University of Mosul

First Cycle – Bachelor's degree (B.Sc.) – Horticulture and land Scape Design

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1. Overview

This catalogue is about the courses (modules) given by the program of Agricultural sciences to gain the Bachelor of Horticulture 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.

2. Undergraduate Courses 2024-2025

Module 1

Code	Course/Module Title	ECTS	Semester
UOM1031	**COMPUTER 1**	3	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	47	75
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 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 1**	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)	**Lect/Lab./Prac./Tutor**	**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)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	62	63
Description			
The "Agricultural Professional 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**		1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	3	63	87
Description			
The "Engineering Drawing" module equips students with the fundamental skills of technical drawing, essential for all engineering disciplines. It covers basic principles of orthographic projection, isometric views, and sectional drawings. Students will learn how to interpret and create accurate engineering drawings, focusing on line work, dimensions, scaling, and geometric tolerances. The module also introduces the use of computer-aided design (CAD) software, enabling students to produce precise technical diagrams. By the end of the course, students will be proficient in visualizing and communicating design concepts, preparing them for advanced engineering tasks.			

Module 7

Code	Course/Module Title	ECTS	Semester
AET1040	**AGRICULTRAL ENGINEERING TECHNIQUES TRANSFER**	5.00	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**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 1**	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)	**Lect/Lab./Prac./Tutor**	**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)	Lect/Lab./Prac./Tutor	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)	Lect/Lab./Prac./Tutor	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)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	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)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	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 LANGUAGE 2**	2.00	3

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2		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	**CRIMES of the BAATH 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)	Lect/Lab./Prac./Tutor	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**	2	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	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	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**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 20

Code	Course/Module Title	ECTS	Semester
APT2140	**AGRICULTURAL PRODUCTION**	5.00	3

	TECHNOLOGIES		
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**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)	**Lect/Lab./Prac./Tutor**	**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 LANGUAGE 2**	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)	**Lect/Lab./Prac./Tutor**	**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	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**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 25

Code	Course/Module Title	ECTS	Semester
DPF2170	**DESIGN and PLANNING of AGRICULTURAL FACILITIES**	5.00	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**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 26

Code	Course/Module Title	ECTS	Semester
PEI2180	**BENEFICIAL INSECTS**	5.00	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " **BENEFICIAL INSECTS** " module focuses on the principles and technologies involved in modern beekeeping (apiculture). Students will explore the design of efficient beekeeping systems, including hive construction, site selection, and the use of modern tools for honey production and bee health management. The course covers topics such as bee biology, disease control, pollination, and sustainable practices in apiculture. Emphasis is placed on innovations that improve productivity and the environmental benefits of beekeeping. By the end of the module, students will have practical knowledge to apply advanced technologies in the design and management of apiculture systems.			

Module 27

Code	Course/Module Title	ECTS	Semester
SWS2190	**SOIL and WATER SUITBILITY**	5.00	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Design and Soil and Water Suitability" 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
BIA2200	**BIOCHEMICAL ANALYSIS**	5.00	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Design and Biochemical Analysis" module introduces students to the principles and techniques used in the biochemical analysis of agricultural products and processes. The course covers experimental design, sample preparation, and the application of various analytical methods, including chromatography, spectroscopy, and enzymatic assays. Students will learn to assess the composition and quality of food, soil, and plant materials through biochemical analysis. Emphasis is placed on interpreting results and understanding their implications for agricultural practices and food safety. By the end of the module, students will be equipped to design and conduct experiments that enhance biochemical understanding in agricultural contexts.			

Module 29

Code	Course/Module Title	ECTS	Semester
PLG3230	**PLANT GENETICS**	2.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	1	32	18
Description			
The "Plant Genetics" module explores the principles of genetics as they apply to plant breeding and improvement. Students will study the structure and function of plant genes, inheritance patterns, and the mechanisms of genetic variation. The course covers techniques in molecular genetics, including marker-assisted selection and genetic modification, to enhance desirable traits in crops. Emphasis is placed on the role of genetics in developing disease-resistant, high-yielding, and climate-resilient plant varieties. By the end of the module, students will have a solid understanding of plant genetic principles and their applications in agricultural practices and food production.			

Module 30

Code	Course/Module Title	ECTS	Semester
FPS3240	**FUNDAMENTALS of PLANE SURVEYING**	3.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**

2	2	63	12
Description			
The "Fundamentals of Plane Surveying" module provides students with an understanding of the basic principles and techniques used in land surveying. The course covers essential topics such as measuring distances, angles, and elevations, as well as the use of surveying instruments like theodolites, total stations, and levels. Students will learn about mapping, plotting land boundaries, and the importance of accuracy and precision in surveying work. Practical applications of surveying in agriculture, construction, and environmental management are emphasized. By the end of the module, students will be equipped with foundational skills necessary for effective surveying practices in various fields.			

Module 31

Code	Course/Module Title	ECTS	Semester
PLP3330	**PLANT PHYSIOLOGY**	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " **PLANT PHYSIOLOGY** " module **enabling the student to understand and comprehend what is related to plant physiology and its relationship to other sciences** **Enabling the student to know the most important scientific methods in learning about plant physiology** **Enabling the student to become familiar with the concept of plant physiology** **Enabling the student to be able to investigate plant cells and all phenomena related to plant physiology** • **The student can explain all aspects of plant life through plant physiology**.			

Module 32

Code	Course/Module Title	ECTS	Semester
PGR3340	**PLANT GROWTH REGULATORS**	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " **PLANT GROWTH REGULATORS TECHINQUES** " module Enable the student to identify different plant growth regulators. • Enable the student to understand the working mechanism of these plant organizations. • The student learns about its different effects on plants.			

Module 33

Code	Course/Module Title	ECTS	Semester
WVT3500	**WINTER VEGETABLE PRODUCTION TECHNOLOGY**	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "WINTER VEGETABLE PRODUCTION TECHNOLOGY" module Enabling the student to understand and comprehend what is related to the science of vegetable production and its relationship to other sciences Enabling the student to know the most important scientific methods in identifying vegetable production Enabling the student to become familiar with the concept of vegetable production Enabling the student to be able to identify all types of summer vegetables and all the phenomena related to the production of summer vegetables • The student can explain all aspects of life related to the science of producing winter vegetables			

Module 34

Code	Course/Module Title	ECTS	Semester
OPT3510	**ORNAMENTAL PLANTS and CUT FLOEWRS PRODUCTION TECHNIQUES**	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "ORNAMENTAL PLANTS and CUT FLOEWRS PRODUCTION TECHNIQUES" module •Identify the different types of ornamental plants • Identify the description of plants and the morphological description of plants, leaves, stems, roots and flowers • Training on methods of propagating ornamental plants • Identify all agricultural processes for plants			

Module 35

Code	Course/Module Title	ECTS	Semester
PMT3520	**POME and MINOR FRUIT TECHNOLOGY**	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			

The "POME and MINOR FRUIT TECHNOLOGY" module
-1 Introducing students to the most important types of deciduous fruits that can be successfully cultivated in Iraq.
2. Study the most important environmental requirements necessary for the successful cultivation of some types of deciduous fruits.
3. Enabling students to understand the most important horticultural operations that must be
Practical:
1- Introducing students to the importance of deciduous fruit trees through their economic importance and botanical description, in addition to the most important foundations for dividing and classifying fruits.
2- Study the most important factors affecting the growth and production of deciduous fruits.
3- Enabling the student to propagate some carried out in the orchards of some types of deciduous fruits.
4. Teaching students about the most important methods of propagation of some types of deciduous fruits and their most important origins.
5. Introducing students to the most important types of each type of fruit studied.

Module 36

Code	Course/Module Title	ECTS	Semester
DNP3530	**DESIGN NURSERIES and PROPAGATION**	4.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	48	52
Description			
The "DESIGN NURSERIES and PROPAGATION" module focuses Types of nurseries - Selection of nursery land - Nursery planning - Nursery cycle - Nursery organization - Nursery management - Irrigation methods in the nursery - Nursery facilities and supplies - Glass and plastic houses - Wooden canopy - Seed beds / Plant reproduction: The importance of studying the science of reproduction - Studying and understanding the nature of reproduction - Reproduction nurseries / Main methods of reproduction: Sexual reproduction (seeds) - Types of seeds - Methods of extracting seeds - Seed storage - Seed dormancy - Factors leading to seed dormancy - Factors affecting seed germination - Seed vitality tests - Planting seeds of some types of garden plants: Asexual reproduction (vegetative) / Purposes of vegetative reproduction - Methods of vegetative reproduction / Reproduction by cuttings and cuttings / Physiological and anatomical bases of reproduction by cuttings - Formation of roots on stem and root cuttings - Types of cuttings - Growth regulators and their uses in vegetative propagation - Factors affecting the formation of roots on cuttings - Making wounds in the bases of cuttings / Reproduction by layering / The benefit of Propagation by layering - Layering methods			

Module 37

Code	Course/Module Title	ECTS	Semester
CEH4610	**CONROLLED ENVIRONMENTS HORTICULTURE**	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "CONROLLED ENVIRONMENTS HORTICULTURE" module explores **to** understand and assimilate what is the matter? cultivation and production of vegetables for winter crops at times other than when it is grown in greenhouses and its relationship with other sciences enabling the student to know the most important scientific methods in learning about science plant production and modern methods used to increase production in unheated greenhouses enabling the student to become familiar with the concept greenhouse management, methods of controlling the non-air-conditioned environment, application of modern methods, plant requirements, and important fertilizers for plants empowering the student with the ability to detect lack of nutrients and all related phenomena lack of elements the student can managing fields and following up on modern systems used in protected agriculture, weeds and disease pests.			

Module 38

Code	Course/Module Title	ECTS	Semester
PMA3550	**PLANT MORPHOLOGY and ANATOMY**	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "PLANT MORPHOLOGY and ANATOMY" module focuses definition of plant morphology and anatomy/ Introduction/ Relationship of plant morphology and anatomy to other sciences/ Appearance and anatomy of the plant cell – its types – its secondary parts/ Appearance and anatomy of permanent tissues in plants/ Appearance and anatomy of the epidermis and its other secretory and non-secretory appendages/ Appearance and anatomy of parenchymal tissues/ Appearance and anatomy of collenchymal tissues/ Appearance and anatomy of sclerenchyma tissue/ Appearance and anatomy of wood tissue/ Appearance and anatomy of bark tissue/ Appearance and anatomy of plant roots/ Appearance and anatomy of plant stems/ Appearance and anatomy of plant leaves/ Appearance and anatomy of plant flowers/ Appearance and anatomy of fruits/ Appearance and anatomy of seeds.			

Module 39

Code	Course/Module Title	ECTS	Semester
SVT3560	**SUMMER VEGETABLES**	5.00	6

	PRODUCTION TECHNIQUES		
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "SUMMER VEGETABLES PRODUCTION TECHNIQUES" module enabling the student to understand and comprehend what is related to the science of vegetable production and its relationship to other sciences Enabling the student to know the most important scientific methods in identifying vegetable production Enabling the student to become familiar with the concept of vegetable production Enabling the student to be able to identify all types of summer vegetables and all the phenomena related to the production of summer vegetables • The student can explain all aspects of life related to the science of producing summer vegetables.			

Module 40

Code	**Course/Module Title**	**ECTS**	**Semester**
IOO3570	**INDOOR and OUTDOOR ORNAMENTALS**	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "INDOOR and OUTDOOR ORNAMENTALS" module focuses on the principles Identify the different types of **INDOOR and OUTDOOR ORNAMENTALS** plants • Identify the description of plants and the morphological description of plants, leaves, stems, roots and flowers • Training on methods of propagating **INDOOR and OUTDOOR ORNAMENTALS** • Identify all agricultural processes for plants.			

Module 41

Code	**Course/Module Title**	**ECTS**	**Semester**
SNT3580	**STONE and NUT FRUITS PRODUCTION TECHNIQUES**	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " STONE and NUT FRUITS PRODUCTION TECHNIQUES " module provides students with an understanding of the establishment and management of STONE and NUT FRUITS PRODUCTION TECHNIQUES The course covers various aspects of nursery operations, including seed selection, germination techniques, propagation methods, and care for seedlings. Students will learn about the			

importance of site selection, soil preparation, and pest management in producing healthy and vigorous plants. Practical training will include hands-on experience in nursery management practices. By the end of the module, students will have the skills to effectively operate a stone and nut fruits production techniques and contribute to successful reforestation and afforestation efforts.

Module 42

Code	Course/Module Title	ECTS	Semester
SEM3260	**SEMINARS**	1.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	0	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
MIT4270	**MODERN IRRIGATION TECHNIQUES**	300	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	12
Description			
The "Modern Irrigation Techniques" module focuses on advanced methods and technologies for efficient water management in agricultural practices. Students will explore various irrigation systems, including drip, sprinkler, and subsurface irrigation, emphasizing their design, implementation, and maintenance. The course covers the principles of water conservation, soil moisture management, and the role of technology in optimizing irrigation practices. Students will also examine the environmental impacts of irrigation and strategies for sustainable water use in agriculture. Through practical applications and case studies, participants will gain the skills needed to implement modern irrigation techniques that enhance crop productivity while conserving water resources.			

Module 44

Code	Course/Module Title	ECTS	Semester
HPT4590	**HORTICULTURAL PLANTS SEEDS PRODUCTION TECHNOLOGY**	5.00	7

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

Description

The " **HORTICULTURAL PLANTS SEEDS PRODUCTION TECHNOLOGY** " module aims to teach students - Identifying seeds of horticulture crops and methods of producing
Them And maintain it - Identify methods of producing seeds for horticulture crops
Summer and winter. - Identifying vegetable seeds in terms of description - Morphology and how to measure its vitality - The rate of germination, its speed, determination of its purity,
and knowledge of the plant
Its flowers and methods of pollination (cross or self) - Knowing the problems we face in growing crops Vegetables,
their reproduction, and methods of producing their seeds.

Module 45

Code	Course/Module Title	ECTS	Semester
HST4600	**HANDLING and STORAGE of HORTICULTURAL CROPS TECHNOLOGY**	5.00	7

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

Description

The "HANDLING and STORAGE of HORTICULTURAL CROPS TECHNOLOGY" module the learner will be able to identify the economic and political objectives of horticultural forecasts
• The student learns about the stages of growth and maturity through which horticultural results are achieved
• The team between the different storage groups and the appropriate ones
• Recording the basics of tree growth and using them to acquire emerging fruits for storage
• Training between types of fruits and their divisions, depending on the type of large roles of fruits
• Familiarity with what information the evidence needs to store and what is called for it to master the work
• The student's awareness of the factors affecting the prolongation of the storage life of fruits
• Determine the appropriate type of storage to suit the type of fruits
• A comprehensive study of all types of fruits and how to cover them, and does not include conditions except for periods of storage for a long period of time.

Module 46

Code	Course/Module Title	ECTS	Semester
OAT4650	**ORGANIC AGRICULTURAL TECHNIQUES**	5.00	8

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

Description

The "ORGANIC AGRICULTURAL TECHNIQUES" module focuses definition and importance of organic agriculture
Areas of spread of organic agriculture in the world and the Arab world
Impacts resulting from agricultural practices in traditional agriculture
Foundations of organic agriculture
Means and methods on which organic agriculture depends
Materials used in plant nutrition and soil fertility in organic agriculture
Plant extracts used in organic agriculture as an alternative to industrial growth regulators
Quality standards for organic products - The most important features of organic agricultural products - Disadvantages of organic agriculture
Resistance to diseases and insects in organic agriculture
Using safe chemicals in organic agriculture
Conditions for establishing organic farms
Basic steps for converting to the organic agriculture system and factors for its success
Green fertilizers and their importance in organic agriculture - Future prospects for organic agriculture - Organic agriculture and the environment..

Module 47

Code	Course/Module Title	ECTS	Semester
MAT4620	**MEDICINAL and AROMATIC PLANTS PRODUCTION TECHNIQUES**	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "MEDICINAL and AROMATIC PLANTS PRODUCTION TECHNIQUES" module Explaining the 1- importance of medicinal plants and methods of extracting active ingredients used in pharmaceutical industries. 2. Entering the agricultural sector with distinguished efficiency by participating in the cultivation of economic medicinal plants. 3. Directing students towards the desire to obtain better experiences when applying for postgraduate studies			

Module 48

Code	Course/Module Title	ECTS	Semester
EFT4630	**EVERGREEN FRUIT PRODUCTION TECHNOLOGY**	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " EVERGREEN FRUIT PRODUCTION TECHNOLOGY " module explain 1. Introducing students to the most important types of deciduous fruits that can be successfully cultivated in Iraq.			

2. Study the most important environmental requirements necessary for the successful cultivation of some types of deciduous fruits.
3. Enabling students to understand the most important horticultural operations that must be carried out in the orchards of some types of deciduous fruits.
4. Teaching students about the most important methods of propagation of some types of deciduous fruits and their most important origins.
5. Introducing students to the most important types of each type of fruit studied.

Module 49

Code	Course/Module Title	ECTS	Semester
AEP4290	**AGRICULTRUAL ENGINEERING PROJECT1**	2.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	47	3
Description			
The "Agricultural Engineering Project" module provides students with hands-on experience in applying engineering principles to solve real-world agricultural problems. Throughout the course, students will work on individual or group projects that focus on designing, developing, and implementing innovative solutions in areas such as irrigation systems, machinery design, and sustainable farming practices. Emphasis will be placed on project planning, resource management, and technical communication. Students will also engage in critical analysis and evaluation of their designs through feedback and peer review. By the end of the module, participants will gain valuable skills in project management and practical engineering applications within the agricultural sector.			

Module 50

Code	Course/Module Title	ECTS	Semester
PLN4370	**PLANT NUTRITION**	3.00	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	12
Description			
The "PLANT NUTRITION" module focuses Introduction to plant nutrition, the importance of studying it and its relationship to other sciences. Cell membranes and their importance in plant nutrition. Ionic absorption theories. Plant roots, their functions and anatomical structure and their importance in absorbing nutrients. Soil and its importance in plant nutrition. Factors affecting the availability of nutrients in the soil. Soil salinity and its effect on the growth and production of garden plants. Nutrients necessary for plants, their classification and presence in the soil and forms of their absorption by plants. Foliar nutrition for garden plants. Macronutrients, their importance and symptoms of their deficiency in garden plants.			

Macronutrient fertilizers and methods of adding them to garden plants.
Micronutrients, their importance and symptoms of their deficiency in garden plants.
Micronutrient fertilizers and methods of adding them to garden plants.

Module 51

Code	Course/Module Title	ECTS	Semester
PTT4300	**PLANTS TISSUE CULTURE TECHNIQUES**	5.00	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62

Description

The "Plant Tissue Culture Techniques" module introduces students to the principles and practices of plant tissue culture, a crucial method for propagating and breeding plants under controlled conditions. Students will learn about various techniques, including micropropagation, somatic embryogenesis, and callus culture, as well as the role of plant growth regulators. The course emphasizes the importance of sterile techniques, media formulation, and environmental control in achieving successful tissue culture outcomes. Through hands-on laboratory experience, students will develop practical skills in plant propagation and tissue manipulation. By the end of the module, participants will understand the applications of tissue culture in agriculture, horticulture, and conservation.

Module 52

Code	Course/Module Title	ECTS	Semester
LAD4640	**LANDSCAPE DESIGN**	5.00	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	63	62

Description

The "LANDSCAPE DESIGN " module learner should be able to identify the concept of a garden and the information
needed for its optimal design.
 - Select the appropriateness of the factors affecting garden planning and landscaping for the selected garden and its plants
 - Differentiate between different planning systems and the appropriate ones
 - Understand the basics of planning and employ them in creating an ideal garden
 - Distinguish between types of gardens and their sections according to the type of planning
 - Knowing what the designer needs to know and what is available to him to master his work
 - Recognize the factors that affect the layout of the garden
 - Determining the appropriate type of gardens and what to consider when creating them
 - A comprehensive study of the different types of gardens and how to create them and determine the controls and conditions that must be taken into account when creating them

Module 53

Code	Course/Module Title	ECTS	Semester
PBT4280	**PLANT BREEDING TECHNIQUE**	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The " PLANT BREEDING TECHNIQUE" module course aims to teach students about the basic principles of the concept Biotechnology, its uses and applications in production Agricultural technology and its techniques used in breeding and improving plants and how Producing genetically modified plants and using genetic fingerprinting technology In plant breeding and improvement and in genetic diversity, recognition On the concept of biotechnology, the devices used in it, The use of genetic fingerprinting in the field of plant breeding and improvement, Creating genetically modified plants and using technology Gene gun..			

Module 54

Code	Course/Module Title	ECTS	Semester
GPT4660	**GRAPES PRODUCTION and SMALL FRUITS TECHNIQUES**	5.00	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "GRAPES PRODUCTION and SMALL FRUITS TECHNIQUES" module 1. Introducing students to the most important nutritional importance and nutritional value of grapes and grape varieties that can be successfully cultivated in Iraq. 2. Grape classification study. 3. Enable students to understand the most important horticultural processes that must be performed in vineyards. 4. The most important environmental requirements necessary for the successful cultivation of grapes. 5- Teaching students about the most important methods of reproduction of grapes. 5. Introducing students to the annual grape cycle.			

Module 55

Code	Course/Module Title	ECTS	Semester
SAT4310	**SMART AGRICULTURAL TECHNIQUES**	5.00	8

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
The "Smart Agricultural Techniques" module introduces students to innovative practices that enhance agricultural productivity and sustainability through the integration of technology. Students will explore various smart farming methods, including precision agriculture, Internet of Things (IoT) applications, and data analytics. The course emphasizes the importance of using technology to optimize resource use, improve crop yields, and minimize environmental impact. Through hands-on projects and case studies, students will learn how to implement smart techniques such as soil moisture monitoring, automated irrigation systems, and crop health assessment. By the end of the module, participants will be equipped to apply modern technologies in agriculture, promoting efficiency and sustainability.			

Module 56

Code	Course/Module Title	ECTS	Semester
AEP4292	**AGRICULTRUAL ENGINEERING PROJECT2**	2.00	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
0	3	47	3
Description			
The "Agricultural Engineering Project" module provides students with hands-on experience in applying engineering principles to solve real-world agricultural problems. Throughout the course, students will work on individual or group projects that focus on designing, developing, and implementing innovative solutions in areas such as irrigation systems, machinery design, and sustainable farming practices. Emphasis will be placed on project planning, resource management, and technical communication. Students will also engage in critical analysis and evaluation of their designs through feedback and peer review. By the end of the module, participants will gain valuable skills in project management and practical engineering applications within the agricultural sector.			

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