University of Mosul

جامعة الموصل

First Cycle – Bachelor's degree (B.Sc.) – Forest science

بكالوريوس علوم زراعة - علوم غابات

Table of Contents

---

1. Overview

This catalogue is about the courses (modules) given by the program of Agricultural sciences to gain the Bachelor of Forest sciences degree. The program delivers (xx) 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 الغابات . يقدم البرنامج (٤٠) مادة دراسية ، على سبيل المثال، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
UOM1031	COMPUTER 1	3.00	1
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 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 LANGUAGE1**	**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	6.00	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 LANGUAGE1	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 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	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	6.00	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	3
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 TECHNOLOGIES	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 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 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)	**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	4
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 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 حشرات نافعة	5.00	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Design and Apiculture Technologies" 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	3.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	2	48	27
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
FOE3500	FOREST ECONOMIC	4.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	1	48	52
Description			
The "Forest Economics" module explores the economic principles and practices related to forest resources and management. Students will learn about the valuation of forest ecosystems, timber production, and non-timber forest products. The course covers topics such as cost-benefit analysis, sustainable forest management, and the economic impact of forestry practices on local and global scales. Emphasis is placed on understanding the trade-offs between economic development and environmental sustainability. By the end of the module, students will be equipped with the analytical skills necessary to make informed decisions regarding forest resource utilization and conservation.			

Module 32

Code	Course/Module Title	ECTS	Semester
FOS3510	FOREST Silviculture	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Silviculture" module focuses on the science and art of managing forest stands to achieve specific objectives, such as timber production, wildlife habitat enhancement, and ecosystem conservation. Students will study various silvicultural systems, including regeneration methods, thinning practices, and site preparation techniques. The course emphasizes the importance of species selection, growth patterns, and forest health in developing sustainable management practices. Practical applications include field assessments and management planning. By the end of the module, students will gain a comprehensive understanding of silvicultural techniques and their role in fostering resilient and productive forest ecosystems.			

Module 33

Code	Course/Module Title	ECTS	Semester
FOI3520	FOREST INVESTMENT	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Investment" module examines the financial aspects of forestry and forest resource management. Students will learn about investment principles specific to the forestry sector, including the valuation of forest assets, cost analysis, and risk assessment. The course covers methods for evaluating the profitability of forestry projects, such as timber production, non-timber forest products, and ecosystem services. Students will also explore the economic impact of sustainable forest management practices on local and global markets. By the end of the module, students will be equipped to make informed investment decisions that balance economic returns with environmental sustainability.			

Module 34

Code	Course/Module Title	ECTS	Semester
RES3250	REMOTE SENSING	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62

Description
The "Remote Sensing" module introduces students to the principles and applications of remote sensing technology in environmental monitoring and resource management. Students will learn how to acquire and analyze satellite and aerial imagery to assess land use, vegetation cover, and environmental changes. The course covers techniques for interpreting data from various sensors, including multispectral and hyperspectral imaging, and their relevance in fields like agriculture, forestry, and environmental science. Emphasis is placed on practical skills, including image processing and data analysis using specialized software. By the end of the module, students will understand how remote sensing can inform decision-making and sustainable resource management.

Module 35

Code	Course/Module Title	ECTS	Semester
FTT3540	FOREST TREES TAXONOMY	5.00	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Trees Taxonomy" module focuses on the classification, identification, and nomenclature of tree species found in forest ecosystems. Students will learn to recognize various tree species based on morphological characteristics, such as leaf shape, bark texture, and fruit structure. The course emphasizes the importance of taxonomy in understanding biodiversity, ecology, and conservation efforts. Students will engage in fieldwork to practice identifying trees in their natural habitats and learn about the evolutionary relationships between different species. By the end of the module, students will possess the skills to accurately classify forest trees and understand their ecological roles.			

Module 36

Code	Course/Module Title	ECTS	Semester
FOM3550	FOREST MENSURATION	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Mensuration" module focuses on the measurement and assessment of forest resources, including trees, stands, and forest productivity. Students will learn techniques			

for estimating tree height, diameter, volume, and biomass using both traditional and modern tools. The course covers sampling methods, data collection, and statistical analysis necessary for forest inventory and management. Emphasis is placed on understanding the importance of accurate mensuration in sustainable forest management and resource planning. By the end of the module, students will be equipped with practical skills and knowledge to effectively measure and evaluate forest resources in various ecological contexts.

Module 37

Code	Course/Module Title	ECTS	Semester
FOM3550	FOREST PLANTING	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Planting" module covers the principles and practices of establishing and managing forest plantations. Students will learn about site preparation, species selection, planting techniques, and post-planting care. The course emphasizes the importance of choosing appropriate species based on ecological conditions and intended management objectives, such as timber production, habitat restoration, or conservation. Students will also explore strategies for enhancing seedling survival and growth, as well as methods for preventing pests and diseases. By the end of the module, students will be equipped with the skills and knowledge needed to successfully implement forest planting projects and contribute to sustainable forestry practices.			

Module 38

Code	Course/Module Title	ECTS	Semester
WOS3570	WOOD SCIENCE	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Wood Science" module explores the properties, processing, and utilization of wood as a natural resource. Students will learn about the anatomy and physiology of wood, including its physical and mechanical properties, as well as how these characteristics influence its use in various applications. The course covers wood preservation techniques, the impact of environmental factors on wood quality, and advancements in wood-based materials and products. Emphasis is placed on sustainable practices in the harvesting and processing of wood to ensure environmental stewardship. By the end of the module, students will have a comprehensive understanding of wood science and its significance in forestry and industry.			

Module 39

Code	Course/Module Title	ECTS	Semester
FTP3580	FOREST TREE PHYSIOLOGY	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Tree Physiology" module delves into the biological processes that govern the growth, development, and functioning of forest trees. Students will explore key physiological concepts such as photosynthesis, respiration, water and nutrient uptake, and stress responses. The course emphasizes the relationship between physiological processes and environmental factors, including light, temperature, soil quality, and climate conditions. Through both theoretical study and practical experiments, students will learn how physiological traits influence tree health, productivity, and resilience in forest ecosystems. By the end of the module, students will gain valuable insights into how tree physiology informs sustainable forest management and conservation strategies.			

Module 40

Code	Course/Module Title	ECTS	Semester
WAM3590	WATERSHED MANAGEMENT	5.00	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Watershed Management" module focuses on the principles and practices of managing watershed ecosystems to sustain water quality and availability while balancing ecological, economic, and social needs. Students will learn about the hydrological cycle, watershed functions, and the impacts of land use and climate change on water resources. The course covers techniques for assessing watershed health, implementing conservation practices, and developing management plans that promote sustainable water use. Emphasis is placed on integrated approaches that consider the interconnections between land, water, and communities. By the end of the module, students will be equipped with the skills to contribute effectively to watershed management and protection efforts.			

Module 41

Code	Course/Module Title	ECTS	Semester
FON3600	FOREST NURSERIES	4.00	6

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	2	48	52
Description			
The "Forest Nurseries" module provides students with an understanding of the establishment and management of tree nurseries for forest restoration and plantation projects. 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 forest nursery 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
FOP4610	FOREST PLANNING	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Planning" module focuses on the strategic development and implementation of plans for sustainable forest management. Students will learn the principles of forest resource assessment, land-use planning, and the integration of ecological, social, and economic factors in decision-making. The course covers techniques for setting management objectives, developing silvicultural systems, and creating monitoring plans to assess the health and productivity of forest ecosystems. Emphasis is placed on stakeholder engagement and the importance of adaptive management in responding to changing environmental conditions. By the end of the module, students will possess the skills needed to contribute to effective forest planning and management initiatives.			

Module 45

Code	Course/Module Title	ECTS	Semester
FOM4620	FOREST MAINTENANCE	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Forest Maintenance" module provides students with essential knowledge and skills for the ongoing care and management of forest ecosystems. The course covers practices such as thinning, pruning, pest management, and disease control, emphasizing their importance in maintaining forest health and productivity. Students will learn to assess			

forest conditions and implement maintenance strategies that promote biodiversity and resilience against environmental stressors. Additionally, the module addresses the role of forest maintenance in achieving sustainable timber production and habitat conservation. By the end of the course, students will be equipped to develop and execute effective forest maintenance plans, ensuring the long-term viability of forest resources.

Module 46

Code	Course/Module Title	ECTS	Semester
WOI4630	WOOD INDUSTRIES	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Wood Industries" module explores the various sectors involved in the processing, manufacturing, and utilization of wood products. Students will examine the entire wood supply chain, from timber harvesting and milling to the production of finished goods such as furniture, paper, and engineered wood products. The course covers essential topics such as wood properties, manufacturing techniques, and quality control measures. Additionally, students will learn about sustainable practices and the economic and environmental impacts of the wood industry. By the end of the module, students will gain a comprehensive understanding of the wood industry's role in the economy and its significance in sustainable resource management.			

Module 47

Code	Course/Module Title	ECTS	Semester
SIS4640	SILICULTURAL SYSTEMS	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Silvicultural Systems" module focuses on the principles and practices of managing forest stands to achieve specific ecological, economic, and social objectives. Students will explore various silvicultural techniques, including clear-cutting, selective logging, and shelterwood systems, and assess their impacts on forest health, biodiversity, and regeneration. The course emphasizes the importance of understanding site conditions, species selection, and the role of natural disturbances in shaping forest ecosystems. Students will also engage in practical applications and case studies, developing skills to design and implement effective silvicultural systems that promote sustainable forest management. By the end of the module, participants will be equipped to make informed decisions regarding forest stand management.			

Module 48

Code	Course/Module Title	ECTS	Semester
SEM4280	SOIL ENVIRONMENT METEOROLOGY	5.00	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
The "Soil Environment Meteorology" module examines the interactions between soil, climate, and meteorological factors that influence land use and agricultural practices. Students will study the principles of soil physics, chemistry, and biology, alongside meteorological elements such as temperature, humidity, and precipitation patterns. The course emphasizes the role of these interactions in determining soil health, fertility, and crop productivity. Students will also learn about climate variability and its effects on soil moisture and nutrient availability. Through practical assessments and field studies, participants will develop skills to analyze soil data and make informed decisions for sustainable land and water management in agricultural systems.			

Module 49

Code	Course/Module Title	ECTS	Semester
AEP4291	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

WOP4650	WOOD PRESERVATION	3.00	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	12
Description			
The "Wood Preservation" module focuses on the techniques and practices used to protect wood from decay, pests, and environmental factors that can compromise its integrity and longevity. Students will explore various preservation methods, including chemical treatments, heat treatment, and pressure impregnation, as well as the environmental implications of these processes. The course emphasizes the importance of understanding wood properties and the factors affecting wood durability. Students will also investigate standards and regulations related to wood preservation. By the end of the module, participants will possess the knowledge and skills necessary to select appropriate preservation methods and implement effective wood protection strategies in various applications.			

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
FTB4660	FOREST TREE BREEDING	5.00	8

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	1	63	62
Description			
The "Forest Tree Breeding" module focuses on the genetic improvement of forest tree species to enhance their growth, health, and adaptability. Students will explore the principles of plant genetics, hybridization, and selection techniques used in breeding programs. The course emphasizes understanding the genetic diversity within tree populations and the impact of environmental factors on tree performance. Students will engage in practical activities, including field trials and data analysis, to evaluate the effectiveness of breeding strategies. By the end of the module, participants will acquire the skills necessary to contribute to sustainable forest management and conservation through informed tree breeding practices.			

Module 53

Code	Course/Module Title	ECTS	Semester
FOE4670	FOREST ENGINEERING	5.00	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			
The "Forest Engineering" module explores the application of engineering principles and techniques to the management and utilization of forest resources. Students will learn about the design and optimization of forest operations, including logging systems, road construction, and habitat restoration. The course emphasizes the integration of environmental considerations and sustainable practices into forest engineering projects. Students will engage in fieldwork and practical exercises to assess site conditions, develop engineering solutions, and analyze the impact of engineering activities on forest ecosystems. By the end of the module, participants will be equipped with the knowledge and skills to implement effective and sustainable forest engineering practices.			

Module 54

Code	Course/Module Title	ECTS	Semester
FOM4680	FOREST MANAGEMENT	5.00	8
Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	62
Description			

The "Forest Management" module provides an in-depth understanding of the principles and practices involved in the sustainable management of forest resources. Students will explore key topics such as forest ecology, inventory methods, and land-use planning. The course emphasizes the balance between ecological health, economic viability, and social benefits in forest management strategies. Through case studies and practical exercises, students will learn to develop management plans that address issues such as biodiversity conservation, timber production, and recreation. By the end of the module, participants will be equipped with the skills necessary to make informed decisions that promote sustainable forest practices and contribute to the well-being of communities.

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.

Contact

Program Manager:

Sumod husain ali | Ph.D. in Forest science | Professor

Email: sumod_husain@uomosul.edu.iq

Mobile no.: +9647704477301

Program Coordinator:

Samer ameer hanna | Ph.D. in Forest science | lecturer

Email: samer_alshaby@uomosul.edu.iq

Mobile no.:+964 7701666218