Northern Technical University

First Cycle - Bachelor's degree (B.Sc.) – Plant production techniques

بكالوريوس تقنيات علوم زراعية/ تقنيات الإنتاج النباتي



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1- Overview

This catalogue is about the courses (modules) given by the program of Plant production techniques to gain the Bachelor of Science degree. The program delivers (40) 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	ECTS	Semester
NTU 100	Democracy and human rights	2	1
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
This course aims to raise the student's knowledge of the basic concepts of the most important laws related to human rights, and to learn about the Iraqi constitutions and their relationship to human rights, as well as to teach students to respect others in dealing with cultural differences within the Iraqi environment.			

Module 2

Code	Course / Module	ECTS	Semester
NTU 101	English language	2	1
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
The module aims to study the grammar rules of the English language and correct conversation, the way to pronounce letters and sounds in and learn how to speak taking into account the tenses, in addition to getting to know family members and friends and social communication phrases.			

Module 3

Code	Course / Module	ECTS	Semester
TAMO 100	General Chemistry	6	1
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
The course aims to introduce students to the basic concepts of the elements of the periodic table and their electronic distribution, and to identify the different types of acids, bases, and salts, and the properties that characterize these compounds, as well as methods for preparing some compounds and means of detecting them.			

Module 4

Code	Course / Module	ECTS	Semester
PLP 100	General Insects	6	4
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
The course aims to raise students' knowledge of the basic concepts of entomology of various types, study their stages and the damage each type causes to cultivated plants, the economic importance of insects, and know the host plant for each type, so that students can classify them, how to combat them, and the best way to combat them in a manner consistent with the requirements of a sustainable environment.			

Module 5

Code	Course / Module	ECTS	Semester
PLP 101	General Botany	7	1
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	82
Description			
The course aims to explain the basic concepts of general plant material in terms of the different parts of the plant in monocots and dicots, and to identify the functions of each part (organ) of the plant such as the root, stem, leaves, flowers and fruits, in addition to identifying the nature of germination (terrestrial and aerial), and the extent of plants' adaptation to the environment in which they exist.			

Module 6

Code	Course / Module	ECTS	Semester
PLP102	Principle of Horticulture	7	1
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	82
Description			
By studying this module, the student will learn the scientific classifications of horticultural plants, the conditions for the growth and cultivation of these plants, the importance of horticultural crops, in addition to identifying the most important factors affecting productivity. Through this course, students can also become able to describe and distinguish horticultural crops according to their types and different uses.			

Module 7

Code	Course / Module	ECTS	Semester
NTU102	Computer	3	2
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	2	48	27
Description			
The course covers many aspects of computer science topics in terms of its history and rapid development, getting to know computer systems, learning how to use basic operating systems, as well as learning how to use word processors and statistical analysis programs, and encouraging students to solve computer problems in creative ways.			

Module 8

Code	Course / Module	ECTS	Semester
NTU103	Arabic Language	2	2
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
The module includes topics to explain the basic grammar rules of the Arabic language in terms of the ability to form correct sentences, correct pronunciation, and writing without spelling errors as much as possible. It also provides students with the basic rules of punctuation marks and how to use them.			

Module 9

Code	Course / Module	ECTS	Semester
TAMO 101	Occupational safety	2	2
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
The Occupational Safety course aims to increase students' knowledge of safety concepts and principles in the workplace. It covers basic topics such as risk assessment, preventive measures, and emergency response. It also includes awareness of safety laws and regulations, in addition to training on the use of protective equipment. The ultimate goal is to promote a culture of safety and reduce accidents and injuries in the workplace.			

Module 10

Code	Course / Module	ECTS	Semester
PLP 103	Fundamental of soil science	7	2
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	97
Description			
The module contains topics that expand the student's knowledge of soil, through which he studies the types of soil, its layers, components, physical and chemical properties, properties and characteristics of each one, and its suitability for the agricultural process due to its essential role in the agricultural production process, and studying the specifications of the soil and its formation factors, as well as identifying the best crops that are compatible with different types of soil, which will increase the properties of the various organic materials in the soil.			

Module 11

Code	Course / Module	ECTS	Semester
PLP 104	Plant anatomy	8	2
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	112
Description			
The course aims to provide students with the basics of plant anatomy through a set of topics that identify all the anatomical parts of the plant, identify the contents of the living and non-living plant cell, the structure of the plant cell, how the cell wall is formed, and the types of plasmatic connections, as well as introducing students to the functions of each plant tissue and organ.			

Module 12

Code	Course / Module	ECTS	Semester
PLP 105	Principle of genetics	8	2
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	122
Description			
The module includes chapters with explanations of the basics of genetics and Mendel's laws that control dominant and recessive inherited qualitative and quantitative traits, hybridizations, chromosome functions, and their role in genetic engineering and research so that the student can predict the plants of advanced generations and the possibility of improving their specifications.			

Module 13

Code	Course / Module	ECTS	Semester
NTU 200	AL Baath regime's Crimes in Iraq	2	3
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
This module explains to the modern generations who did not live through the era of the defunct Baath regime and its crimes committed inside the Iraqi state, and it explains the danger of the control of reactionary totalitarian regimes over the ruling systems and their control over the fate of peoples and the distinction between their crimes and crimes against humanity. The module also deals with the laws of the International Criminal Court against humanity and the laws of the Iraqi High Criminal Court of 2005.			

Module 14

Code	Course / Module	ECTS	Semester
NTU 201	English language	2	3
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
The module aims to study the grammar rules of the English language and correct conversation, the way to pronounce letters and sounds in and learn how to speak taking into account the tenses, in addition to getting to know family members and friends and social communication phrases.			

Module 15

Code	Course / Module	ECTS	Semester
TAMO 200	Biochemistry	6	3
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	2	63	87
Description			
By studying this course, the student can learn the basic concepts of biochemistry, the formation of biological compounds, their biosynthesis processes, and the transformations that occur inside the plant until the plant obtains what it needs from them to use them in its vital process, the final result of which leads to achieving proper growth, which leads to the best production.			

Module 16

Code	Course / Module	ECTS	Semester
PLP 200	Plant Physiology	7	3
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	82
Description			
This course includes topics that enable the student to know the basic concepts of plant physiology and the influence and interaction of plants with environmental factors, with a focus on photosynthesis, respiration, water relations, the roles of enzymes and hormones, movement in plants, mineral nutrition, and evaluation of the main physiological characteristics of plants.			

Module 17

Code	Course / Module	ECTS	Semester
PLP 201	Field Crop	6	3
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	82
Description			
Winter and summer field crops are explained in detail in this module from various aspects such as production techniques, their service, identifying the most important environmental conditions suitable for their cultivation, and introducing the student to the importance of post-harvest techniques and seed purification, in addition to clarifying the importance of these strategic crops and including them in breeding and improvement programs with the aim of increasing their productivity.			

Module 18

Code	Course / Module	ECTS	Semester
PLP 202	Vegetable Production	7	3
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	97
Description			
This course covers the basic concepts of producing winter and summer vegetables, and clearly shows the study of modern scientific methods for their growth and the means necessary to increase productivity and quality by providing the conditions and requirements for production. In addition to methods of classifying them according to vegetable plant families, methods of propagation, and describing the appropriate environment for each crop.			

Module 19

Code	Course / Module	ECTS	Semester
NTU 202	Computer	3	4
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	2	48	27
Description			
The course covers many aspects of computer science topics in terms of its history and rapid development, getting to know computer systems, learning how to use basic operating systems, as well as learning how to use word processors and statistical analysis programs, and encouraging students to solve computer problems in creative ways.			

Module 20

Code	Course / Module	ECTS	Semester
NTU 203	Arabic Language	2	4
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
The module includes topics to explain the basic grammar rules of the Arabic language in terms of the ability to form correct sentences, correct pronunciation, and writing without spelling errors as much as possible. It also provides students with the basic rules of punctuation marks and how to use them.			

Module 21

Code	Course / Module	ECTS	Semester
PLP 203	Fruits Production	9	4
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	132
Description			
The module includes in its chapters the divisions of important fruit trees, whether deciduous or evergreen, and it also includes a detailed explanation of the parts of the fruit tree, its life cycle, methods of propagation, scientific methods for establishing fruit orchards, methods and systems of agriculture, and various service operations throughout the year, and a study of the varieties and types that suit production areas according to the environmental conditions prevailing in each region and their compatibility with the requirements of each type or variety of fruit so that students can establish fruit orchards, serve them, and improve their productivity.			

Module 22

Code	Course / Module	ECTS	Semester
PLP 204	Agricultural Pullers & Machinery	8	4
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	122
Description			
The module specializes in studying agricultural machinery and mechanization, including types of bulldozers and agricultural machines, their parts, how they work, and their economic importance in serving the agricultural process. The student will also be able to perform periodic maintenance operations for them and determine the type of bulldozers and machines needed for each agricultural process and their relationship to the type of soil.			

Module 23

Code	Course / Module	ECTS	Semester
PLP 205	Forestry	8	4
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	122
Description			
The module, with its different chapters, can raise the student’s knowledge of natural and artificial forests, their geographical distribution, and methods of exploiting and developing them through studying the special service and maintenance operations, in addition to clarifying the importance of forests from an environmental and tourism perspective and their role as natural economic resources.			

Module 24

Code	Course / Module	ECTS	Semester
TAMO 300	Plane surveying & Engineering Drawing	6	5
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
The module deals with the nature of the Earth's topography and the study of dimensions and flat distances for drawing, understanding and reading maps. In addition, the course contains chapters that explain to students the basics of spatial and engineering drawing by learning about engineering drawing tools and the process of projections and three-dimensional shapes using modern design techniques.			

Module 25

Code	Course / Module	ECTS	Semester
PLP 300	Fertilizers & Fertility	6	5
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
The course Providing scientific knowledge of pastures the basic concepts of fertility and fertilization, the importance of fertilizers in the development of agricultural production, what types of fertilizers are used, what are their characteristics, and the specific periods for their use, and the student becomes able to calculate the fertilizer needs for each crop.			

Module 26

Code	Course / Module	ECTS	Semester
PLP 301	Nursery & Plant Propagation	6	5
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57
Description			
This module provides extensive information on plant propagation, greenhouse and protected environment cultivation, identifying the types and forms of protected cultivation facilities and their benefits, and how to control suitable conditions for cultivation outside of crop growth times. The student will be able to produce plants from different plant families.			

Module 27

Code	Course / Module	ECTS	Semester
PLP 302	Plant Growth Regulators	6	5
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57
Description			
This module provides extensive information about plant growth regulators, their types, mechanisms of action, properties, and biosynthesis within the plant, and their important role in the growth and development of plants, in addition to studying growth inhibitors and their role in plant life.			

Module 28

Code	Course / Module	ECTS	Semester
PLP 303	Forage Crop	6	5
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
Providing scientific knowledge of pastures and their management, identifying the most important fodder crops and pastures, and the environmental conditions suitable for crop and pasture production and expansion, to benefit from them in supporting and developing animal production and breeding.			

Module 29

Code	Course / Module	ECTS	Semester
TAMO 301	Statistics, design and analysis of experiments	6	6
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	72
Description			
The course aims to give the students the basic of statistical processes and dispersion measures, so that students will be able to conduct statistical tests and estimate correlation and regression coefficients, as well as introduce students to the importance of planning and implementing agricultural experiments, how to control experimental error, and study the designs used in the field of agricultural experiments. The student becomes Able to plan and implement the design and analyze its data.			

Module 30

Code	Course / Module	ECTS	Semester
PLP 304	Floriculture & Landscape	5	6
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	32
Description			
The course deals with the types of ornamental plants, methods of planting them, their uses, study the basic rules for designing public and home gardens, and identifying the most important ornamental plants so that the student can design gardens, propagate ornamental plants, and care for them using modern scientific methods.			

Module 31

Code	Course / Module	ECTS	Semester
PLP 305	Organic Agriculture	5	6
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	47
Description			
The module aims to familiarize students with organic farming methods and the types of crops that can be grown organically, without using chemical fertilizers that have been proven to be harmful to humans and agricultural soil, and to learn about the benefits of organic farming and the production of high-quality crops that are characterized by their high prices.			

Module 32

Code	Course / Module	ECTS	Semester
PLP 306	Industrial Crops	5	6
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	32
Description			
The Module aims to increase students' knowledge to the basic concepts of the importance of industrial crops of all kinds, winter and summer, and their suitability for agriculture in the Iraqi environment, and to introduce these crops into breeding and improvement programs to obtain the highest production and best quality of these crops that enter into human daily life.			

Module 33

Code	Course / Module	ECTS	Semester
PLP 307	Natural Resources Economics	4	6
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37
Description			
To enable the student to know the basics of agricultural economics, the role of agricultural activity in building the economic structure, identifying the labor force in the agricultural sector, determining agricultural and water policies, and the ability to calculate the economic feasibility of each agricultural project and manage agricultural projects.			

Module 34

Code	Course / Module	ECTS	Semester
PLP 308	Plant Nutrition	5	6
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	32
Description			
Expanding the student's understanding of the nutrients important for plant growth and the basic concepts of plant nutrition, the importance of nutrients for plant growth, their types, the quantity needed for each element at each stage of its growth, and how they are transported and represented within the plant. The student becomes able to diagnose the symptoms of nutrient deficiency and how to treat them.			

Module 35

Code	Course / Module	ECTS	Semester
NTU 400	Scientific research methodology	2	7
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
1	1	33	17
Description			
The course aims to introduce students to the basic concepts of scientific research, so that the student is able to think scientifically and research, how to conduct scientific experiments and apply them in the field, how to take readings and analyze them, and give a logical analysis of the results.			

Module 36

Code	Course / Module	ECTS	Semester
PLP 400	Plant Breeding	7	7
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	97
Description			
The module enables the student to become familiar with the concept of plant breeding and the importance of plant breeding and improvement programs in creating crops that are resistant and tolerant to field conditions. The student will be able to perform the hybridization process, produce hybrids, estimate the characteristics of the hybrid and compare them with the parents to obtain high-yielding varieties and strains.			

Module 37

Code	Course / Module	ECTS	Semester
PLP 401	Plant Disease	7	7
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	82
Description			
The course aims to teach the student to identify plant diseases, their causes and harmful stages, as well as to familiarize the student with the most important diseases that affect plants during their different growth stages, and what are the factors that affect the severity of the disease, and to be able to diagnose the type of infection, its severity and methods of combating it.			

Module 38

Code	Course / Module	ECTS	Semester
PLP 402	Post-harvest physiology & Storage	7	7
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	82
Description			
The curriculum aims to explain the basic concepts of crop care and storage, as well as to introduce the student to scientific methods for determining crop harvest dates, methods of post-harvest fruit care, providing the best storage conditions, and reducing crop losses. The student will also be able to identify the physiological damage that affects fruits during storage.			

Module 39

Code	Course / Module	ECTS	Semester
PLP 403	Seed inspection and certification	7	7
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	82
Description			
The module explains to students how seed inspection and certification tests are carried out. Through these tests, students learn about seed inspection processes and how to take samples for inspection purposes, and the student is able to conduct field inspections.			

Module 40

Code	Course / Module	ECTS	Semester
TAMO 401	Employability skills	2	8
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17
Description			
The course aims to equip students with the knowledge and skills necessary to succeed in the workplace. It covers topics such as resume writing, interview skills, and effective communication. It also includes developing teamwork, problem solving, and time management skills. The goal is to enhance students' ability to adapt to market demands and increase their employment opportunities.			

Module 41

Code	Course / Module	ECTS	Semester
PLP 404	Weeds and weed control	7	8
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	3	78	97
Description			
The subject of the course aims to raise the student's awareness of the basic concepts of weeds science, and to identify its types, especially those that grow with the main crops in the field, and what are its specifications and control techniques, and the ability to diagnose it and describe the necessary pesticides for it and methods of controlling it.			

Module 42

Code	Course / Module	ECTS	Semester
PLP 405	Plant Tissue Culture	7	8
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	82
Description			
The module aims to introduce the basic concepts of plant tissue culture techniques, supplies, requirements and equipment of the tissue culture laboratory, as well as how to prepare nutrient media for different types of plants and harness this knowledge in the plant propagation sector to benefit from the advantages of this technique.			

Module 43

Code	Course / Module	ECTS	Semester
PLP 406	Economic insects	6	8
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57
Description			
The curriculum aims to make the student familiar with the most important economic insects, including beneficial insects, including bees and honey production, and their important role in the pollination process and increasing crop productivity. The student will also be able to manage and raise beehives and address their problems, in addition to the silkworm that produces silk.			

Module 44

Code	Course / Module	ECTS	Semester
PLP 407	Harvesting Equipment	6	8
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	4	93	57
Description			
This course enables the student to become familiar with the basic concepts of harvesting and harvesting equipment, and to introduce the student to the most important machines and equipment used in harvesting and harvesting crops, what their components are, and to perform calculations for methods of calibrating them and performing maintenance operations on them and how to choose the appropriate type of them.			

Module 45

Code	Course / Module	ECTS	Semester
PLP 408	Graduation project	2	8
Class (hr / w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
0	2	30	20
Description			

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