
The "Seminars" module is designed to enhance students' critical thinking, research, and presentation skills through a series of interactive discussions and presentations on contemporary topics in forestry and environmental science. Students will engage with faculty, industry experts, and peers to explore current research trends, challenges, and innovations within the field. The module emphasizes the importance of effective communication and the ability to articulate ideas clearly and confidently. Participants will present their findings from individual research projects and receive constructive feedback, fostering a collaborative learning environment. By the end of the module, students will be well-prepared for professional discussions and academic discourse in their careers.			

Module 43

Code	Course/Module Title	ECTS	Semester
APM4330	**ANIMAL PRODUCTION MECHANIZATION**	300	7
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	12
Description			
Theoretical - The student understands the importance of livestock and their mechanization. - The student must be familiar with the concept of the operation of all equipment and machines used in animal shelters. - The student should be able to invest agricultural machinery and equipment in promoting animal products - The student must be able to Manase and supervise the farm. Practical - The student should be familiar with the methods of operating and maintaining equipment and machinery in animal pens. - The student should be aware of the risks to which he is exposed when using machines in barns. - The student must be able to carry out all experiments and special work on equipment and machines in animal pens. - The student must be fully aware of the responsibility of maintaining the farm and the processes necessary for that. - The student must have practical experience in managing animal pens and investing in the farm in the best possible wav.			

Module 44

Code	Course/Module Title	ECTS	Semester
HME4630	**HEAVY MACHINES and EQUIPMENT**	5.00	7
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**

2	2	63	62

Description

• Identify the components and parts of agricultural tractors, starting with the engine and the main and auxiliary devices it contains.
• Clarifying the basics and principles of engineering sciences and their applications in various agricultural fields.
• Discussing every type of agricultural equipment and machinery for the production of agricultural crops (in terms of structure and function), starting from plowing the soil and preparing the seedbed, passing through the stages of serving the growing crop, ending with harvesting operations and the subsequent processes through which these agricultural products are prepared, whether for consumption or Storage.
• Making the necessary adjustments to agricultural machines in order to obtain the optimal use of those machines in order to reach the intended use of those machines.
• The ability to maintain, maintain and repair agricultural equipment.
• The ability to disassemble and install these machines.
• The ability to manage agricultural equipment in the field.
• The ability to connect machines to the agricultural puller and carry out organizing and calibrating operations for them in a way that suits the agricultural process required to be performed with the agricultural machine.

Module 45

Code	Course/Module Title	ECTS	Semester
HST4640	HYDRAULIC SYSTEMS TECHNOLOGY	5.00	7
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62

Description

1- Identify hydraulic systems, their types, and their uses in the field of agricultural machinery
2- Identify the basic hydraulic systems and their main functions, identify their malfunctions, and how to calibrate them.
3- Identify the advantages and disadvantages of hydraulic systems of various types
4- Identify the correct operational methods for each type of hydraulic system
5- Acquiring knowledge in methods of sustaining, maintaining and repairing parts of basic hydraulic systems.
6- Gaining the ability to keep pace with developments in hydraulic systems represented by adopting modern methods.
7- Acquire knowledge and ability in how to develop the hydraulic systems used and prove their efficiency when applied.
8- Acquiring knowledge in the applications of types of hydraulic systems in various agricultural and heavy machinery.
9- The ability to diagnose hydraulic system malfunctions
10 - Possibility of calibrating parts of the hydraulic system
11- How to choose the appropriate systems according to the variables in the crisis
12- Gaining skill in using modern hydraulic systems.
13- The ability to design and manufacture hydraulic systems to serve and develop the mechanized

sector

Module 46

Code	Course/Module Title	ECTS	Semester
AMA4650	**AGRICULTURAL MECHANIZATION and AUTOMATION**	5.00	7
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " AGRICULTURAL MECHANIZATION and AUTOMATION " module			

Module 47

Code	Course/Module Title	ECTS	Semester
MRT4660	**MAINTENANCE and REPAIR AGRICULTURAL TRACTORS**	5.00	7
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
•Focus on safety standards during work to avoid accidents and ensure a safe working environment. •Teach students how to assess and understand the reasons for engine consumption and the wear of other components, and how this affects the efficiency of agricultural machinery. •Provide students with the necessary knowledge for performing effective routine maintenance to prolong the lifespan of agricultural tractors and associated equipment. •Learn detailed inspection and fault detection methods, including using appropriate techniques and tools to identify problems in different tractor parts. •Equip students with the skills to repair and maintain complex components such as the crankshaft, engine head, pistons, cylinders, and fuel system. •Learn how to inspect and maintain cooling and lubrication systems to avoid malfunctions that can lead to significant engine damage. •Develop the knowledge and skills needed to identify and repair problems in the transmission system and power transfer units, which are essential to the operational efficiency of agricultural tractors. •Provide opportunities for students to apply their knowledge in practical workshop environments to enhance their practical skills and readiness for industry participation after graduation.			

Module 48

Code	Course/Module Title	ECTS	Semester
REE4670	**RENEWABLE ENERGY**	5.00	7
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " RENEWABLE ENERGY " module			

Module 49

Code	Course/Module Title	ECTS	Semester
AEP4291	**AGRICULTRUAL ENGINEERING PROJECT1**	2.00	7
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	47	3
Description			
Objectives: -To be able to analyze data and prepare results to manage the project scientifically. - The student must have the ability to determine agricultural project investment priorities and implement them properly and successfully. - The student must be familiar with establishing agricultural projects and investing in them scientifically and economically			

Module 50

Code	Course/Module Title	ECTS	Semester
PRA4680	**PRECISION AGRICULTURE**	3.00	8
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	12
Description			
The "PRECISION AGRICULTURE" module focuses			

Module 51

Code	Course/Module Title	ECTS	Semester

IDS4690	**IRRIGATION and DRAINGE EQUIPMENTS and SYSTEMS**	5.00	8
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
1- Studying the science of irrigation machines, equipment and devices and what are the purposes for which the irrigation process is carried out. 2- Study the types of pumps used in the field of irrigation, their parts, installation, how to install and operate them, and methods of sustaining, maintaining and repairing them. 3- Identify the types of sprinkler and drip irrigation systems, the disadvantages and advantages of each system, and the parts of the irrigation network for each type. 4- Identify the types of sprinklers and drippers used in sprinkler and drip irrigation and how they work, install them, operate and maintain them. 5- Choosing the appropriate irrigation method for the type of soil and the type of crop grown by choosing the appropriate equipment and devices for that. 6 - Use water in the irrigation process correctly and economically through the appropriate equipment. 7- Understanding the scientific and engineering foundations of irrigation systems with all their mechanical parts and how to design and modify them to suit the nature of the field, its topography, the nature of the irrigation water source, the type of cultivated plants, and the type of soil. 8- Study the auxiliary equipment for puncture operations to suit the type of puncturing system in the field			

Module 52

Code	Course/Module Title	ECTS	Semester
HAT4600	**HARVESTING TECHNOLOGY**	5.00	8
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " HARVESTING TECHNOLOGY " module focuses on the methods and techniques used in harvesting crops. This module aims to provide comprehensive knowledge about modern and effective ways of harvesting crops, including traditional practices and technological advancements: - • Know the history of harvesting and threshing • Identify the types of harvesters and combine harvesters and their uses • Identify the advantages and disadvantages of agricultural harvesters of different types • Identify the correct operational methods for each type of harvester • Identify the basic parts of agricultural harvesters and their main functions • Estimating the qualitative and quantitative losses resulting from the incorrect use of harvesters • Identifying harvester malfunctions and how to calibrate them • Operate harvesters in a scientific and correct manner			

Module 53

Code	Course/Module Title	ECTS	Semester
HPT4610	**HARVESTING and POST-HARVASTING TECHNOLOGY**	5.00	8
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " HARVESTING and POST-HARVASTING TECHNOLOGY " module 1- Acquiring knowledge in improving post-harvest crop transactions and food processing to reduce losses in the agricultural field and open markets for national agricultural products that are compatible with international production and quality systems. 2- The ability to develop modern agricultural production systems in line with the general trend in production and market requirements for human resources capable of dealing with those systems. 3 - The ability to improve post-harvest crop and food processing transactions 4- Graduating agricultural engineers and researchers to serve the agricultural sector in the field of post-harvest equipment in the correct manner, with the aim of improving agricultural production processes in quantity and quality.			

Module 54

Code	Course/Module Title	ECTS	Semester
Emm4620	**Economics and management of agricultural machinery**	5.00	8
Class (hr/w)	**Tutor. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
-Comprehensive understanding of the goals of agricultural mechanization. -Full acquisition of knowledge in the fundamentals of agricultural machinery management. -Knowledge of the obstacles that limit the spread of agricultural mechanization in Iraq and ways to overcome them. -Deepening understanding of estimating fixed and variable costs and how to calculate the total costs of mechanized agricultural operations. -Estimating the performance of agriculturae machinery and understanding the factors that affect it. -Leaming methods to calculate the productivity rates of agricultural machinery and the elements that influence productivity. -Recognizing the factors that affect improving the performance and efficiency of agricultural machinery.			

Module 55

Code	Course/Module Title	ECTS	Semester

PPE4630	**PLANT PROTECTION EQUIPMENT**	5.00	8
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
Identify the components and parts of plant protection equipment • Explaining the basics and principles of control equipment and their applications in various agricultural fields • Discussing each type of plant protection equipment for agricultural crop production (in terms of installation and function) • Make the necessary adjustments for various protective equipment in order to obtain the optimal use of these machines in order to achieve the goal of efficient use. • The ability to maintain, maintain and repair agricultural equipment. • The ability to disassemble and install these machines. • The ability to manage agricultural equipment in the field. • The ability to connect machines to the agricultural puller and carry out organizing and calibrating operations for them in a way that suits the agricultural process required to be performed with the agricultural machine.			

Module 56

Code	**Course/Module Title**	**ECTS**	**Semester**
AEP4292	**AGRICULTRUAL ENGINEERING PROJECT2**	2.00	8
Class (hr/w)	**Prac. (hr/w)**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	47	3
Description			
Objectives: -To be able to analyze data and prepare results to manage the project scientifically. - The student must have the ability to determine agricultural project investment priorities and implement them properly and successfully. - The student must be familiar with establishing agricultural projects and investing in them scientifically and economically			

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