الملحق (2): دليل البرنامج الدراسي

دليل البرنامج الدراسي | 2025-2026 | Program Catalogue

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. Mission & Vision Statement:

Vision Statement

The faculty members at the College of Agricultural Technology/Mosul - Department of Plant Production Technologies at the Northern Technical University believe that students come to understand the specialty of agricultural science technologies through a combination of coursework, laboratory experiences, research, and field work. The combination of educational methods leads students to a balanced understanding of the scientific methods that agricultural scientists use to make observations, develop ideas, and create theories about plants. Small class sizes in the biology program foster a close working relationship between faculty and students in an informal and caring atmosphere.

Mission statement

The academic staff in the Department of Plant Production Technologies pursue a multifaceted mission at Northern Technical University. The program seeks to provide all students with basic knowledge of agricultural science techniques and a deeper understanding of their chosen area of focus in agricultural science. The curriculum and advising are designed to prepare graduates for their future careers, whether they choose to work as agricultural technical engineers specializing in botany or plant production or pursue advanced scientific study in agricultural sciences. In addition, biology courses provide essential laboratory science experience for students seeking to complete general education requirements.

2. Program Specification:

Program code:	BSc. PLP	**ECTS**	240
Duration:	4 Years: 8 Semesters	**Method of Attendance:**	Full Time

Level 1 exposes students to the fundamentals of agricultural science and is suitable for progression to all programmes within the Agricultural Sciences portfolio. Core programme topics are covered at Level 2 to prepare for the research-led specialist subject units at Levels 3 and 4. Thus, the Plant Production Technology graduate is trained to appreciate how research influences teaching, in accordance with the mission statements of the University and the School.

At levels 2, 3 and 4, students are free to choose more than half of their modules provided they choose a combination of modules that enable them to understand modern plant production techniques to ensure the breadth of knowledge expected of a graduate with a Bachelor of Science in Agricultural Technology. This allows students to develop their broad interests in agricultural science. Decisions about what to study are made with input from personal tutors.

The research spirit is developed and reinforced from the outset through practical exercises, which are either included in lecture modules or taught in dedicated practical modules, research seminars, tutorials, and PowerPoint presentations which students must pass during the programme levels to progress to the next level. At level 4, all students undertake an independent capstone project, which may be a field research project or a laboratory research project involving data analysis worth one credit hour.

Academic tutorials are held at Levels I and 2 with the same tutor, who is also the personal tutor, providing continuity and progressive guidance. Level I and 2 tutorials include a number of workshops to teach skills, e.g. library use and presentation skills, followed by assessed exercises, e.g. essays and talks, as opportunities to practice these skills in a subject-specific context.

3- Program Goals:

1-Providing comprehensive education in plant production technology that focuses on scientific thinking and problem solving.

2-Preparing students for a wide range of post-bachelor's paths, including graduate studies, vocational training programs, or entry-level jobs in any field of work in either the public or private sector.

3- prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of Agricultural Science.

4- provide extensive hands-on training in electronic technology, statistical analysis laboratory skills, and field techniques.

5- enrich students with opportunities for alternative education in the area of Plant production techniques through undergraduate research, internships, and study-abroad.

4. Student Learning Outcomes:

Agriculture is the lifeblood of life and the continuity of life on the planet depends on it to provide the necessary food for its population that is increasing day by day. The Agricultural Technical College has contributed to this through the Department of Plant Production Technologies by preparing graduates with the title of Agricultural Technical Engineer armed with the sciences that enable them to perform this role. Graduates obtain information about the technical, technical, field scientific and theoretical aspects of agricultural sciences and use basic knowledge to achieve broader concepts. The department offers a bachelor's degree in Plant Production Technologies with a focus on horticultural sciences and field crops; in addition, the department offers courses for a large number of students from other departments and supports pre-professional programs. The curriculum and experiences of Plant Production are designed to prepare students, in part, to enter graduate programs, technical professions and education.

Work on the basic axes in plant biotechnology as follows: -

1- Using genetic engineering programs and plant tissue culture techniques to improve plant production.

2- Implementing field and horticultural crop production projects and beekeeping projects.

3- Economic management of agricultural projects.

4- Working in agricultural laboratories of all kinds, grading grains.

5- Using protected agriculture techniques such as tunnels, greenhouses and plastic in the production of horticultural crops.

6- Working in nurseries and propagating ornamental plants.

7- Solving problems by conducting researches, collecting data and analyzing it statistically.

5. Academic Staff:

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6. Credits, Grading and GPA:

***Credits**:*

The Department of Plant Production Technologies at the Technical College of Agriculture/Mosul, Northern Technical University follows the Bologna Process through the European Credit System (ECTS). The total number of degree programs taught according to the European Credit System is 240, i.e. 30 European Credits per semester. The European Credit System is equivalent to 25 student hours of work, including structured and unstructured workload.

Grading:

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

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

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

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of 4-year B.Sc. degrees:

CGPA= [(1^{st} module score x ECTS) + (2^{sd} module score x ECTS) + ...]/ 240

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request

7- Curriculum/Modules

Semester 1 │ 30 ECTS │ 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request
NTU 100	Democracy and human rights	33	17	2	B	
NTU 101	English Language	33	17	2	B	
TAMO 100	General Chemistry	78	72	6	B	
PLP 100	General Insects	78	72	6	C	
PLP 101	General Botany	93	82	7	C	
PAP 102	Principle of Horticulture	93	82	7	C	

NTU 102	Computer	48	27	3	B	
NTU 103	Arabic Language	33	17	2	B	
TAMO 101	Occupational safety	33	17	2	B	
PLP 103	Fundamental of soil science	78	97	7	C	
PLP 104	Plant anatomy	78	122	8	C	
PLP 105	Principle of genetics	78	122	8	C	

Semester 2 │ 30 ECTS │ 1 ECTS = 25 hrs.

Semester 3 │ 30 ECTS │ 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request
NTU 200	AL Baath regime Crimes in Iraq	33	17	2	B	
NTU 201	English language	33	17	2	B	
TOMA 200	Biochemistry	63	87	6	S	
PLP 200	Plant Physiology	93	82	7	C	
PLP 201	Field Crop	78	72	6	C	
PLP 202	Vegetable production	78	97	7	C	

Semester 4 │ 30 ECTS │ 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request
NTU 202	Computer	48	27	3	B	
NTU 203	Arabic Language	33	17	2	B	
PLP 203	Fruit Production	93	132	9	C	
PLP 204	Agricultural Pullers & Machinery	78	122	8	C	
PLP 205	Forestry	78	122	8	C	

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request

TAMO 300	Plane surveying & Engineering Drawing	78	72	6	S	
PLP 300	Fertilizers & Fertility	78	72	6	C	
PLP 301	Nursery & Plant Propagation	93	57	6	C	
PLP 302	Plant Growth Regulates	93	57	6	C	
PLP 303	Forage Crop	78	72	6	C	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs.

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request
TAMO 301	Statistics, design and analysis of experiments	78	72	6	S	
PLP304	Floriculture & Landscape	93	32	5	C	
PLP 305	Organic Agriculture	78	47	5	C	
PLP 306	Industrial Crops	93	32	5	C	
PLP 307	Natural Resources Economics	63	37	4	B	
PLP 308	Plant Nutrition	93	32	5	C	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request
TAMO 400	Scientific research methodology	33	17	2	B	
PLP 400	Plant Breeding	78	97	7	C	
PLP 401	Plant Disease	93	82	7	C	
PLP 402	Post-harvest physiology & Storage	93	82	7	C	
PLP 403	Seed inspection and certification	93	82	7	C	

Semester 8 │ 30 ECTS │ 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre - request
TAMO 401	Employability skills	33	17	2	B	
PLP 404	Weeds and weed control	78	97	7	C	
PLP 405	Plant Tissue Culture	93	82	7	C	
PLP 406	Economic insects	93	57	6	C	
PLP 407	Harvesting Equipment	93	57	6	C	
PLP 408	Graduation project	30	20	2	C	

8. Contact:

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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			

3. Contact:

Program Manager:

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MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information					
Module Title	Democracy and human rights			**Module Delivery**	
Module Type	B			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	NTU 100				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Plant production techniques		**College**	Technical Agricultural College	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	.....	**Semester**	....
Co-requisites module	.....	**Semester**	.....

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. **Introducing the student to the most important laws related to human rights** 2. **Introducing the student to the most important Iraqi constitutions and their relationship to human rights.** 3. **Teaching the student to respect the freedom of others in dealing with him, taking into account the differences in cultures in the Iraqi environment**
Module Learning Outcomes	1. Demonstrate a clear understanding of fundamental concepts related to democracy, human rights, and social justice. 2. Analyze and critically evaluate various theories and frameworks related to democracy and human rights, including their historical and contemporary contexts. 3. Apply theoretical knowledge to real-world scenarios, including case studies of human rights violations and democratic movements. 4. Engage with and assess current global and local issues related to democracy and human rights, demonstrating awareness of their complexities. 5. Conduct independent research on topics related to democracy and human rights, utilizing appropriate methodologies and sources. 6. Communicate ideas effectively in both written and oral formats, articulating arguments and perspectives on democracy and human rights issues. 7. Develop ethical reasoning skills to evaluate the implications of policies and practices on human rights and democratic governance. 8. Work collaboratively with peers to explore and present on various topics, demonstrating teamwork and leadership skills. 9. Understand the role of advocacy and activism in promoting democracy and human rights, and develop skills to engage in these efforts.
Indicative Contents	**Indicative content includes the following.** **theoretical part** 1. **Relying on accumulated information on the topic [2]** 2. **Relying on the ability to focus on information[2]** 3. **Clarifying the idea and defining the goal of the lesson[2]** **The ability to collect information about the topic by asking questions[2]**

Learning and Teaching Strategies

Strategies	Interactive Lectures: Group Discussions and Debates: Role-Playing and Simulations: Case Studies: Analyze specific case studies of human rights violations or successful democratic movements to provide concrete examples of the principles being studied. Service Learning: Encourage students to engage in community service or advocacy projects related to democracy and human rights, fostering a practical understanding of these concepts. Collaborative Learning: Promote group projects where students can work together to research and present on various topics related to democracy and human rights. Critical Reflection: Incorporate reflective writing assignments where students can analyze their learning experiences and personal beliefs regarding democracy and human rights. Digital Tools and Resources: Field Trips and Site Visits: Organize visits to local government institutions, NGOs, or human rights organizations. to provide students with firsthand experience of democratic processes.

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.20
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	Continuous	All
	Assignments	2	10% (10)	Continuous	All
	Assignments Homework	2	10% (10)	Continuous	All

Summative	**Report**	2	10% (10)	Continuous	All
	Midterm Exam	1hr	10% (10)	8	All

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Human rights, their definition, and goals.
Week 2	The roots of human rights and their development in human history. Human rights in ancient times
Week 3	Human rights in ancient civilizations, especially the Mesopotamian civilization
Week 4	Human rights in divine laws, with a focus on human rights in Islam
Week 5	Human rights in the Middle Ages. Human rights in doctrines, schools and political theories. Human rights in companies, their advertisements, revolutions, and constitutions
Week 6	Human rights in contemporary and modern history: international recognition of human rights
Week 7	Regional international recognition of human rights
Week 8	Non-governmental organizations and human rights
Week 9	National human rights organizations
Week 10	Human rights in Iraqi constitutions between reality and theory
week 11	The relationship between human rights and public freedoms in the Universal Declaration of Human Rights
Week 12	The relationship between human rights and public freedoms in regional charters and national constitutions
Week 13	Necessary human rights and collective human rights
Week 14	Economic, social and cultural human rights and civil and political human rights
Week 15	Modern human rights: facts in development, the right to a clean environment
Week 16	final exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	محاضرات في الديمقراطية و حقوق الانسان	Yes
Recommended Texts	**Democracy and Human Rights Curriculum**	
Websites		

Grading Scheme

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Arabic Language			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☐**Lecture** ☐ **Lab** ☐ **Tutorial** ☐**Practical** ☒ **Seminar**	
Module Code	NTU 103				
ECTS Credits	2				
SWL (hr/se3m)	**50**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	**Plant Production** PLP		**College**	Technical Agricultural College	
Module Leader	Fahad Khalaf Yassein		**e-mail**	fahadbiologymycology@ntu.edu.iq	
Module Leader's Acad. Title	Asst.prof.		**Module Leader's Qualification**		
Module Tutor	Amina mahir azeez		**e-mail**	Amina.mahir@ntu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1-Preparing students who have the ability to pronounce correctly and write without .errors as much as possible 2.Encouraging the student to follow correct spelling rules 3.Paying attention to punctuation marks and how to use them in writing

Module Learning Outcomes	1-.Learn about the basic and important rules of the Arabic language 2.Focus on correct spelling rules . 3-Paying attention to a lot of reading and reading. To train the student on .correct pronunciation and writing without errors as much as possible
Indicative Contents	Instructional content includes the following Alert students to common linguistic errors, as well as benefit from correcting these _ errors in their formal and informal writing. (4 hours Knowing the necessary spelling rules. (4 hours_ Knowing punctuation marks and how to use them. (4 hours_

	Part B - practical part

Learning and Teaching Strategies

Strategies	1-.Providing students with the basics and lectures related to the subject - 2.Use slide presentation methods to convey information more clearly 3-.Urging students to read, read, and go to libraries

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسيالمنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسيالمنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem)	**50**		

الحمل الدراسي الكليللطالب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The concept of linguistic errors
Week 2	Rules for writing open ta's and open ta's
Week 3	The elongated alif and the short alif
Week 4	Solar letters and lunar letters
Week 5	Dhaad and Dhaa
Week 6	Writing the hamza: connecting and cutting, the middle hamza, the extreme hamza
Week 7	punctuation marks
Week 8	Exam
Week 9	The noun, the verb, and the difference between them
Week 10	The object, the absolute object, the object for its sake, the object in it, and the object with it
Week 11	Formal aspects of administrative discourse, the language of administrative discourse

Week 12	the number
Week 13	Applications of common linguistic errors
Week 14	Meanings of prepositions, the rule of alif al-fariqa, the rule of nun and tanween
Week 15	Exam
Week 16	Review the material before the final exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Clear Dictation, Abdul Majeed Al-Naimi, Dahham Al-Kayyal, Dar Al-Mutanabbi Library, Baghdad, 6th edition, 1987 AD.	
Recommended Texts	Lessons in language, grammar, and dictation for state employees, Ismail Hamoud Atwan and others, Ministry of Education Press No. (3), Baghdad, 2nd edition, 1984 AD.	
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	General Chemistry			**Module Delivery**	
Module Type	B			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	TAMO 100				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Plant Production PLP		**College**	Technical Agricultural College	
Module Leader	Fahad Khalaf Yassein		**e-mail**	fahadbiologymycology@ntu.edu.iq	
Module Leader's Acad. Title	Asst.prof		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Hala awf abdalrahman		**e-mail**	Hala chilmeran 20@gmail .com	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**The student becomes familiar with the classification of chemical elements, types of acids, salts, and bases and their properties, and is able to detect them.**
Module Learning Outcomes	- **Identify solutions and methods of preparing them.** - **Identify the preparation of diluted and concentrated acids and stimulants.** - **Identify the principles of chromatographic analysis.**
Indicative Contents	**Indicative content includes the following.** General Chemistry: You learn basic concepts such as atomic structure, electronic structure, ions, and forces operating between molecules.[10] Accurate analysis: To learn how to collect and extract a sample, analyze statistics, and use advanced technological measurements.[10] Thermodynamics and Kinetics: For practice in understanding the laws of thermodynamics and how they relate to chemical systems.[10] Spectrometry and Spectroscopy: Ratios between electromagnetic readings and matter have been discovered.[10].

Learning and Teaching Strategies

Strategies	1. Theoretical lectures 2. Presentations 3. Showing illustrative films 4. Visual aids 5. Practical 6. Oral and written tests

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Periodic classification of elements
Week 2	Atomic structure
Week 3	Electronic distribution of atoms in the periodic table
Week 4	Electronic theory of valence
Week 5	Chemical bonds
Week 6	Acids base and salts
Week 7	Reduction and oxidation reactions
Week 8	Balancing in acidic and basic media
Week 9	Standard electrode voltage
Week 10	Nuclear chemistry
Week 11	The predominant nonmetallic elements
Week 12	Ideal gases
Week 13	Halogens, their properties and preparation, general properties of group six elements
Week 14	General characteristics of the elements in the fifth group
Week 15	General properties of the elements in group four

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	A visit to the chemistry laboratory and learning about the devices and equipment
Week 2	Safety in chemical laboratories, dealing with chemicals (simple distillation, crystallization and filtration)
Week 3	Use of some laboratory equipment
Week 4	Data processing and results
Week 5	Estimate the boiling point
Week 6	Estimation of melting point
Week 7	Purification of chemical materials (simple distillation, crystallization and filtration)
Week 8	Estimation of dissolution yield
Week 9	Determination of molecular weight by the Victormier method
Week 10	Estimating the molecular weights of non-ionized substances
Week 11	Estimation of equivalent weights (electrochemical method)
Week 12	Estimation of equivalent weights (electrochemical method)
Week 13	Estimating the reaction rate
Week 14	Estimation of chemical equilibrium
Week 15	Estimation of chemical equilibrium
Week 16	Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	General chemistry,2014 مبادئ الكيمياء العامة ,د.محي الدين البكوش 2024	Yes
Recommended Texts	General Chemistry,2020	No
Websites	https://praxilabs.com/arabic/blog/6-most-important-chemistry-laws/	

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
Module Title	General Insects	**Module Delivery**
Module Type	**core**	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**PLP100**	
ECTS Credits	**6**	
SWL (hr/sem)	**150**	

Module Level	**1**	**Semester of Delivery**	**1**
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**
Module Leader	**Janan kassim khorshed**	**e-mail**	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title	**Assist. Prof.**	**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	**1. Understanding the economic importance of insects** **2. Learning the plant host for each type insect** **3. Explain the classifications of insects .**
Module Learning Outcomes	1. Understanding Insect Anatomy and Physiology: • Students will be able to describe the basic anatomical structures of insects and understand their physiological functions. • identify the major body parts of an insect (head, thorax, abdomen) and explain the functions of the digestive, circulatory, and respiratory systems in insects. 2. Classification and Identification of Insects: • Students will demonstrate the ability to classify and identify common insect species based on their morphological features. • tudents will be able to distinguish between different orders of insects (e.g., Lepidoptera, Coleoptera, Diptera) and identify specific species within these orders. 3. Insect Behavior and Ecology : • Students will understand the behavior of insects, including feeding, mating, and migration patterns, and their roles in ecosystems. • Students will explain the role of pollination in plant reproduction and how certain insect species contribute to ecological processes like decomposition.
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **An overview of microbiology screening and diagnosis centers in Iraq** **. Factors affecting entomology** **Learn about the most important insects spread in Iraq**
	Part B - practical part **Insect morphology study [9 hrs].** **.** Devices and tools used in microbiology examination **[9 hrs].** **. Sample extraction [9 hrs].**

Learning and Teaching Strategies	
Strategies	**1. Inquiry-Based Learning (Student-Centered Discovery)** **2. Hands-On Learning (Active Learning)** **3. Problem-Based Learning (PBL)** **4. Collaborative Learning** **5. Flipped Classroom.**

Student Workload (SWL)
الحمل الدراسي للطالب محسوب ل60 ساعة

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	Continuous	All
	Assignments	2	10% (10)	Continuous	All
	Projects / Lab.	2	10% (10)	Continuous	All
	Report	2	10% (10)	Continuous	All
Summative assessment	Midterm Exam	1hr	10% (10)	8	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The economic importance of insects and ways to combat them
Week 2	Insects with multiple damage - order similar-winged - aphids, whiteflies
Week 3	Wheat and barley insects - sauna, corn insects - corn stalk bore
Week 4	Bean insects - from beans - from black beans, jet insects and alfalfa - weevil
Week 5	Diabetic beet insects, sunflower insects
Week 6	Cotton insects, safflower insects
Week 7	Onion and garlic insects – onion fly – lettuce insects – aphids
Week 8	Insects of the Solanaceae family – Potato tuber moth – Insects of the cucurbitacea family – Donkey beetle
Week 9	Pomegranate insects - Pomegranate fruit worm - fig insects - fig fruit worm
Week 10	Grape insects - gloves - citrus insects - citrus leafworm
Week 11	Olive insects – olive leaf fly – buckthorn insects – fruit worm
Week 12	Stem excavators - types - control
Week 13	Apple bugs – apple fruit worm
Week 14	Palm insects – Dubas palm – Donkey

Week 15	**nsects of ornamental plants- cutworms**
Week 16	**exame**

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	The relationship of insects with other animals, the description of insects - their advantages - the most important insect ranks of economic importance
Week 2	Straight-winged rank - locust field cockroach, equal ptera - ground
Week 3	Wheat and barley insects - spike breaker worm, scale insects, corn insects - from the leaves - cornworm
Week 4	Peas - legume worm - stem borer, jet insects and alfalfa
Week 5	Sugar beet insects, sunflower insects
Week 6	Cotton insects, safflower insects
Week 7	Onion and garlic insects – lahana and cauliflower insects
Week 8	Insects of the Solanaceae family - insects of the cucurbitaceae family
Week 9	Pomegranate insects - fig insects
Week 10	Grape insects- citrus insects
Week 11	Olive bugs - buckthorn insects
Week 12	Walnut insects
Week 13	Almond insects
Week 14	Palm insects
Week 15	Insects of ornamental plants
Week 16	exame

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	General Insects الدكتور نزار مصطفى الملاح	Yes
Recommended Texts	معجم الملاح في مصطلحات علم الحشرات 2022	No
Websites	https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.seip-eg.com/%3Fp%3D1366&ved=2ahUKEwihpNKczr6FAxXVYPEDHaNwBHgQFnoECBIQAQ&usg=AOvVaw3yHTA-lk9LVMVFIRz-k_5u	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
Module Title	General Insects	**Module Delivery**

Module Type	**core**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**PLP100**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	**1**	**Semester of Delivery**	**1**
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**
Module Leader	**Janan kassim khorshed**	**e-mail**	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title	**Assist. Prof.**	**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	**4. Understanding the economic importance of insects** **5. Learning the plant host for each type insect** **6. Explain the classifications of insects .**
Module Learning Outcomes	4. Understanding Insect Anatomy and Physiology: • Students will be able to describe the basic anatomical structures of insects and understand their physiological functions. • identify the major body parts of an insect (head, thorax, abdomen) and explain the functions of the digestive, circulatory, and respiratory systems in insects. 5. Classification and Identification of Insects: • Students will demonstrate the ability to classify and identify common insect species based on their morphological features. • tudents will be able to distinguish between different orders of insects (e.g., Lepidoptera, Coleoptera, Diptera) and identify specific species within these orders. 6. Insect Behavior and Ecology : • Students will understand the behavior of insects, including feeding, mating, and migration patterns, and their roles in ecosystems. • Students will explain the role of pollination in plant reproduction and how certain insect species contribute to ecological processes like decomposition.
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **An overview of microbiology screening and diagnosis centers in Iraq** **. Factors affecting entomology** **Learn about the most important insects spread in Iraq**
	Part B - practical part **Insect morphology study [9 hrs].** **.** Devices and tools used in microbiology examination **[9 hrs].** **. Sample extraction [9 hrs].**

Learning and Teaching Strategies	
Strategies	**1. Inquiry-Based Learning (Student-Centered Discovery)** **2. Hands-On Learning (Active Learning)** **3. Problem-Based Learning (PBL)** **4. Collaborative Learning** **5. Flipped Classroom.**

Student Workload (SWL)
الحمل الدراسي للطالب محسوب ل60 ساعة

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	Continuous	All
	Assignments	2	10% (10)	Continuous	All
	Projects / Lab.	2	10% (10)	Continuous	All
	Report	2	10% (10)	Continuous	All
Summative assessment	Midterm Exam	1hr	10% (10)	8	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The economic importance of insects and ways to combat them
Week 2	Insects with multiple damage - order similar-winged - aphids, whiteflies
Week 3	Wheat and barley insects - sauna, corn insects - corn stalk bore
Week 4	Bean insects - from beans - from black beans, jet insects and alfalfa - weevil
Week 5	Diabetic beet insects, sunflower insects
Week 6	Cotton insects, safflower insects
Week 7	Onion and garlic insects – onion fly – lettuce insects – aphids
Week 8	Insects of the Solanaceae family – Potato tuber moth – Insects of the cucurbitacea family – Donkey beetle
Week 9	Pomegranate insects - Pomegranate fruit worm - fig insects - fig fruit worm
Week 10	Grape insects - gloves - citrus insects - citrus leafworm
Week 11	Olive insects – olive leaf fly – buckthorn insects – fruit worm
Week 12	Stem excavators - types - control
Week 13	Apple bugs – apple fruit worm
Week 14	Palm insects – Dubas palm – Donkey

Week 15	**nsects of ornamental plants- cutworms**
Week 16	**exame**

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	The relationship of insects with other animals, the description of insects - their advantages - the most important insect ranks of economic importance
Week 2	Straight-winged rank - locust field cockroach, equal ptera - ground
Week 3	Wheat and barley insects - spike breaker worm, scale insects, corn insects - from the leaves - cornworm
Week 4	Peas - legume worm - stem borer, jet insects and alfalfa
Week 5	Sugar beet insects, sunflower insects
Week 6	Cotton insects, safflower insects
Week 7	Onion and garlic insects – lahana and cauliflower insects
Week 8	Insects of the Solanaceae family - insects of the cucurbitaceae family
Week 9	Pomegranate insects - fig insects
Week 10	Grape insects- citrus insects
Week 11	Olive bugs - buckthorn insects
Week 12	Walnut insects
Week 13	Almond insects
Week 14	Palm insects
Week 15	Insects of ornamental plants
Week 16	exame

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	General Insects الدكتور نزار مصطفى الملاح	Yes
Recommended Texts	معجم الملاح في مصطلحات علم الحشرات 2022	No
Websites	https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.seip-eg.com/%3Fp%3D1366&ved=2ahUKEwihpNKczr6FAxXVYPEDHaNwBHgQFnoECBIQAQ&usg=AOvVaw3yHTA-lk9LVMVFIRz-k_5u	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Principle of Horticulture**	**Module Delivery**	
Module Type	**Core**	☒ **Theory**	
Module Code	**PLP 102**	☐ **Lecture**	
ECTS Credits	**7**	☐ **Lab**	
SWL (hr/sem)	**175**	☒ **Tutorial**	
		☒ **Practical**	
		☐ **Seminar**	
Module Level	**1**	**Semester of Delivery**	**1**
Administering Department	**Plant production techniques**PLP	**College**	**Technical Agricultural College**
Module Leader	**Waad said faizy**	**e-mail**	Waadwaad1970@ntu.edu.iq
Module Leader's Acad. Title	lecturer	**Module Leader's Qualification**	**Ph.D.**
Module Tutor		**e-mail**	
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**The student will be able to understand the basics of horticulture and its importance, develop his skills in learning agricultural techniques, and introduce him to plant species, their varieties, and their environmental needs, and develop his practical skills by providing opportunities for practical application through field activities and practical experiments to prepare students to be professionals in the field of horticulture with a comprehensive understanding of theoretical and practical knowledge.**
Module Learning Outcomes	**• The student will be able to give a clear and detailed definition of horticulture and its relationship to other agricultural sciences.** **• The student will distinguish the types of horticultural crops and divide them into fruit, vegetable and ornamental plants, as well as their subdivisions and characteristics of each section.** **• The student will learn about the plant families that belong to fruit and those that belong to vegetables and ornamental plants.** **• The student will be provided with the scientific and practical skills to understand the environmental needs of plants in each group of horticultural plants.** **• The student will acquire basic knowledge of the process of propagating horticultural plants.** **• The student will learn modern methods of agriculture such as organic agriculture, protected agriculture and appropriate agricultural systems for each horticultural crop.** **• The student will apply scientific and practical knowledge in establishing and founding orchards.**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **Definition of horticulture, its divisions, and methods of dividing plants . [3 hrs]** **Plant families and their importance in identifying plants to know their needs and planting times [3 hrs]** **Growth problems and environmental needs are fundamental [3 hrs]**

	Part B - practical part **Preparing different growing media and identifying their types in the field . [9 hrs].** **Identify the different horticultural facilities and tools for agriculture . [9 hrs].** **Planting seeds of ornamental plants, fruits and vegetables . [9 hrs].** **Conducting various vegetative propagation operations . [9 hrs].** **Following up on planted plants, fertilizing them, and combating diseases that affect plants [9 hrs].**

Learning and Teaching Strategies

Strategies	1. Theoretical lectures 2. Presentations 3. Showing illustrative films 4. Visual aids 5. Practical 6. Oral and written tests

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	5.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes	4	10% (10)	Continuous	All

Formative assessment	Assignments	2	10% (10)	Continuous	All
	Projects / Lab.	2	10% (10)	Continuous	All
	Report	2	10% (10)	Continuous	All
Summative assessment	Midterm Exam	1hr	10% (10)	8	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Definition of horticulture, the economic and nutritional importance of horticultural crops, division of crops
Week 2	The effect of environmental factors on the production of horticultural crops
Week 3	Soil service operations
Week 4	Propagation of horticultural plants by seeds
Week 5	Vegetative propagation of crops
Week 6	Physiology of reproduction
Week 7	Morphological structures of plant parts
Week 8	The most important methods of propagation - varieties - the most important service operations - economic and nutritional importance
Week 9	The most important deciduous fruit trees in Iraq - importance - methods of propagation - varieties - most important service operations
Week 10	Fruit tree service
Week 11	The most important summer vegetables in Iraq
Week 12	The most important winter vegetables in Iraq
Week 13	The most important ornamental and shade plants, methods of propagation
Week 14	Alarm crops
Week 15	Spices and medicinal crops
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	View propagation facilities and gardening fields
Week 2	Identify the fruit trees grown in the area
Week 3	Learn about ornamental seeds and different vegetables
Week 4	Preparing different growth media
Week 5	Cultivation of seeds in different agricultural environments
Week 6	Methods of planting seeds in panels, terraces, and terraces
Week 7	How to take cuttings for fruit trees and plant them

Week 8	Propagation of some plants by tubers and bulbs
Week 9	Planning a regular fruit orchard
Week 10	Orchard service operations
Week 11	Growing and caring for vegetable plants in greenhouses and greenhouses
Week 12	Vegetable crop service
Week 13	Identifying ornamental plants in the laboratory
Week 14	Individualization, transplantation and service of ornamental plants
Week 15	How to implement a geometric garden
Week 16	**Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	**Principle of Horticulture 2017** **الحدائق وهندسة البستنة علم مبادئ** **أ.م. أياد هاني إسماعيل العلاف** **كلية الزراعة والغابات / جامعة الموصل**	Yes
Recommended Texts		No
Websites	**Ayad_alalaf@yahoo.com**	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	**Computer**		**Module Delivery**		
Module Type	**B**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**		
Module Code	**NTU 102**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	**1**		**Semester of Delivery**	**2**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader	Fahad Khalaf Yassein		**e-mail**	fahadbiologymycology@ntu.edu.iq	
Module Leader's Acad. Title	**Asst. prof.**		**Module Leader's Qualification**		
Module Tutor	**Mustafa Natheer Mustafa Al Obaidy**		**e-mail**	mustafa.n.m1989@ntu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. **Understand the basics of computing: Provide students with a basic understanding of computing concepts, including its history, development, and types of computing systems.** 2. **Learn to use operating systems and basic software: Provide students with basic skills to use operating systems effectively and learn to use office software such as word processors, spreadsheets, and presentation software.** 3. **Developing basic programming skills: Teaching students the basics of programming through programming languages such as Python or Java, enabling them to write simple programs and understand different programming concepts.** 4. **Learn about the basics of software engineering: clarify software engineering concepts such as analysis, design, and testing, and how to apply them in software development.** 5. **Enhancing practical skills and creative thinking: Encouraging students to solve computer problems in creative ways and use the acquired programming skills to produce effective solutions.** 6. **Promoting interaction and teamwork: Encouraging students to collaborate on group programming projects and in solving complex programming problems.**
Module Learning Outcomes	1. **Understand basic concepts in computer science such as data, software, hardware, and networks.** 2. **Ability to analyze problems and understand basic algorithms used in programming and software development.** 3. **Learn basic programming languages such as C, Python, or Java and understand the basics of writing and executing code.** 4. **Ability to use software development tools such as text editors and integrated development environments (IDEs).** 5. **Understand the concepts of information security and privacy in the context of technology use.** 6. **The ability to understand and analyze computer systems, networks, and communication concepts between devices.** 7. **Learn about artificial intelligence concepts and their basic applications.** 8. **Learn about the basics of operating systems and how to manage computer resources and processes.**
Indicative Contents	1. **Introduction to computer science and its history.** 2. **Basic concepts such as data, processing and storage.** 3. **Numerical systems and conversion between them (decimal, binary, octal, and hexadecimal).** 4. **Computer structure and its main units (central processor, memory, input/output).** 5. **Basic programming and algorithms.** 6. **Programming languages and software development methods.** 7. **Data structures and advanced concepts in programming.** 8. **Information security and privacy in computing.** 9. **Fundamentals of computer networks and communications.** 10. **Introduction to operating systems and resource management.** 11. **Basic artificial intelligence and machine learning concepts.** 12. **Ethics and social responsibility in the use of technology.**

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	27	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) , Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	**Definition of calculator - calculator generations - hardware and software components**
Week 2	**MS-Dos operating system, system concept, system signal, disks, directories and their levels, files, internal and external commands**
Week 3	**Internal and external operating system commands.**

Week 4	**Windows operating system, system concept, advantages, basic requirements, system operation, desktop components**
Week 5	**The concept of icons, the method of dealing with the mouse, the importance and components of the Task Bar, the Start menu, and exiting the system**
Week 6	**Formatting disks, copying files and folders, taking advantage of Cut and Paste operations, dealing with the Recycle Bin, how to delete files and recover them.**
Week 7	**Take advantage of Control Panel programs,**
Week 8	**Change the desktop background, control the Screen Saver, Add and remove programs to the start menu.**
Week 9	**Taking advantage of the Run command to execute programs directly.**
Week 10	**Use entertainment programs, Window media player, and take advantage of additional programs. Accessories**
Week 11	**Use entertainment programs, Window media player, take advantage of additional programs, and use the calculator.**

Week 12	**Working with the Paint drawing program to create, save and retrieve drawings. Dealing with Office applications. How to get help Help.**
Week 13	**The concept of computer viruses, how they are infected, types of viruses, how to treat them and deal with them using anti-virus programs.**
Week 14	**Windows 7 operating system, American company Microsoft, the company's official website www.microsoft.com**
Week 15	**. Dealing with desktop icons, dealing with the components of the My Computer icon in terms of disks, folders, and files.**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	الكتاب المنهجي لوزارة التعليم العالي الجزء 1 والجزء 2 للمرحلة الاولى	no
Recommended Texts	سلسلة يسر المصطفى للعلوم " اساسيات الحاسوب والانترنت, الاوفس 2010 د. زياد محمد عبود, 2013	No
Websites	نظام التشغيل ويندوز 7, شركة مايكروسوفت الامريكية, موقع Microsoft الشركة الرسمي www.microsoft.com	

Grading Scheme
مخطط الدرجات

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

(0 - 49)	**F -** Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Arabic Language			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☐**Lecture** ☐ **Lab** ☐ **Tutorial** ☐**Practical** ☒ **Seminar**	
Module Code	NTU 103				
ECTS Credits	2				
SWL (hr/se3m)	**50**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	**Plant Production** PLP		**College**	Technical Agricultural College	
Module Leader	Fahad Khalaf Yassein		**e-mail**	fahadbiologymycology@ntu.edu.iq	
Module Leader's Acad. Title	Asst.prof.		**Module Leader's Qualification**		
Module Tutor	Amina mahir azeez		**e-mail**	Amina.mahir@ntu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1-Preparing students who have the ability to pronounce correctly and write without .errors as much as possible 2.Encouraging the student to follow correct spelling rules 3.Paying attention to punctuation marks and how to use them in writing

Module Learning Outcomes	1-.Learn about the basic and important rules of the Arabic language 2.Focus on correct spelling rules . 3-Paying attention to a lot of reading and reading. To train the student on .correct pronunciation and writing without errors as much as possible
Indicative Contents	Instructional content includes the following Alert students to common linguistic errors, as well as benefit from correcting these _ errors in their formal and informal writing. (4 hours Knowing the necessary spelling rules. (4 hours_ Knowing punctuation marks and how to use them. (4 hours_

	Part B - practical part

Learning and Teaching Strategies

Strategies	1-.Providing students with the basics and lectures related to the subject - 2.Use slide presentation methods to convey information more clearly 3-.Urging students to read, read, and go to libraries

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسيالمنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسيالمنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem)	**50**		

الحمل الدراسي الكليللطالب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The concept of linguistic errors
Week 2	Rules for writing open ta's and open ta's
Week 3	The elongated alif and the short alif
Week 4	Solar letters and lunar letters
Week 5	Dhaad and Dhaa
Week 6	Writing the hamza: connecting and cutting, the middle hamza, the extreme hamza
Week 7	punctuation marks
Week 8	Exam
Week 9	The noun, the verb, and the difference between them
Week 10	The object, the absolute object, the object for its sake, the object in it, and the object with it
Week 11	Formal aspects of administrative discourse, the language of administrative discourse

Week 12	the number
Week 13	Applications of common linguistic errors
Week 14	Meanings of prepositions, the rule of alif al-fariqa, the rule of nun and tanween
Week 15	Exam
Week 16	Review the material before the final exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Clear Dictation, Abdul Majeed Al-Naimi, Dahham Al-Kayyal, Dar Al-Mutanabbi Library, Baghdad, 6th edition, 1987 AD.	
Recommended Texts	Lessons in language, grammar, and dictation for state employees, Ismail Hamoud Atwan and others, Ministry of Education Press No. (3), Baghdad, 2nd edition, 1984 AD.	
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information
معلومات المادة الدراسية

Module Title	Occupational safety	**Module Delivery**	
Module Type	**B**		☒ **Theory**
Module Code	TAMO 101		☐ **Lecture** ☐ **Lab**
ECTS Credits	2		☐ **Tutorial** ☐ **Practical**
SWL (hr/se3m)	**50**		☐ **Seminar**
Module Level	One	**Semester of Delivery**	Two
Administering Department	**PLANT Production**	**College**	Technical Agricultural College
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Protecting the human element: Ensuring the safety and health of workers by reducing risks .and injuries in the work environment Maintaining facilities and equipment: Preventing damage and losses resulting from accidents .by applying safety standards Providing a safe work environment: Implementing occupational safety and health .requirements to ensure a risk-free work environment Promoting safety awareness: Educating workers on occupational safety and health practices .and the importance of following them Encouraging research and development: Supporting research and participating in .conferences to improve occupational safety and health standards
Module Learning Outcomes	Understanding the principles of occupational safety and health: The ability to define and apply the concepts of occupational safety and health in different work environments. Risk assessment: The ability to identify and evaluate potential hazards in the work environment and develop strategies to reduce them. Legislation and standards: Understanding and applying local and international laws and legislation related to occupational safety and health. Safety management: Developing and implementing occupational safety and health programs and procedures in institutions. Training and awareness: Designing and implementing training programs to increase awareness of the importance of occupational safety and health.
Indicative Contents	1. Introduction to Occupational Safety and Health: Definition and importance of safety in the work environment. 2. Risk assessment: Methods of identifying and assessing risks and strategies for reducing them. 3. Personal protective equipment (PPE): Types, use and maintenance. 4. Emergency procedures: Emergency plans, evacuation and accident handling. 5. Training and awareness: Safety training programs and spreading a culture of safety among workers.

Learning and Teaching Strategies	
Strategies	1-.Providing students with the basics and lectures related to the subject - 2.Use slide presentation methods to convey information more clearly 3-.Urging students to read, read, and go to libraries

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسيالمنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسيالمنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكليللطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Occupational Safety Concept
Week 2	Regulations, Laws and Legislation
Week 3	Identifying Agricultural Hazards
Week 4	Safety from Physical Hazards
Week 5	Safety from Biological Hazards
Week 6	Safety from Chemical Hazards
Week 7	Safety from Mechanical Hazards
Week 8	Safety from Common Diseases
Week 9	Handling Agricultural Machinery
Week 10	Handling Agricultural Waste
Week 11	Accidents and Injuries in the Agricultural Sector
Week 12	Accident Reporting Procedures
Week 13	First Aid
Week 14	Safe Use of Pesticides and Fertilizers
Week 15	Training

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	"Occupational Safety and Health" by Dr. Nasser Al-Daghmi, Al-Yazouri Publishing and Distribution House, 2016.	no
Recommended Texts	"General Professional Safety" by Khaled Fathy Madi and Ahmed Ragheb Al-Khatib, Kunuz Al-Ma'rifah Al-Ilmiyyah House, 2011	no
Websites	الملف السلامة والصحة المهنية الوطنية - جمهورية العراق (2022) | International Labour Organization (ilo.org)	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	**Fundamental of soil science**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐**Lecture** ☒**Lab** ☐ **Tutorial** ☒**Practical** ☐ **Seminar**	
Module Code	**PLP 103**				
ECTS Credits	7				
SWL (hr/sem)	**175**				
Module Level	**1**	**Semester of Delivery**	2		
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College of Mosul**		
Module Leader	Fahad Khalaf Yassein	**e-mail**	fahadbiologymycology@ntu.edu.iq		
Module Leader's Acad. Title	Asst.prof.	**Module Leader's Qualification**	Master		
Module Tutor	**Omar Younis**	**e-mail**	mti.lec224.omar@ntu.edu.iq		
Peer Reviewer Name	**Omar Younis**	**e-mail**	E-mail		
Scientific Committee Approval Date	**01/06/2021**	**Version Number**	1.0		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives	Course objectives - Learn about soil science and related sciences: 1- Identify the factors of soil formation and its formation processes. 2- Identify the morphological characteristics of the soil and how to collect soil data from the field. Preparing the samples taken to conduct estimates on them. 3- Measuring morphological characteristics in the field, such as color, composition, and humidity. 4- Measuring soil chemical characteristics - colloids - organic matter - exchange capacity - ion exchange - ph - E.C. 5- Measuring physical characteristics such as humidity, true density, and calculating porosity - knowing the mechanical analysis of soil to determine its components.
Module Learning Outcomes	g-Cognitive objectives 9- Identify the composition of the soil and its organic states. 10- The relationship between soil components and plant condition 11- Paying attention to the quality of soil water, air, soil temperature, and moisture stress. 12- Identify colloids, their types, and their relationship with the organic state. 13- Learn how to manage soil, manage water, and maintain soil fertility and productivity. 14- Submitting reports on the quality of the soil, its organic state, the quality of irrigation water, and the suitability of groundwater wells for irrigation. D- The skills objectives of the course. 2- Estimating soil moisture and its potential to achieve agricultural production. 3- Estimating the soil texture to determine the quality of the soil. 4- Estimating the ketone exchange capacity in relation to fertilization. 5- Determine the salinity of river irrigation water or groundwater 6- The ability to determine the salinity and acidity of the soil, which is related to fertilization, salinization, and agriculture.
Indicative Contents	1- That what the student studies should be consistent with his inclinations and thinking trends 2- That the student feels the importance of correcting refractive errors in the eye 3-The student should listen carefully to the professor's explanation 4- That the student feels what cognitive excellence and excellence mean 5- That the student recognizes the impact of science and scientists 6-The student must pay attention to respecting the time and class system

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Types of communication in the field of work 2- The ability to express ideas clearly and reliably 3- Teamwork.

Student Workload (SWL)			
Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)	97	**Unstructured SWL (h/w)**	6.46
Total SWL (h/sem)	**175**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	What is soil, the purpose of studying it, soil science, its branches, and the basic components of soil.
Week 2	Weathering, its types, factors, composition of the original material.
Week 3	Soil formation and development, soil formation factors.
Week 4	Soil morphology, soil depth, soil horizons, soil color, and other morphological characteristics.
Week 5	Physical properties of soil and their relationship to plant growth.
Week 6	Physical properties of soil and their relationship to plant growth
Week 7	Liquid phase of soil, soil relationship with water, water constants, soil water classification.
Week 8	Soil colloids, clay minerals.
Week 9	Chemical properties of soil, soil interaction, ion exchange, cation exchange capacity.
Week 10	Organic matter in the soil, its sources, importance, components, and decomposition.
Week 11	Soil salinity, sources of salinity, causes of salinity, classification of salinized soils, reclamation of saline soils, inspection of salinity...etc
Week 12	Soil fertility, macro and micro nutrients, their importance, sources, and symptoms of deficiency.
Week 13	The relationship of soil, water and plants.
Week 14	Soil classification
Week 15	Iraqi soil
Week 16	Exam

Delivery Plan (Weekly Practical Syllabus)	
	Material Covered
Week 1	Soil laboratory, definition, tools and equipment used in it, definition of occupational safety requirements and conditions that must be applied.
Week 2	Methods of collecting samples, soil collection and procedures adopted in its description, training in conducting a qualitative description of some morphological characteristics such as color, texture and composition.
Week 3	Preparing the plant for laboratory procedures and analyses
Week 4	Physical properties, estimation of moisture content, preparation of saturated dough and identification of its properties.
Week 5	Apparent density, true density.
Week 6	Mechanical analysis of soil by absorbent and hydrogen methods to estimate texture.
Week 7	Training in preparing standard solutions
Week 8	Training on preparing soil suspensions and extracts.
Week 9	Soil chemical properties, PH and EC.
Week 10	Organic matter, calcium carbonate
Week 11	Estimation of some nutrients in the soil, potassium, sodium.
Week 12	Dynamic properties of soil.
Week 13	Identify the types of fertilizers and fertilization methods.
Week 14	Conducting an experiment in the field of soil restoration.
Week 15	Using informatics in studying and classifying soil, reviewing reports submitted by students

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Basics of soil science / translated by Saleh Mahmoud	yes
Recommended Texts	Recommended books and references (scientific journals, reports,....)	yes
Websites	Electronic references, Internet sites	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	**Plant anatomy**	**Module Delivery**	
Module Type	**core**	☒ **Theory**	
Module Code	**PLP 104**	☐ **Lecture** ☒ **Lab**	
ECTS Credits	**8**	☒ **Tutorial**	
SWL (hr/sem)	**200**	☒ **Practical** ☐ **Seminar**	
Module Level	**1**	**Semester of Delivery**	**2**
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**
Module Leader	Fahad Khalaf Yassein	**e-mail**	fahadbiologymycology@ntu.edu.iq
Module Leader's Acad. Title	Asst.prof.	**Module Leader's Qualification**	
Module Tutor	**Amer Moqbel Abdul Hameed**	**e-mail**	E-mail **amer.m@ntu.edu.iq**
Peer Reviewer Name	**Amer Moqbel Abdul Hameed**	**e-mail**	E-mail **amer.m@ntu.edu.iq**
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	-Introducing the student to the most important basic information about different plants Definition of the plant cell, its types, and its difference from the animal cell. -Teaching and training the student to know its plants parts . -Teaching and training the student to take plants tissue.
Module Learning Outcomes	1. The student must have knowledge of the importance of plant parts. 2. Identify the anatomical parts of the plant. 3. Knowledge of permanent tissues. 4. Identify all the different plant tissues. 5. Identify the function of each plant tissue. 6. Identify the living and non-living contents of the plant cell.
Indicative Contents	Indicative content includes the following. Part A - theoretical part .Definition of the plant cell. Plant tissues are distinguished by some characteristics from animal tissues. The plant cell differs in shape, size, function, and type. The difference between a prokaryotic and eukaryotic cell. [3 hrs] .Plant cell structure, how the cell wall is formed, types of plasma bonds. [3 hrs] .Protoplasm, cytoplasm, precise structure of the plasma membrane. [3 hrs] .Endoplasmic reticulum, types, Golgi apparatus, function. [3 hrs] .Ribosomes, the nucleus, the difference between DNA and RNA, types of plant tissues [3 hrs]

	Part B - practical part **Installing a microscope or a compound microscope. . [9 hrs].** **Cell division. . [9 hrs].** **Plant cell contents. . [9 hrs].** **Leg anatomy. . [9 hrs].** **Root anatomy. [9 hrs].**

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	122	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	9.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Division of meristematic tissue
Week 2	Division of permanent tissues
Week 3	Skin (functions, types of skin cells)
Week 4	Layers of epiderm (cork, cork cambium, secondary cortex)
Week 5	Parenchymal tissue, sclerenchymal tissue
Week 6	Wood textur
Week 7	Bark texture
Week 8	Secretory cells and tissues
Week 9	Internal structure of the root
Week 10	Internal structure of the leg
Week 11	Internal structure of the sheet
Week 12	Secondary thickening
Week 13	Secondary xylem and phloem
Week 14	Prederm
Week 15	The internal structure of the plant and its relationship to the environment
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	Installation of an electron and optical microscope
Week 2	Identify the materials and tools used in dissection
Week 3	Prepare temporary glass slides
Week 4	Preparing permanent glass slides
Week 5	Preparing permanent glass slides
Week 6	Examination of cell wall components
Week 7	Examination of plant cell organelles
Week 8	Examination of some types of cells and tissues
Week 9	Displaying posters explaining the types of clicks and crystals and their drawing
Week 10	Anatomy of root, stem and leaf
Week 11	Watch and draw the types of human hairs and appendages
Week 12	Watch and draw the shapes of starch granules and parenchyma cells
Week 13	Identify the types of parenchymal cells, secondary thickening, and types of pitting
Week 14	Identify the types of wood and the stages of secondary growth
Week 15	Identify the naked and covered seeds
Week 16	Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Plant anatomy, تشريح النبات ، اساسيات علم تشريح النبات الدكتور بدري عويد الغاني الدكتور قيصر مجيب صالح الطبعة الثالثة 1988	Yes
Recommended Texts	Plant anatomy	Yes
Websites	https://www.agro-lib.site/2019/10/blog-post_592.html	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	Principle of genetics			Module Delivery	
Module Type	Core			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	PLP 105				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	1		Semester of Delivery	2	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader	Fahad Khalaf Yassein		e-mail	fahadbiologymycology@ntu.edu.iq	
Module Leader's Acad. Title	Asst.prof.		Module Leader's Qualification	MSC	
Module Tutor	Noura huseen saleh aljarjary		e-mail	Noura_aljarjary@ntu.edu.iq	
Peer Reviewer Name	Not available		e-mail	E-mail	
Scientific Committee Approval Date			Version Number		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**-Introducing the student to the Understand basic concepts in genetics and development, including molecular, cellular, and behavioral concepts.** **-Teaching and training the student to know Analyzing the mechanisms of gene transfer and distribution during various genetic processes such as sexual and asexual reproduction.** **-Teaching and training the student to Develop experimental and analytical skills by carrying out genetic experiments and analyzing genetic data.**
Module Learning Outcomes	**1. The ability to explain the mechanisms of gene transfer and various genetic changes.** **2. Be able to use genetic terminology correctly and effectively.** **3. The ability to analyze and interpret various genetic phenomena and identify the relationships between them.** **4. The ability to apply genetic concepts to solve simple genetic problems.** **5. Being able to identify the most important recent developments in the field of genetics and understand their effects.** **6. Be able to communicate effectively about genetics topics in appropriate scientific language.**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** - **Genetic define, history and develoment, relationship between genetic and other scince, important of genetic plan. Chromosome theory. Mendelar genetic. Test cross, modified mendelian. [6 hrs]** - **Ratio and gene intraction. Probability and use in genetic problems. Linkage and crossing over and chromosome mapping . [6 hrs]** - **Variation in chromosome number. Sexual determination,chromosomes. Sexual genetic balance. Multiple allels, Blood groups. [6 hrs]** - **Chromosome abirration variation of size chromosomes mutation of chromosome. Quantitive genetic, effect of leathal genes hertibilty. Cytoplasmic genetic. [6 hrs]** - **Genetic engineering. Engineering practic in the plants technology reproductive alternative. Moleculare. [6 hrs]**

	Part B - practical part - **Cell and cell components, techniges tool. Cell divition,mitosis divition. Meiosis divition. [9 hrs].** - **Scores genetic use, Practice and exersices on the first mendl's law. Practice and eersices on the second mendl's law. [9 hrs].** - **Test cross, back cross. Dominate, recessive codominace, genes and allels.Chemical structuer and replication of nucleic acid. [9 hrs].** - **Chemical structureand replication of nucleic acid. Praactice of quantitive genetic. Paratice of mapping gene and chromosome . [9 hrs].** - **Feulgen reation, isoltion gene. Genetic analysis. [9 hrs].**

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	122	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	9.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Genetic define, history and develoment, relationship between genetic and other scince, important of genetic plan
Week 2	Chromosome theory. Mendelar genetic
Week 3	Test cross, modified mendelian
Week 4	Ratio and gene intraction.
Week 5	Probability and use in genetic problems.
Week 6	Linkage and crossing over and chromosome mapping.
Week 7	Variation in chromosome number.
Week 8	Variation in chromosome number
Week 9	Multiple allels, Blood groups.
Week 10	Chromosome abirration variation of size chromosomes mutation of chromosome.
Week 11	Quantitive genetic, effect of leathal genes hertibilty.
Week 12	Cytoplasmic genetic.
Week 13	Genetic engineering.
Week 14	Engineering practic in the plants technology reproductive alternative
Week 15	Moleculare basis for plant improement
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)	
week	Material Covered
Week 1	Cell and cell components, techniges tool.
Week 2	Cell divition,mitosis divition.
Week 3	Meiosis divition.
Week 4	Scores genetic use
Week 5	Practice and exersices on the first mendl,s law.
Week 6	Practice and exrsices on the second mendl,s law.
Week 7	Test cross, back cross.
Week 8	Dominate, recessive codominace, genes and allels.
Week 9	Chemical structuer and replication of nucleic acid.
Week 10	Chemical structuer and replication of nucleic acid.
Week 11	Paractice of quantitive genetic.
Week 12	Paratice of mapping gene and chromosome.
Week 13	Feulgen reaction.
Week 14	isoltion gene.
Week 15	Genetic analysis
Week 16	Exam

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Genetics: Analysis and Principles - Robert J. Brooker(2021) + "Genetics: A Conceptual Approach" Benjamin A. Pierce(2008)	Yes
Recommended Texts	Genetics: Analysis and Principles - Robert J. Brooker(2015)	No
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**AL Baath regimes Crimes in Iraq**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**NTU 200**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	**2**		**Semester of Delivery**	**4**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1. Providing students with basic concepts related to defining crimes, their types and categories.** **2. Introducing the crimes and violations of the former regime and the types of international crimes** **3. Introducing mass grave crimes and violations of Iraqi laws** **4. Addressing environmental crimes, the destruction of cities, demographic change policies, and extrajudicial detention** **5. Explaining the role of the Supreme Criminal Court in dealing with the crimes of the Baath regime**
Module Learning Outcomes	**1. Enabling students to understand the concept of crime and the types of national and international crimes.** **2. Developing knowledge aspects related to human rights protection and guarantees.** **3. Developing students' ability to distinguish between crimes and human rights violations and how to confront them**
Indicative Contents	**Indicative content includes the following.** 1. Developing legal culture 2. 2- Carrying out his duties at work sites for professional motives. 3. 3- Instilling the values of tolerance and cooperation in society.

Learning and Teaching Strategies	
Strategies	**Periodic reports / periodic tests / practical case studies.**

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Crimes of the Baath regime according to the Law of the Supreme Iraqi Criminal Court in 2005 - The concept of crimes and their categories Definition of crime linguistically and idiomatically
Week 2	Crime departments - The crimes of the Baath regime according to the documentation of the Law of the Supreme Iraqi Criminal Court in 2005
Week 3	- Types of international crimes Decisions issued by the Supreme Criminal Court
Week 4	- Psychological and social crimes and their effects. - Psychological crimes - Mechanisms of psychological crimes Psychological effects of crimes
Week 5	Social crimes - Militarization of society - The Baath regime's position on religion
Week 6	- Violations of Iraqi laws Pictures of human rights violations and crimes of power
Week 7	Some decisions regarding political and military violations of the Baath regime
Week 8	Prison and detention places of the Baath regime
Week 9	Environmental crimes of the Baath regime in Iraq
Week 10	Military and radioactive contamination and mine explosions
Week 11	Destruction of cities and villages , scorched earth policy
Week 12	Drying the marshes Razing palm groves, trees and crops
Week 13	Mass grave crimes Introduction to mass graves
Week 14	Mass graves and genocide committed by the Baathist regime
Week 15	Chronological classification of genocide graves in Iraq
Week 16	The preparatory week before the final exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Literature on crime, penal law, and human rights is available in the college library and the university's central library**	Yes
Recommended Texts		
Websites	Human rights websites.	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information					
Module Title	English Language			**Module Delivery**	
Module Type	B			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	NTU 201				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level	2		**Semester of Delivery**	1	
Administering Department	PLANT Production		**College**	Technical Agricultural College	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Bashar Mohsin Mohammed able		**e-mail**	Bashar_mohsin.m@ntu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. Enabling students to obtain knowledge and introduction to the rules of the English language 2. Enabling students to obtain knowledge of the origins of speech and sentences and what they consist of and their types 3. Enabling students to obtain knowledge of the correct pronunciation of English vocabulary
Module Learning Outcomes	1. Students acquire general knowledge of the English language 2. Gaining students the ability to speak properly and in accordance with the principles of the language 3. Acquire and require the ability to correctly pronounce letters and vocabulary 4. Students acquire the skill of writing sentences correctly and with the fewest possible errors
Indicative Contents	Indicative content includes the following. Part A - theoretical part 1. Relying on accumulated information on the topic [2] 2. Relying on the ability to focus on information[2] 3. Clarifying the idea and defining the goal of the lesson[2] 4. The ability to collect information about the topic by asking questions[2]
	Part B - practical part 1. The skill of thinking according to the student's ability, and the goal of this skill is for the student to believe in what is tangible. [2] 2. Understanding when, what and how one should think and working to improve the ability to think sensibly. [2] 3. Observation and perception[2] 4. Analysis and interpretation[2] 5. Preparation and calendar[2] 6. Critical thinking strategy in learning[2]

Learning and Teaching Strategies	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos).**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Hello!
Week 2	Your world
Week 3	All about you
Week 4	Family and friends
Week 5	The way I live
Week 6	Every day
Week 7	My favourites
Week 8	Where I live
Week 9	Time past
Week 10	We had a great time
Week 11	I can do that
Week 12	Please and thank you
Week 13	Here and now
Week 14	Its time to go
Week 15	Review of the article
Week 16	final exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	**1. Headway plus , pre-intermediate student's book**	Yes
Recommended Texts	**2. Headway plus , intermediate student's book**	Yes
Websites		

Grading Scheme

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	**Biochemistry**	**Module Delivery**	
Module Type	**B**	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**TAMO 200**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	**2**	**Semester of Delivery**	**1**
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	**Ph.D.**
Module Tutor		**e-mail**	
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**The student learns about the biochemical processes that occur within a plant in order for it to obtain food, grow, and produce.**
Module Learning Outcomes	**1- The course mainly identifies students on how to find out their military membership and non-vehicle status** **2- Membership is focused on medically relevant topics** **3- Knowledge of the biological and metabolic interactions within the human body and their relationship to diseases arising from disorders Metabolites and antiviral chemical clothing** **4- Scientific knowledge of scientific techniques in a new medical procedure**
Indicative Contents	- Part A - - Defnition of the biochemistry , historical brief scope of the biochemistry . correlation [5] - Lipids (fatty materials) and fatty acids [5]. - Enzymes , vitamins , coenzymes [5]. - Metabolism of carbohydrates (brief) [5] - Part B - PH , Buffer solution , indicators , Physical Biochemistry colloids , imbibitions , viscosity . adsorption [10]. - Effect of the bases and acids on sacchorides, Physical properties of fatty material [10]. - iodine No. polenski No. , Acdy no ., Millons test , sakoguchs test Aldenyde test .[10]. - Nudeo acids , metabolism of protam , and others .[10].

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)

ا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	5.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Defnition of the biochemistry , historical brief scope of the biochemistry . correlation
Week 2	Importance of the cell in the study of the biochemistry , Brief deception to the physical
Week 3	Water and reaction degree (PH)

Week 4	Chemistry of the carbohydrates
Week 5	Amino acids
Week 6	Peptides
Week 7	Lipids (fatty materials) and fatty acids
Week 8	Nudeo acids
Week 9	Enzymes , vitamins , coenzymes
Week 10	Bioenergetic (out lines)
Week 11	Bioenergetic (out lines)
Week 12	Metabolism of carbohydrates (brief)
Week 13	Metabolism of carbohydrates (brief)
Week 14	Metabolism of carbohydrates (brief)
Week 15	Metabolism of carbohydrates (brief)

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	PH , Buffer solution , indicators .
Week 2	Physical Biochemistry colloids , imbibitions , viscosity . adsorption .
Week 3	Reduction of the Benedict solutions Bar focds solution .
Week 4	Reduction of the, mono sacehordes formations of the ozazon fchilink test .
Week 5	Effect of the bases and acids on sacchorides
Week 6	Physical properties of different types of sacchorides
Week 7	Physical properties of fatty material
Week 8	Fat constant's acid number saponifcation number .
Week 9	iodine No. polenski No. , Acdy no .
Week 10	Testes on the oils .
Week 11	Millons test , sakoguchs test Aldenyde test .
Week 12	Chemical analysis of the material prsteis solubility .
Week 13	Biuret test .
Week 14	Sengers test .
Week 15	Nudeo acids , metabolism of protam , and others .
Week 16	**Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**الكيمياء الحياتية** **د.طارق يونس احمد ولؤي عبد علي الهلالي2012**	Yes
Recommended Texts	**bioChemistry,2020**	No
Websites	http://ocw.mit.edu/courses/biology/7-013-introductory-biology-spring-2013/	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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Fail Group	**FX** - Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded
(0 - 49)	**F** - Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	Plant Physiology	**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☒ Practical ☐ **Seminar**
Module Code	**PLP 200**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		
Module Level	**2**	**Semester of Delivery**	**1**
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**
Module Leader	**Waad said faizy**	**e-mail**	Waadwaad1970@ntu.edu.iq
Module Leader's Acad. Title		**Module Leader's Qualification**	**Ph. D**
Module Tutor		**e-mail**	
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1. Expanding the student's understanding of the most important basic information about plant physiology.** **2. Teaching and training the student to know the most important physiological processes that occur within the plant.** **3. Teaching and training students on the most important biological reactions carried out by plants.** **4. Introducing the student to how plants perform these activities and the mechanisms and mechanisms of their occurrence.** **5. Giving students knowledge of the physiology laboratory supplies, how to deal with them, use them, and conduct simple physiological experiments.**
Module Learning Outcomes	**1. Understand how plants perform their various functions.** **2. Identifying the plant's growth needs and thus using them to increase agricultural production.** **3. Determine the plant's needs in order to provide them.** **4. Understanding the physiological state of plants and providing the student with the scientific knowledge to diagnose different physiological states of plants.** **5. Identify the nature and types of plants and the extent to which they are affected by their external environment.**
Indicative Contents	**Instructional content includes the following.** **Part A – Theoretical part** **1. Plant, physiology, cell, types, and organelles. [3 hours]** **2. Cell structure, components, and functions. [3 hours]** **3. Solutions, their types, methods of measuring them, and methods of preparing them. [3 hours]** **4. Diffusion, osmosis, water potential, the importance of osmosis for plants. [3 hours]** **5. Water relationship with plants, water absorption, xylem, phloem tissue. [3 hours]** **6. Water loss from plants, transpiration, stomata, mechanism of opening and closing stomata [3 hours]** **7. Physiological processes, photosynthesis, respiration [3 hours]**

	Part B – practical part 1. Using an optical microscope to identify the cell and its structure. [9 hours]. 2. Preparing solutions and methods for measuring their concentrations. [9 hours]. 3. Experiments on diffusion, osmosis, absorption and transport of water. [9 hours]. 4. Cell organs, anatomy of the root system, stems and leaves, showing scientific films. [9 hours]. 5. Tissue culture, plant hormones. [9 hours].

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	5.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The plant cell, its components, functions, and characteristics.
Week 2	Types of solutions, their concentrations, solute and solvent, acids, Alkalines, and salts.
Week 3	Diffusion and osmotic
Week 4	Water potential, imbibition and permeability
Week 5	The importance of water – physical properties – ways of absorbing water
Week 6	Nutrient absorption
Week 7	The rise of plant succulents
Week 8	Transpiration – Estimating the coefficient and rate of transpiration – The mechanism of opening and closing stomata
Week 9	Transport by phloem – components of phloem tissue – the most important transported materials – theories of transport
Week 10	The process of photosynthesis, the source of the oxygen molecule – light reactions
Week 11	Dark reactions phase (methods of CO2 fixation) C3 plants and C4 plants and factors affecting the photosynthesis process.
Week 12	The process of respiration – importance – the first stage of respiration and the formation of pyruvic acid
Week 13	The Krebs cycle, the electron transport chain, and calculating the resulting energy
Week 14	Energy transfer in green leaves, stomata)
Week 15	Growth regulators – types – importance and applications
Week 16	Show scientific films

Delivery Plan (Weekly Lab. Syllabus)	
week	**Material Covered**
Week 1	**Learn about Laboratory equipment and solutions preparation**
Week 2	**Microscopy and cell examination – using an optical microscope – types of microscopes**
Week 3	**Detection of some substances in the cell such as carbohydrates, proteins and oils – how to separate some parts of the cell such as the nucleus and mitochondria**
Week 4	**Experiments on applying the rules of diffusion, membrane permeability and imbibition**
Week 5	**Explaining osmosis, osmotic pressure, and plasma**
Week 6	**Experiments showing water transport in wood and root pressure**
Week 7	**Study of stomata and the process of transpiration**
Week 8	**Explain the process of phloem transport**
Week 9	**Study of the photosynthesis apparatus**
Week 10	**The relationship of vegetative growth to light and leaf area measurement**
Week 11	**Detecting the presence of starch resulting from the photosynthesis process in leaves**
Week 12	**Extraction and estimation of plant pigments**
Week 13	**Some experiments indicating the process of respiration in plants**
Week 14	**The most important applications of growth regulators in agriculture**
Week 15	**Practicing the process of plant tissue culture in vitro**
Week 16	**Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Plant Physiology** **علم فسلجة النبات/ الدكتور عبد العظيم كاظم محمد،1985**	Yes
Recommended Texts	**Fundamentals of Plant Physiology**, 2024	No
Websites	https://global.oup.com/ushe/product/fundamentals-of-plant-physiology-9780197614167?cc=us&lang=en	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Field crops**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PLP 201**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	**2**		**Semester of Delivery**	**1**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**	fahadbiologymycology@ntu.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1. . Introducing the student to the most important winter and summer crops, their production techniques and how to serve them,** **2. Determining the most suitable conditions for growing each crop and its economic importance.** **3. And the ability to program agricultural cycles that help improve plant growth.**
Module Learning Outcomes	**1. The student should have knowledge of the winter and summer crops grown in Iraq** **2. Identify the methods of growing field crops, crop service and the environmental requirements of each crop** **3. Identify the characteristics and benefits of each crop**
Indicative Contents	The syllabus includes the following. Part A - Theoretical Part . Importance of winter field crops [4 hours] . Classification of winter field crops [4 hours] . Methods of planting field crops, planting dates and seeding rates for each crop [4 hours] . Industrial winter field crops, their uses and properties of oil and fiber [4 hours] . Importance of summer field crops [4 hours] . Classification of summer field crops [4 hours] . Methods of planting field crops, planting dates and seeding rates for each crop [3 hours] . Industrial summer field crops, their uses and properties of oil and fiber [3 hours]

	Part B - practical part Diagnosis of winter field crops, soil service operations and agricultural machinery [10 hours]. . Crop service operations, botanical description of crops [10 hours]. . Crop growth stages and processing operations [10 hours]. . Diagnosis of summer field crops, soil service operations and agricultural machinery [10 hours]. . Crop service operations, botanical description of crops [10 hours]. . Crop growth stages and processing operations [10 hours].

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Field crop / Importance of field crop production in the world and Iraq / Division of crops according to plant classification / According to economic importance and use. According to the planting season.
Week 2	Soil service operations and their importance: Plowing, smoothing, leveling, harrowing, division.
Week 3	Cultivation methods based on: soil moisture content, seed placement in the soil, service operations.
Week 4	Fertilization, irrigation, patching, thinning, weeding, pest control, harvesting, marketing, storage.
Week 5	Wheat crop production, origin, economic importance, suitable environmental conditions planting date, planting method, seed quantity, wheat crop growth stages, wheat grain maturity stages.
Week 6	Barley crop production - origin, economic importance, suitable environmental conditions planting date, planting method, seed quantity, crop growth stages, grain maturity stages.
Week 7	Broad bean crop production - economic importance, suitable environmental conditions, planting date, planting method, seed quantity, human sensitivity to broad bean.
Week 8	Production of chickpeas and lentils - economic importance, suitable environmental conditions, production problems, planting date, planting method, seed quantity.
Week 9	Production of flax and safflower crops - origin, economic importance, suitable environmental conditions, planting date, planting method, seed quantity.
Week 10	Production of sugar beet crop - economic importance, suitable environmental conditions, planting date, planting method, seed quantity, sugar extraction stages.
Week 11	Production of rice crop - economic importance, suitable environmental conditions, rice production problems.
Week 12	Production of yellow corn - economic importance, suitable environmental conditions, planting method.
Week 13	Production of white corn crop - economic importance, suitable environmental conditions, effect of HCN acid Production of cotton crop - economic importance, suitable environmental conditions, conversion processes.
Week 14	Production of jute and sesame crops, economic importance, suitable environmental conditions
Week 15	Production of sunflower crop, economic importance, suitable environmental conditions, oil quality, production problems
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
week	**Material Covered**
Week 1	**Identification of winter field crop seeds from the field and laboratory.**
Week 2	**Soil service operations** **Ploughing, leveling, field division.**
Week 3	**Crop harvesting operations** **Wheat crop production and barley crop production, soil and crop harvesting operations, comparison between soft wheat and coarse wheat, manufacturing operations.**
Week 4	**Production of fava beans, chickpeas and lentils, soil and crop service operations, signs of maturity and harvest, collection and identification of plant samples and methods of drying them**
Week 5	**Sugar beet crop production, soil and crop service operations**
Week 6	**Sugar cane crop production, plant description, types of varieties, signs of maturity and harvest.**
Week 7	**Fertilization, Mathematical exercises to calculate the amount of fertilizer added per unit area, field follow-up**
Week 8	**Rice crop production - Plant description, Rice groups and varieties, Service operations**
Week 9	**Yellow corn production, Seed planting**
Week 10	**Field crop planting and completion of field operations**
Week 11	**White corn production -**
Week 12	**Soil and crop service operations, Report preparation**
Week 13	**Cotton crop production - Soil and crop service operations, Machines used in cotton harvesting and sorting**
Week 14	**Sunflower crop production - Soil and crop service operations, Ripening and harvesting**
Week 15	**Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**General Botany,2014** **انتاج المحاصيل الحقلية/ الدكتور مجيد محسن الانصاري 1982**	Yes
Recommended Texts	**انتاج محاصيل الحبوب / الدكتور عبد الحميد محمد حسنين 2019**	No
Websites	file:///C:/Users/noon/Downloads/antaj_mhasyl_alhbwb.pdf	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	**Vegetables Production**	**Module Delivery**	
Module Type	**Core**	☒ Theory	
Module Code	**PLP 202**	☐ Lecture Lab	
ECTS Credits	**7**	☐ Tutorial	
SWL (hr/sem)	**175**	× Practical ☐ Seminar	
Module Level	**2**	**Semester of Delivery**	**1**
Administering Department	**Plant Production PLP**	**College**	**Technical Agricultural College**
Module Leader		**e-mail**	
Module Leader's Acad. Title	.	**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**4. Introducing the student to the most important vegetables and methods of producing and serving them.** **5. Learn about methods of classifying summer and winter crops and the plant families for each crop.** **6. And methods of propagation and able to describe the appropriate environment for each crop.**

Module Learning Outcomes	**1. Introducing students to the most important types and varieties of vegetable crops that can be successfully cultivated and traded in Iraq.** **2. Study the most important environmental requirements (climate and soil) necessary for the successful cultivation of some vegetable crops.** **3. Introducing students to the most important horticultural operations that must be carried out correctly for the successful cultivation of some vegetable crops** **4. Study the most important methods of reproduction and production of vegetables.** **5. Introducing students to the most important types of each type of vegetable studied**
Indicative Contents	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** **1. Factors that must be taken into consideration when establishing a vegetable field, selecting and preparing permanent land for growing vegetables. . [3 hrs]** **2. Propagation of vegetable crops, advantages and disadvantages of sexual reproduction, specifications that must be met by vegetable seeds, examination of vegetable seeds. . [3 hrs]** **3. Treatment of vegetable seeds, vegetative propagation, advantages and disadvantages of vegetative propagation, conditions that must be applied when carrying out vegetative propagation. . [3 hrs]** **4. Methods of vegetative propagation, methods of planting vegetable seeds, advantages of planting with seedlings. . [3 hrs]** **5. Dividing vegetable crops according to their ability to tolerate transplanting, factors affecting the success of the transplanting process. . [3 hrs]** **6. Seedling production methods, acclimatization methods, seedling pruning, and specifications that must be met by vegetable seedlings. [3 hrs].** **7. Agricultural operations in vegetable crops, covering the soil surface, benefits of fertilization in vegetable crops . [3 hrs]** **8.** <u>Part B - practical part</u> **.Crops of the Solanaceae family, their types, reproduction, suitable soil, and planting date. [9 hrs]** **.Crops of the cucurbit family, their types, reproduction, suitable soil, and planting date. [9 hrs]** **.Crops of the mallow family, their types, reproduction, suitable soil, and planting date. [9 hrs]**

Learning and Teaching Strategies	
Strategies	**1. Explanation and clarification** **2. Giving lectures** **3. Field practical exercises** **4. Playing videos and pictures** **5. Daily and monthly exams**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Agricultural cycles for vegetable crops (definition, benefits, design principles, models for vegetable cycles).
Week 2	Production of vegetable seedlings (types of agricultural media, specifications of good seeds, seedling density and seedling care processes, types of containers).
Week 3	Production of Solanaceae family plants (tomatoes and eggplant).
Week 4	Solanaceae family (peppers and potatoes).
Week 5	The Cucurbita family (cucumber, zucchini, and hazel).
Week 6	The cucurbit family (cucumber, watermelon, cucumber).
Week 7	The legume family (cowpea, beans).
Week 8	Production of sweet potatoes and maza (tartufa).
Week 9	Production of okra and sugar corn.
Week 10	Production of basil and mint.
Week 11	Production of asparagus and taro.
Week 12	Production of berbene and molokhia.
Week 13	Production of strawberries and artichokes.
Week 14	Agricultural mushroom production.
Week 15	Other vegetables (gotha, cassava).
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	Botanical classification of vegetable plants.
Week 2	For sexual reproduction of vegetable plants..
Week 3	Vegetative reproduction of vegetable plants.
Week 4	Types of irrigation systems.
Week 5	Soil preparation and production of cauliflower, cabbage, onion and lettuce seedlings.
Week 6	Plant description, botanical classification and diversity for the cruciferous family
Week 7	Plant description, botanical classification and diversity for the umbelliferous family.
Week 8	Plant description, botanical classification and diversity for the legume family.
Week 9	Plant description, botanical classification and diversity for the ramoraceae family. Plant description, botanical classification and diversity for different families.
Week 10	Plant description, botanical classification and diversity for different families.
Week 11	Chicory, shishioria, turnip, broccoli, mustard.
Week 12	Field cultivation training in the fields.
Week 13	Types of fertilizers and methods of application.
Week 14	Pesticide control for vegetable plants.
Week 15	Storage of plant products.
Week 16	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Vegetable Production, Prof. Dr. Hussein Jawad Muharram Al-Bayati 2020 University of Mosul	Yes
Recommended Texts		NO
Websites	https://uomosul.edu.iq/agriculture/wp-content/uploads/sites/11/2023/09/%D8%A7%D9%86%D8%AA%D8%A7%D8%AC-%D8%AE%D8%B6%D8%B1_compressed.pdf	

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

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

MODULE DESCRIPTION FORM

Module Information

Module Title	Computer	**Module Delivery**	
Module Type	B	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	NTU 202		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	2	**Semester of Delivery**	2
Administering Department	PLANT Production	**College**	Technical Agricultural College
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Mustafa Natheer Mustafa Al Obaidy	**e-mail**	mustafa.n.m1989@ntu.edu.iq
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	7. **Understand the basics of computing: Provide students with a basic understanding of computing concepts, including its history, development, and types of computing systems.** 8. **Learn to use operating systems and basic software: Provide students with basic skills to use operating systems effectively and learn to use office software such as word processors, spreadsheets, and presentation software.** 9. **Developing basic programming skills: Teaching students the basics of programming through programming languages such as Python or Java, enabling them to write simple programs and understand different programming concepts.** 10. **Learn about the basics of software engineering: clarify software engineering concepts such as analysis, design, and testing, and how to apply them in software development.** 11. **Enhancing practical skills and creative thinking: Encouraging students to solve computer problems in creative ways and use the acquired programming skills to produce effective solutions.** 12. **Promoting interaction and teamwork: Encouraging students to collaborate on group programming projects and in solving complex programming problems.**
Module Learning Outcomes	1. **Understand basic concepts in computer science such as data, software, hardware, and networks.** 2. **Ability to analyze problems and understand basic algorithms used in programming and software development.** 3. **Learn basic programming languages such as C, Python, or Java and understand the basics of writing and executing code.** 4. **Ability to use software development tools such as text editors and integrated development environments (IDEs).** 5. **Understand the concepts of information security and privacy in the context of technology use.** 6. **The ability to understand and analyze computer systems, networks, and communication concepts between devices.** 7. **Learn about artificial intelligence concepts and their basic applications.** 8. **Learn about the basics of operating systems and how to manage computer resources and processes.**
Indicative Contents	1. **Introduction to computer science and its history.** 2. **Basic concepts such as data, processing and storage.** 3. **Numerical systems and conversion between them (decimal, binary, octal, and hexadecimal).** 4. **Computer structure and its main units (central processor, memory, input/output).** 5. **Basic programming and algorithms.** 6. **Programming languages and software development methods.** 7. **Data structures and advanced concepts in programming.** 8. **Information security and privacy in computing.** 9. **Fundamentals of computer networks and communications.** 10. **Introduction to operating systems and resource management.** 11. **Basic artificial intelligence and machine learning concepts.** 12. **Ethics and social responsibility in the use of technology.**

Learning and Teaching Strategies	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) , Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	Definition of calculator - calculator generations - hardware and software components
Week 2	MS-Dos operating system, system concept, system signal, disks, directories and their levels, files, internal and external commands
Week 3	Internal and external operating system commands.
Week 4	Windows operating system, system concept, advantages, basic requirements, system operation, desktop components
Week 5	The concept of icons, the method of dealing with the mouse, the importance and components of the Task Bar, the Start menu, and exiting the system
Week 6	Formatting disks, copying files and folders, taking advantage of Cut and Paste operations, dealing with the Recycle Bin, how to delete files and recover them.
Week 7	Take advantage of Control Panel programs,
Week 8	Change the desktop background, control the Screen Saver, Add and remove programs to the start menu.
Week 9	Taking advantage of the Run command to execute programs directly.
Week 10	Use entertainment programs, Window media player, and take advantage of additional programs. Accessories
Week 11	Use entertainment programs, Window media player, take advantage of additional programs, and use the calculator.
Week 12	Working with the Paint drawing program to create, save and retrieve drawings. Dealing with Office applications. How to get help Help.
Week 13	The concept of computer viruses, how they are infected, types of viruses, how to treat them and deal with them using anti-virus programs.
Week 14	Windows 7 operating system, American company Microsoft, the company's official website www.microsoft.com
Week 15	. Dealing with desktop icons, dealing with the components of the My Computer icon in terms of disks, folders, and files.
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	الكتاب المنهجي لوزارة التعليم العالي الجزء 1 والجزء 2 للمرحلة الاولى	No
Recommended Texts	سلسلة يسر المصطفى للعلوم " اساسيات الحاسوب والانترنت, الاوفس 2010 د. زياد محمد عبود, 2013	No
Websites	الامريكية, موقع Microsoftنظام التشغيل ويندوز 7, شركة مايكروسوفت الشركة الرسميwww.microsoft.com	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	Arabic Language			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☐**Lecture** ☐ **Lab** ☐ **Tutorial** ☐**Practical** ☐ **Seminar**	
Module Code	NTU 203				
ECTS Credits	2				
SWL (hr/se3m)	**50**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	**plant Production**		**College**	Technical Agricultural College	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Amina mahir azeez		**e-mail**	Amina.mahir@ntu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1-Preparing students who have the ability to pronounce correctly and write without errors .as much as possible 2.Encouraging the student to follow correct spelling rules 3.Paying attention to punctuation marks and how to use them in writing
Module Learning Outcomes	1-.Learn about the basic and important rules of the Arabic language 2.Focus on correct spelling rules . 3-Paying attention to a lot of reading and reading. To train the student on correct .pronunciation and writing without errors as much as possible
Indicative Contents	Instructional content includes the following Alert students to common linguistic errors, as well as benefit from correcting these errors _ in their formal and informal writing. (4 hours Knowing the necessary spelling rules. (4 hours_ Knowing punctuation marks and how to use them. (4 hours_

	Part B - practical part

Learning and Teaching Strategies	
Strategies	1-.Providing students with the basics and lectures related to the subject - 2.Use slide presentation methods to convey information more clearly 3-.Urging students to read, read, and go to libraries

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسيالمنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسيالمنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكليللطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The concept of linguistic errors
Week 2	Rules for writing open ta's and open ta's
Week 3	The elongated alif and the short alif
Week 4	Solar letters and lunar letters
Week 5	Dhaad and Dhaa
Week 6	Writing the hamza: connecting and cutting, the middle hamza, the extreme hamza
Week 7	punctuation marks
Week 8	Exam
Week 9	The noun, the verb, and the difference between them
Week 10	The object, the absolute object, the object for its sake, the object in it, and the object with it
Week 11	Formal aspects of administrative discourse, the language of administrative discourse

Week 12	the number
Week 13	Applications of common linguistic errors
Week 14	Meanings of prepositions, the rule of alif al-fariqa, the rule of nun and tanween
Week 15	Exam
Week 16	Review the material before the final exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Clear Dictation, Abdul Majeed Al-Naimi, Dahham Al-Kayyal, Dar Al-Mutanabbi Library, Baghdad, 6th edition, 1987 AD.	
Recommended Texts	Lessons in language, grammar, and dictation for state employees, Ismail Hamoud Atwan and others, Ministry of Education Press No. (3), Baghdad, 2nd edition, 1984 AD.	
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	Fruit production			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**PLP 203**			☐ **Lecture**	
ECTS Credits	**9**			☐ **Lab**	
SWL (hr/sem)	**225**			☐ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Level	**2**		**Semester of Delivery**	**2**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents		
Module Objectives		Providing a comprehensive understanding of the principles and techniques of fruit cultivation 2. Introducing students to the various types of fruits and their characteristics. 3. Teaching techniques to enhance productivity and improve fruit quality

		4. Encouraging students to understand the challenges facing fruit cultivation in temperate regions and to innovate solutions for them. 5. Promoting the use of sustainable agricultural practices in fruit production in the regions. 6. Developing the management and planning skills necessary for the effective management of fruit farms. 7. Raising awareness of markets and commercial opportunities available for fruits. 8. Encouraging scientific research in the field of fruit cultivation and developing new technologies. 9. Raising awareness of the environmental and economic aspects of fruit cultivation 10. Motivating students to commit to social and environmental responsibility in the production and marketing of fruits.
Module Learning Outcomes		**Comprehensive knowledge of fruit growing:** **• Demonstrate an understanding of the principles, practices and techniques used in temperate fruit growing.** **2. Identification and classification of fruits:** **• Identify and classify different types of fruits based on their characteristics, growth habits and environmental requirements.** **3. Competence in orchard management:** **• Apply appropriate orchard management techniques for fruit production in temperate regions, including site selection, planting, pruning and pest management.** **4. Enhance skills in fruit handling and storage:** **• Demonstrate competence in harvesting, handling and post-harvest management of fruits to maintain quality and extend shelf life.** **5. Understanding of pest and disease management:** **• Identify common pests and diseases affecting fruit crops and implement Integrated Pest Management (IPM) strategies to control them.** **6. Application of sustainable agricultural practices:** **• Apply sustainable agricultural practices to fruit growing including soil conservation, water management and organic farming methods.** **7. Market and Marketing Awareness:** **• Understand market trends, consumer preferences, and marketing strategies relevant to fruits, including value-added products and niche markets.** **8. Research and Innovation Skills:** **• Conduct research on topics related to fruit production, innovate solutions to production challenges, and contribute to the advancement of the field.** **9. Environmental and Economic Sustainability:** **• Assess the environmental and economic sustainability of fruit production systems and propose measures for improvement.** **10. Ethical and Social Responsibility:** **• Recognize the ethical and social implications of temperate fruit production, including labor practices, community engagement, and fair trade principles.**

Indicative Contents	1. **Introduction to Fruit Cultivation:** • History and evolution of fruit cultivation. • Importance of fruits in nutrition, economy, and culture. 2. **Classification of Fruits:** • Introduction to different types of fruits and their classification. • Study of the characteristics of each fruit type, cultivation methods, and marketing. 3. **Fundamentals of Fruit Cultivation:** • Plant requirements, soil, and climate for fruit cultivation. • Techniques for propagation, cultivation, and appropriate fertilization for fruit crops. 4. **Management of Fruit Farms:** • Planning and management of agricultural areas for fruit cultivation. • Pest and disease management, irrigation management, and efficient fertilization methods. 5. **Harvesting and Storage Techniques for Fruits:** • Introduction to proper harvesting techniques for fruits at the right time. • Storage techniques, packaging, and preservation to maintain fruit quality and extend shelf life. 6. **Challenges and Problems in Fruit Cultivation:** • Study of common problems facing fruit cultivation such as pests, diseases, and environmental conditions. • Review of strategies to combat these challenges and improve productivity and quality. 7. **Research and Development Applications in Fruit Cultivation:** • Introduction to the latest research and developments in the field of fruit cultivation. • Encouragement of students to conduct research and develop new techniques to improve fruit productivity and quality. 8. **Economic and Commercial Aspects of Fruit Cultivation:** • Understanding economic factors affecting the fruit industry from production to marketing. • Market analysis, marketing applications, and global trade in fruits. 9. **Environmental and Sustainability Aspects in Fruit Cultivation:** • Focus on sustainable agricultural practices and their impact on the environment and society. • Promotion of awareness of the importance of preserving biodiversity and protecting natural resources in fruit cultivation.

Learning and Teaching Strategies

Strategies	**1. Explanation and clarification** **2. Giving lectures** **3. Giving lectures** **4. Playing videos and images** **5. Daily and monthly exams**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	132	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	8.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**225**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) ,

Week	Material Covered

Week 1	**Economic and nutritional importance, benefits of growing deciduous fruits and suitable climatic conditions for their cultivation, division of fruit trees.**
Week 2	**Bud dormancy and rest phase.**
Week 3	**Pollination, fertilization and fruit setting, flower and fruit fall, fruit growth stages, fruit harvest.**
Week 4	**Selection of fruit tree rootstocks, relationship between scion and rootstock, methods of rootstock propagation.**
Week 5	**Use of growth regulators in the field of fruit**
Week 6	**Planning and establishing fruit orchards.**
Week 7	**Pome fruits (apples, pears and quince) in terms of original habitat, nutritional value, economic importance, suitable environment for propagating varieties.**
Week 8	**Stone fruits (peaches, apricots, pears) in terms of original habitat - nutritional and economic value, propagation, varieties. Suitable environmental conditions, flowers, nature of bearing, breeding and pruning of fruits.**
Week 9	**Figs and pomegranates - original habitat, nutritional value, economic importance, suitable environment, reproduction, service operations, nature of bearing, varieties.**
Week 10	**Cherries and almonds - habitat, importance, suitable conditions, methods of propagation, varieties, nature of flowering. Suitable environmental conditions, flowers, nature of bearing, breeding and pruning of fruits.**
Week 11	**Grapes - original habitat, economic importance and nutritional value, plant classification, suitable environment, reproduction, nature of bearing, methods of breeding and pruning of fruits.**
Week 12	**Week 12 Palm trees - original habitat, economic importance and nutritional value, plant classification, suitable environment, reproduction, nature of bearing, methods of breeding and pruning of fruits.**
Week 13	**Citrus fruits - native habitat, economic importance and nutritional value, plant classification, suitable environment, reproduction, nature of bearing, methods of breeding and pruning fruits.**
Week 14	**Olives - native habitat, economic importance and nutritional value, plant classification, suitable environment, reproduction, nature of bearing, methods of breeding and pruning fruits**
Week 15	**Nuts (walnuts, pistachios, chestnuts and pecans) in terms of native habitat, economic and nutritional importance, suitable environment, propagation, varieties, methods of pollination**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	**Identifying the types of deciduous fruits in terms of appearance, bud type and nature of the load in deciduous fruit trees**
Week 2	**How to produce seedlings from planting seeds of different types of deciduous fruits**
Week 3	**Pruning deciduous fruit trees and methods of raising deciduous fruit trees**
Week 4	**Identifying the types of perennial fruits in terms of appearance, bud type and nature of the load in perennial fruit trees**
Week 5	**Practicing the process of uprooting, planting and serving seedlings**
Week 6	**Fertilizing fruit trees**
Week 7	**Irrigation process and points to be taken into account when irrigating fruit trees, irrigation methods used**
Week 8	**Performing weeding and weeding operations in fruit orchards**

Week 9	**How to plan fruit orchards**
Week 10	**Practical service of orchards in terms of tilling and smoothing the land** **Grafting fruit seedlings**
Week 11	**Serving the crop from thinning, foliar feeding and using growth regulators**
Week 12	**Methods of raising and pruning grapes (vertical, cane, cordon) and others** **Serving trees**
Week 13	**Methods of training and pruning grapes (vertical, stalk, cordon) and others**
Week 14	**Tree service after harvest**
Week 15	**Methods of harvesting fruits**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Deciduous Fruit Production 1 Everlasting Fruit Production Grapes Palm	
Recommended Texts	https://books.google.com/books/about/البيئة_المناسبة_لنمو.html?id=baU8DwAAQBAJ	No
Websites	https://koha.birzeit.edu/cgi-bin/koha/opac-detail.pl?biblionumber=136663&shelfbrowse_itemnumber=174300	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	Agricultural Pullers & Machinery			Module Delivery	
Module Type	B			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	PLP 204				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	2		Semester of Delivery	2	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date			Version Number		

Relation with other Modules			
Prerequisite module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**Introducing the student to the types of agricultural tractors, their parts, how they work, and their economic importance in serving the agricultural operation. He will be able to perform periodic maintenance operations for them and determine the type of tractor needed for each agricultural operation and its relationship to the type of soil.**
Module Learning Outcomes	**1. Ability to handle various agricultural machinery and tractors.** **2. Know how to conduct regulatory operations for agricultural machines and determine the optimal need for the machine by choosing the appropriate agricultural pullers.** **3. Using modern techniques in agriculture.** **4. The possibility of managing agricultural and livestock activity in dry farming areas in a way that achieves the best possible efficiency through the ideal distribution of irrigation systems.**
Indicative Contents	**<u>part One: Theoretical</u>** **1. Get an overview of the importance of agricultural mechanization in the field of agricultural production. Types of agricultural mechanization and identifying the types of agricultural tractors used (1 hour)** **2. Identifying the main parts that make up the agricultural puller (1 hour)** **3. Knowing the fixed and moving parts of the agricultural tractor engine (1 hour)** **4. Identifying the systems that make up the agricultural puller, which are essential for the engine's operation (3 hours)** **5. Identifying agricultural machines and classifying them according to use (1 hour)** **6. Identifying the machines used to prepare the soil for agriculture (1 hour)** **7. Identifying the machines used in growing different crops (2 hours)** **8. Identify the machines used to serve the crop after planting (1 hour).** **<u>The second part: Practical</u>** **1. Field observations of the agricultural tug to identify the main parts that make up the agricultural tug (3 hours)** **3. Knowing the fixed and moving parts of the agricultural tractor engine and how the engine works (9 hours)** **4. Identifying the systems that make up the agricultural puller, which are essential for the engine's operation (9 hours)** **5. Identifying agricultural machinery, its classification, methods of connecting it to the tug, and the regulations it needs to operate (3 hours)** **6. Identifying the machines used to prepare the soil for agriculture, ways to connect them to the puller, and the arrangements they need to work (3 hours)** **7. Identifying the machines used in growing different crops, ways to connect them to the puller, and the arrangements they need to work (9 hours)** **8. Identify the machines used to serve the crop after planting (3 hours).**

Learning and Teaching Strategies	
Strategies	**Working to increase knowledge to gain practical experience from others through educational videos and training courses to obtain new scientific information in the field of knowledge. Practical field training and how to take field measurements. Access to modern scientific literature. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	122	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	8.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The importance of agricultural mechanization in the field of agricultural production. Types of agricultural mechanization
Week 2	Agricultural tug, its definition, types.
Week 3	The main parts of the tug (the engine and its fixed and moving parts).
Week 4	Means of transmission and mechanical power.
Week 5	Fuel system for diesel and gasoline engines, parts of the system.
Week 6	Air and exhaust purification system, parts of the system and the function of each part
Week 7	The cooling and lubrication system in the tug, parts of the system
Week 8	A general idea about equipmentes with agricultural land, and how to connect it to the tug.
Week 9	Soil preparation plow, subtractive plow, disc plow, their parts and the function of each part.
Week 10	Chisel plow, rotary plow, subsoil plow, its parts and the function of each part.
Week 11	Smoothing equipment (disc combs, toothed combs), types, importance of each part and Leveling and adjustment machines and equipment, their types and the function of each part.
Week 12	Seeding equipment, grain seed, its parts, the function of each part. Fertilized seed, its parts, and the function of each part.
Week 13	How to organize and calibrate seeds, mathematical problems. And Seed methods.
Week 14	Irrigation equipment (stream openers), its parts and the function of each part.
Week 15	Maintenance and maintenance of tillage, smoothing and seeding equipment.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	General driving safety rules. Learning to drive an agricultural tug.
Week 2	Identify the main parts of the tug (engine and parts).
Week 3	Identify the parts of the fuel system, diesel and gasoline engines.
Week 4	Air and exhaust system - its parts - maintenance. Parts of the cooling system - its operation - parts - maintenance. Parts of the lubrication system - its operation - maintenance.
Week 5	Identify the transmission devices (separator, gear box), their parts, and the function of each part
Week 6	Means of transmission and mechanical power, and identifying devices for exploiting the power of agricultural tugs.
Week 7	Daily and seasonal maintenance and maintenance of the agricultural tug.
Week 8	Maintenance and maintenance of tillage, smoothing and seeding equipment.
Week 9	Rotary plow, excavator plow, subsoil plow, their parts and the function of each part.
Week 10	Learn how to connect plows to the tug.
Week 11	Identify disc combs, their types, parts, and the function of each part. Toothed combs, their types, parts and the function of each part.
Week 12	Identify leveling and adjustment machines and equipment, their types and the function of each part.
Week 13	Grain seed - its parts and the function of each part. The fertilized seed, its parts and the function of each part.
Week 14	Seed calibration and organization. Knowledge of seeding methods. Fertilizer spreader, its parts and the function of each part.
Week 15	Pest control and hoeing equipment, its types, parts and each part. Irrigation equipment (Fatihah Al-Sawai), its parts and the function of each part.
Week 16	exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Agricultural machines and machinery Yassin Al-Tahan - Muhammad Al-Naama	Yes
Recommended Texts	Basics of agricultural technology / agricultural tractors 2018	No
Websites	file:///C:/Users/pc/Downloads/%D8%A7%D9%84%D8%AC%D8%B1%D8%A7%D8%B1%D8%A7%D8%AA%20%D8%A7%D9%84%D8%B2%D8%B1%D8%A7%D8%B9%D9%8A%D8%A9%20%D9%88%D8%AA%D8%B1%D9%83%D9%8A%D8%A8%D9%87%D8%A7%20%D8%A7%D9%84%D8%B9%D8%A7%D9%85.pdf	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	Forestry	**Module Delivery**	
Module Type	B	☒ Theory ☐ Lecture ☐Lab ☒ Tutorial ☐ Practical ☒ Seminar	
Module Code	PLP 205		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	2	**Semester of Delivery**	2
Administering Department	Plant Production PLP	**College**	Technical Agricultural College
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1. Understanding the installation and function of the forest:** **• Introducing students to the installation of forests and their biological diversity, and to understand the importance of forests in maintaining environmental balance and providing vital resources.** **2. Study environmental and economic impacts:** **• Analyzing the impact of humanitarian activities on the forests, and studying environmental and economic factors that affect the health and sustainability of forests.** **3. Development of scientific skills:** **• Enhancing research, analysis and critical thinking skills in the field of forests, including collection and analysis of data and logically and systematically providing results.** **4. Definition of environmental policies:** **• Providing a deep understanding of the policies and laws related to managing and protecting forests at the local and global levels, and its role in preserving the environment.** **5. Enhancing environmental awareness:** **• Encouraging students to think responsible about the environmental challenges related to forests and adopting sustainable behaviors to maintain these vital resources.** **1. Understanding the installation and function of the forest:** **• Introducing students to the installation of forests and their biological diversity, and to understand the importance of forests in maintaining environmental balance and providing vital resources.** **2. Study environmental and economic impacts:** **• Analyzing the impact of humanitarian activities on the forests, and studying environmental and economic factors that affect the health and sustainability of forests.** **3. Development of scientific skills:** **• Enhancing research, analysis and critical thinking skills in the field of forests, including collection and analysis of data and logically and systematically providing results.** **4. Definition of environmental policies:** **• Providing a deep understanding of the policies and laws related to managing and protecting forests at the local and global levels, and its role in preserving the environment.** **5. Enhancing environmental awareness:** **• Encouraging students to think responsible about the environmental challenges related to forests and adopting sustainable behaviors to maintain these vital resources.**
Module Learning Outcomes	**1. A deep understanding of the foundations of forest development: These concepts include the principles of forest manufacturing, forest regulation techniques, environmental sustainability, and forestry environment.** **2. Design and planning skills: Students can acquire skills in planning forest land, artificial forest design, and forest management management.** **3. Learn about the types of trees and plants: Students can learn about a variety of trees and plants in the forests and understand the role of each type in the forest environment.** **4. Environmental management skills: These skills include understanding how to maintain biological diversity and maintain natural ecosystems in forests.** **5. The ability to assess environmental impact: Students learn how to assess the impact of human activities on forests and apply strategies to reduce these negative effects.** **6. Participation in scientific research: The course may encourage students to participate in research related to forest development, which helps them to understand the problems and challenges facing forests and create sustainable solutions.**

Indicative Contents	**1.Introduction to Forest Development:** **Definition of forest development and its importance.** **The history of forest development and the development of concepts and practices.** **2.Forest environment:** **Environmental factors that affect the growth and development of forests.** **The effect of climatic changes on the forests.** **3.Forest manufacturing:** **Forest manufacturing concepts and principles.** **Trees transplant techniques and forest renovation.** **4. Forestry Management:** **Methods and tools of forest resource management.** **Forest's strategic planning.** **5. Biological diversity and the preservation of environmental systems:** **The importance of biological diversity in forests and methods of preserving it.** **The effect of human activities on the forest environment and how to mitigate this effect.** **6.Modern techniques in forest development:** **The use of technology to evaluate and manage forests.** **Artificial intelligence applications and data analysis in forest development.** **7.Status studies and field visits:** **Review cases of various forest development projects around the world.** **Field visits to local forest projects to identify practical applications.** **8.Search and innovation in forest development:** **The role of scientific research in developing forest development practices.** **Stimulating students to conduct research in the field of forest development and provide innovative solutions.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	122	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	8.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus) ,

Week	Material Covered
Week 1	The economic importance of forests, the definition of the forest, the relationship of the forest to the human being
Week 2	The geographical distribution of forests, the distribution of forests and the reasons for its spread, the vertical distribution of forests
Week 3	Various divisions of forest trees, division of meals by races, source, source of propagation, target
Week 4	Benefits of forests productive, preventive, tourist, and social benefits
Week 5	Forest problems, seed trees test, multiplication methods, seeds collection and extraction, factors affecting the vitality of seeds
Week 6	Planning the forest factors affecting the forest planning, implanting dates of planning, planting methods
Week 7	Forests, composition, advantages, disadvantages
Week 8	Pruning in forests, the importance of pruning and mitigating the types of pruning and mitigation
Week 9	Forest maintenance is the importance of forest maintenance, stages of development of vital factors (human animal diseases bush insects)
Week 10	Non -vital factors are the importance of studying non -vital factors and their influence on forests and non -biological factors (climate, fires, gases).
Week 11	Forest environment is defined by the effect of forests on heat, wind, moisture.

Week 12	Forest measurements, high trees, diameter of trees, tree -sifters growth and age of trees.
Week 13	Forest investment is important, definition, tree pieces, trunks cleaning, transportation and clouds for trees.
Week 14	Wood technology and wooden industries wood manufacturing wood manufacturing.
Week 15	Show slides or scientific trip.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	Learn about forest trees and virtual qualities for each type in the field
Week 2	Monster reproduction, collection and extraction of seeds, collection dates and methods of storage, the importance of machines and equipment used to collect seeds
Week 3	Forest nurseries, their benefits, types, prose methods, prose and unique methods.
Week 4	Maintenance and sustainability of forests and shrines- watering the wealth of shrines- moving seedlings.
Week 5	Service operations and creating uniqueness shrines, various uniqueness circles, creating uniqueness and continuing to manage prose shrines.
Week 6	Study of changes in breathing and methods for estimating breathing rate
Week 7	A scientific visit to the nearby forests and nurseries to the region and prepare models
Week 8	Identify other trees of forests, type of recipes, benefits, and watch models, display slides or films
Week 9	Pruning and mitigation operations, definition of all kinds, display of slides or films
Week 10	Forest maintenance, practical application on fire extinguishing
Week 11	Excellence operations, uniqueness circles, exclusivity time, unique ways.
Week 12	Forest measurements, height, diameter, growth, age devices used in measurements.
Week 13	Scientific films, the importance and investment of forests
Week 14	Cutting trees, cutting stages, cutting, dropping, cleaning and cutting operations.
Week 15	Wood technology, showing scientific films.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"التصدي لتغير المناخ من خلال الغابات":	no
Recommended Texts	https://shepherd.com/best-books/important-reads-about-forests	No
Websites	https://www.fao.org/biotech/sectoral-overviews/biotech-forestry/ar/ https://www.un.org/ar/208338	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plane surveying and engineering drawing**			**Module Delivery**	
Module Type	**core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**TAMO 300**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	**3**		**Semester of Delivery**	**1**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**Introducing the student to the principles of surveying, tools and equipment used, and some of the operations and activities used in flat surveying, in addition to the principles of measuring angles and directions. The student will be required to perform some operations such as the distance scale, errors and obstacles in it, and the use of the flat board in drawing and projecting maps, measuring areas, roads and the machines used in it, and finally using the compass in measuring angles and directions, and the principles of spreading the area in agricultural projects. Teaching students how to recognize and use engineering drawing tools and some operations in engineering drawing, projections, three-dimensional shapes, sections and some simple shapes in the sections of irrigation canals and agricultural facilities.**
Module Learning Outcomes	**1. - The student will be able to measure areas and erect and drop columns.** **2. The student will be able to use a flat board.** **3. The student will be able to read angles and calculate internal angles and directions.** **4. Use modern technologies in designing fields, agricultural buildings and gardens.** **5. The ability to manage agricultural and animal activity in dry farming areas to achieve the best possible efficiency through the optimal distribution of irrigation systems.** **6. Developing means, equipment and machines in line with the labor market.**
Indicative Contents	**Part One: Getting a general idea about the area, its divisions and uses, methods of measuring distances, and erecting and projecting columns. (9 hours).** **Part Two: Knowing the obstacles and impediments in measuring distances, and learning about cartography, types of maps, and methods of reading the map (9 hours).** **Part Three: Siemens' rule, erecting columns at unequal intervals, and using the Planmer device (9 hours).** **Part Four: Reading the angles between the sides using a compass, and calculating the internal angles and directions of polygons using a compass (9 hours).** **Part Five: Getting a general idea about the engineering drawing material, AutoCAD program, drawing tools and their shortcuts, and how to draw straight lines, circles, and two-dimensional rectangles (9 hours).** **Part Six: Finding the third plan for the other waterfalls and drawing models for the three waterfalls, in addition to doing practical exercises to draw the waterways and irrigation canals (9 hours).** **Part Seven: Drawing arcs and polygons, learning the methods of deletion and addition in drawing, and learning how to draw trigonometric projections (9 hours).**

Learning and Teaching Strategies

Strategies	**Working to increase knowledge to gain practical experience from others through educational videos and training courses to obtain new scientific information in the cognitive field. Practical field training and how to take field measurements. Access to modern scientific literature. Scientific laboratories with other universities**

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Definition of area - its divisions - its types - its uses
Week 2	Measuring distances - its cases - erecting and dropping columns, obstacles and barriers in measuring distances
Week 3	Cartography - Types of maps - Map scales - Methods of reducing and enlarging maps
Week 4	Flat plate scanning - its tools - its advantages - its disadvantages - its conditions of use and methods of using the flat plate - the beam method - the front intersection method
Week 5	Measuring areas using the field method – dividing the plot into triangles – erecting columns at equal intervals
Week 6	Smith's rule - erecting columns at unequal intervals
Week 7	Measurements on the map - Dividing the plot into triangles - Using squares
Week 8	Using a planimeter
Week 9	Prismatic Compass - Magnetic and True North - Angles of All Kinds
Week 10	Reading the angles between the sides using a compass and calculating the interior angles and directions of polygons using a compass
Week 11	General idea about engineering drawing material - its importance - learning how to use engineering drawing tools - drawing the frame of the painting and the title
Week 12	Establishing a perpendicular to a straight line from a point on it and outside it - bisecting a straight line - bisecting a known angle - drawing a straight line parallel to another - dividing a straight line and drawing a circle passing through the vertices of the angles of a triangle from the outside and inside - finding the center of a circle or an arc drawing a tangent to a circle from a known point on its circumference and outside it
Week 13	The three projections (practical exercises) and drawing solids from the three projections
Week 14	Drawing sectors and practical exercises on them
Week 15	Drawing drains and irrigation canals of all kinds, and drawing sections in dams and reservoirs.
Week 16	Exams

Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	General idea about engineering drawing material - its importance - learning how to use engineering drawing tools - drawing the frame of the painting and the title
Week 2	Types of fonts - Arabic geometric letters - illustrative examples
Week 3	Establishing a perpendicular to a straight line from a point on it and outside it - bisecting a straight line - bisecting a known angle - drawing a straight line parallel to another - dividing a straight line
Week 4	Drawing a circle passing through the vertices of the angles of a triangle from the outside and inside - Finding the center of a circle or an arc Drawing a tangent to a circle from a known point on its circumference and outside it
Week 5	Draw an arc with a given radius that touches two circles from the outside and inside and from the outside and inside
Week 6	Perspective drawing of a circle at an angle of 30 or 40 degrees
Week 7	The Three Projections (Practical Exercises)
Week 8	Find the third projection from the other projections
Week 9	Drawing solids from the three projections

Week 10	**Drawing solids from the three projections**
Week 11	**Practical exercises for drawing solids**
Week 12	**Drawing sectors and practical exercises on them**
Week 13	**Drawing drains and irrigation canals of all kinds**
Week 14	**Drawing sections in dams and reservoirs**
Week 15	**How to ink drawings and how to use ink pens**
Week 16	Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Autocad 2014**	Yes
Recommended Texts	https://www.google.iq/books/edition/%D8%A7%D9%84%D8%B1%D8%B3%D9%85_%D8%A7%D9%84%D9%87%D9%86%D8%AF%D8%B3%D9%8A_%D8%A8%D8%A7%D8%B3%D8%AA%D8%AE%D8%AF%D8%A7/llnIDwAAQBAJ?hl=ar&gbpv=1&dq=%D8%A8%D8%B1%D9%86%D8%A7%D9%85%D8%AC%20%D8%A7%D9%88%D8%AA%D9%88%D9%83%D8%A7%D8%AF&pg=PA17&printsec=frontcover	Yes
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	**Fertilizers & Fertility**	**Module Delivery**	
Module Type	**core**	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 300**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	**3**	**Semester of Delivery**	**1**
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	

Relation with other Modules

Prerequisite module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	**The student is introduced to the concept of fertility, how to evaluate it, the importance of fertilizers in the development of agricultural production, what are the types of fertilizers used, what are their characteristics, the specific periods for their use, how to use them, and methods of adding them, and he becomes able to calculate the fertilizer needs for each crop.**
Module Learning Outcomes	**U- Cognitive objectives** **12- The ability to determine the elements of fertility and fertilization in dry areas.** **13- The ability to determine the elements of climate and its impact on soil fertilization in dry areas**
Indicative Contents	**Study of plants and their relationship to the ecosystem and climate elements in dry areas** **P- The skills objectives of the course.** **10- The ability to discuss in a scientific spirit and express what is involved in studying the subject.** **11- The ability to communicate and inquire with the subject teacher** **12- Writing reports related to the subject's vocabulary after identifying the scientific sources available in the library on topics related to the environment and dry areas.**

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	**Working to increase knowledge to gain practical experience from others through educational videos and training courses to obtain new scientific information in the field of knowledge. Practical field training and how to take field measurements. Access to modern scientific literature. Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	he world and food - soil fertility - fertilizers and their role in increasing production and meeting the growing need for food.
Week 2	Nutrient elements and their importance to plants, major elements, minor elements, readiness of nutrients, types of readiness, factors affecting them.
Week 3	Symptoms of nutritional deficiency, major and minor.
Week 4	Principles of fertilization, type of fertilizer, its quantity, when to add it, and methods of addition
Week 5	Inorganic fertilizers and obstacles to use, each according to its type and use
Week 6	Nitrogen, phosphate, and potash fertilizers (simple, complex, and complete), their types and characteristics.
Week 7	Mixed fertilizers, their importance, disadvantages of the process of mixing various types of fertilizers.
Week 8	Manufacture of various fertilizers in Iraq and the world.
Week 9	Methods of adding fertilizers and related calculations
Week 10	Different organic fertilizers, liquid fertilizers, their types, advantages and disadvantages.
Week 11	The remaining effect of fertilizers in the soil: nitrogen, phosphate, potassium, and organic.
Week 12	Hydroponics, the quantitative relationships between the plant and its constituent nutrients.
Week 13	Food requirements, fertilization research.
Week 14	Introducing soil fertility, studying soil fertility problems.
Week 15	Iraqi soil fertility, the reality of fertilization of Iraqi soil, and future prospects

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	Identifying the types of fertilizers, their physical and chemical properties, and descriptive tests.
Week 2	Evaluating soil fertility using the field method by choosing a suitable piece of land and carrying out a fertilization research experiment. Students are distributed into groups, the land is divided into panels, the treatments are distributed, and samples are taken for analysis purposes.
Week 3	Calculations related to the use of types of fertilizers for transactions and training on methods of adding them.
Week 4	Evaluating soil fertility using anvils, calculating the required fertilizers, and conducting the required transactions.
Week 5	How to study the symptoms of physiological diseases of plants in soil and their relationship to the symptoms of deficiency of various elements - biological and semi-biological methods.
Week 6	Determination of exchangeable ammonium, extraction and determination of nitrates in soil.
Week 7	Extraction and estimation of ready phosphorus in soil.
Week 8	Determination and extraction of potassium in soil.
Week 9	Plant analysis, methods of digesting plant models, performing the digestion process for plant models using the dry and wet method
Week 10	Completing plant models and estimating nitrogen
Week 11	Determination of potassium in plant tissues
Week 12	Determination of phosphorus in plant tissues
Week 13	Soil analysis methods
Week 14	Completing the composting experiment that took place at the beginning of the semester and submitting a report about it to each group of students
Week 15	Complete the discussion of the results of the field experiment and the anvil experiment, and discuss the student reports.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	كتاب الأسمدة وخصوبة التربة (الدكتور سعد الله نجم عبد الله النعيمي)	Yes
Recommended Texts		yes

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	**Nursery & Plant Propagation**	**Module Delivery**	
Module Type	**Core**	☒ Theory ☐Lecture ☐Lab ☒ Tutorial ☒ Practical ☒ Seminar	
Module Code	**PLP 301**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	**3**	**Semester of Delivery**	**1**
Administering Department	**Plant Production PLP**	**College**	**Technical Agricultural College**
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Introducing the student to the types and forms of protected agricultural facilities and nurseries and their benefits. 2. How to control the appropriate conditions for cultivation outside of crop growth times. 3. The student will be able to produce plants from different plant families. 4. Identify methods of vegetative propagation. 5. Study of the physical and chemical problems of seed germination.
Module Learning Outcomes	The student will be able to know:- **1. Benefits of protected agriculture and nurseries, economic evaluation of production in nurseries and protected agriculture, problems and obstacles facing farmers in protected agriculture.** **. 2 Points that must be taken into consideration when building nurseries, greenhouses, and plastic houses, the economics of production in nurseries and protected agriculture compared to open agriculture.** **. 3 The most important features of growing plants in these facilities, how to establish nurseries and greenhouses, types of nurseries and greenhouse structures.** **4. Identify the types of systems used to cool greenhouses.** **. 5 Identify the types of systems used to heat greenhouses.** **6. Identify the agricultural crops that can be grown within these facilities.**
Indicative Contents	Indicative content includes the following. Part A-theoretical: 1. A historical overview of nurseries and protected agriculture, the definition of nurseries and protected agriculture, their benefits, their geographical distribution, and the area covered. 2. Geometric shapes of protected agricultural facilities and nurseries, such as ponds, tunnels, and houses. 3. Methods of climate control inside facilities and their characteristics (air humidity, humidity). 4. Types of materials used in coverage and their characteristics. 5. The effect of terrestrial factors on plant growth and types of agricultural media. 6. What are the types of plastic tunnels and methods of constructing them? 7. Technical specifications that must be followed for greenhouses and the method of constructing them. 8. Methods of heating greenhouses. 9. Methods of cooling greenhouses. 10. Preparing and preparing terraces for agriculture (including preparing the land and sterilizing the soil).

Learning and Teaching Strategies	
Strategies	1. Explanation and clarification 2. Giving lectures 3. Play videos and photos 4. Daily and monthly exams 5. Periodic reports. 6. Field visits for students

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus) ,

Week	Material Covered
Week 1	Historical overview, definition of nurseries and protected agriculture, their benefits, geographical distribution and area covered, trends in optimal exploitation, factors influencing development.
Week 2	The foundations of construction, location, direction, area, shape and size, production requirements and production economics.
Week 3	Geometric shapes for nursery and protected agriculture facilities, ponds, tunnels, and houses.
Week 4	Types of materials used in covering and their properties.
Week 5	The effect of climatic factors on plant growth inside protected agricultural facilities (heat, light, gases, humidity).
Week 6	Methods of climate control inside facilities and their characteristics.
Week 7	Methods of climate control inside facilities and their characteristics.
Week 8	Producing vegetable seedlings in nurseries, tunnels and greenhouses.
Week 9	Production of Solanaceae family plants (tomatoes, peppers, eggplant).
Week 10	Production of cucurbit family plants (pumpkin and cucumber).
Week 11	Production of some types of (okra and beans).
Week 12	Mushroom and strawberry production.
Week 13	Production of cut flowers and shade plants.
Week 14	Banana and grape production.
Week 15	Soilless agriculture.

Delivery Plan (Weekly Lab. Syllabus)	
Week	**Material Covered**
Week 1	Methods to protect against unsuitable weather conditions (heat, light and wind)
Week 2	Types of nurseries and plastic tunnels and methods of establishing them.
Week 3	Technical specifications for greenhouses and how to construct them.
Week 4	Methods of heating greenhouses.
Week 5	Methods of cooling greenhouses.
Week 6	Preparing and preparing nurseries and homes for agriculture (preparing the land and sterilizing the soil).
Week 7	Land planning, determining irrigation lines, connecting irrigation lines, and basic fertilization.
Week 8	Training on methods of producing seedlings inside tunnels and agricultural houses on the ground, planting seeds in a nursery, and planting in containers.
Week 9	Caring for seedlings in the nursery.
Week 10	Training on patchwork crop cultivation and tomato thread winding.
Week 11	Training on irrigation and fertilization of plants.
Week 12	Raising, Plant breeding.and ventilation.
Week 13	Training on disease and insect resistance.
Week 14	Weed control training.
Week 15	Scientific visit.

Learning and Teaching Resources

	Text	Available in the Library?
Recommended Texts	الزراعة المحمية، الدكتور عصام عبدالله بشير 1990 جامعة الموصل	
	Protected agriculture الدكتور محمود عبد العزيز إبراهيم خليل 2017	No
Websites	https://www.amazon.eg/-/en/ref=nav_logo	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant Growth Regulater**			**Module Delivery**	
Module Type	**Core**			☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	**PLP 302**				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level	**3**		**Semester of Delivery**	**1**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	**Waadwaad1970@ntu.edu.iq**	
Peer Reviewer Name			**e-mail**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**1. Introduce the student to basic information about plant growth regulators.** **2. Understanding the growth mechanisms that occur within the plant and the effect of growth regulators on it.** **3. Identify the types of plant growth regulators and growth retardants and inhibitors.** **4. Identify the special physiological effects of each growth regulator.** **5. Providing students with knowledge of growth regulators and how to choose the appropriate type at the right time and with the appropriate concentration to produce a specific physiological effect.**
Module Learning Outcomes	**1. Understanding and classifying the different types of plant growth regulators.** **2. Use growth promoters to benefit from them in increasing agricultural production.** **3. Understand the important role of plant growth regulators and their effect on plant growth.** **4. Identify the mechanisms by which plant growth regulators work to produce their physiological effects.** **5. Identify the nature of plants and the extent to which growth regulators affect them and their external environment.**
Indicative Contents	**Instructional content includes the following.** **Part A - Theoretical part** **1. Growth, plant growth regulators, plant hormones, growth retardants.** **2. Growth inhibitors, applications of growth regulators.** **3. Auxins, their biological structure, transport, methods of catabolism, and physiological effects.** **4. Gibberellins and cytokines, their biosynthesis, transport, methods of catabolism, and physiological effects.** **5. Ethylene and abscisic, their biological structure, transport, and physiological effects.**

	Part B - practical part 1. Preparing standard solutions of growth regulators. 2. Methods of using plant growth regulators and how to use them. 3. Practical applications of plant growth regulators. 4. Conducting field experiments on the uses of plant growth regulators, showing scientific films. 5. Plant growth regulators have been used in tissue culture.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction, importance, types of growth regulators.
Week 2	Auxins, discovery, distribution and transport of auxins in plants.
Week 3	Creating a source of auxin, exploiting a source of auxins.
Week 4	Mechanism of action of auxin.
Week 5	Gibberellin, discovery, importance, biological examination of gibberellin, site of gibberellin formation, and transport of gibberellins.
Week 6	Physiological effects of gibberellin, its mechanics.
Week 7	Cytokinins, discovery, importance, manufactured cytokinins, distribution, transmission, biological examination of cytokinins.
Week 8	Physiological effects, mechanical currency.
Week 9	Ethylene, its discovery, areas of its presence, ethylene movement - ethylene formation
Week 10	Physiological effects of ethylene - mechanism of action.
Week 11	Abscisic acid ABA: its discovery, role, biological examination, movement, and biological processes related to abscisic acid.
Week 12	Physiological effects of abscisic acid - mechanism of action.
Week 13	Inhibitors, their types, extraction, purification and biological screening of inhibitors, physiological effects of inhibitors - their mechanism of action.
Week 14	Other growth regulators, vitamins.
Week 15	The role of growth regulators in combating weeds, plant breeding, and others.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**The role of growth regulators in plant reproduction.**
Week 2	**Preparing different concentrations of growth regulators in the laboratory.**
Week 3	**How to use growth regulators.**
Week 4	**Testing cuttings of some plants, treating them with auxins, and planting them in the canopy.**
Week 5	**Experiments showing the effect of different growth regulators on rooting.**
Week 6	**An experiment on the effect of growth regulators on seed germination.**
Week 7	**Spraying some plants to study the effect of auxins in increasing flowering.**
Week 8	**The role of auxins in the growth and fruit setting of some fruits and vegetables.**
Week 9	**Using growth regulators to produce parthenogenetic fruits.**
Week 10	**An experiment showing the role of auxins in the size and yield of fruits.**
Week 11	**The role of growth regulators in the separation of fruits and leaves.**
Week 12	**The role of growth regulators in the decline of flowers and fruits.**
Week 13	**The role of growth regulators in weed control and plant breeding.**
Week 14	**The role of growth regulators in preventing the planting of potato tubers.**
Week 15	**Practice of using growth regulators in tissue culture.**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	**Plant Growth Regulators** **الأستاذ الدكتور/ محب طه صقر أستاذ فسيولوجياالنبات،كليه الزراعه، جامعه المنصورة**	Yes
Recommended Texts	Plant Growth Regulators 2008	No
Websites	https://2u.pw/1ICLyo2p	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Forage Crop			Module Delivery	
Module Type	Core			☒ Theory ☐Lecture ☒Lab ☐ Tutorial ☒ Practical ☒ Seminar	
Module Code	PLP 303				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	3		Semester of Delivery	1	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Teaching the student the foundations and principles of producing forage and pasture crops and their impact on agricultural livestock.
Module Learning Outcomes	The student will be able to know:- 1- Preparing and preparing the land for cultivation. 2- Cultivation and service of fodder crops. 3- The appropriate stage for cutting plants and presenting them to animals. 4- Exploiting natural pastures and methods of improving them. 5- Preparation of feed mixtures.
Indicative Contents	Indicative content includes the following. Part A-theoretical: *The importance of various fodder crops. * Division of crops used for fodder and their modern scientific names. *Common scientific names for fodder crops. *The student's knowledge of methods for storing fodder crops in the form of hay or silage.
	Indicative content includes the following. Part B-practical part: *A general evaluation of coarse and concentrated plant feed materials. The nutritional value of plant feed materials. * Studying the phenotypic appearance and diagnosing the seeds of the following crops: barley, oats, Sudanese grass, millet, white and yellow corn, beans, jet, clover, and hartman, preparing the soil, amending the panels designated for planting. *Cultivation of the views field with fodder crops.

Learning and Teaching Strategies

Strategies	1- The necessity of visiting to gain experience from others. 2- Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. 3- Access to modern scientific literature. Participation in relevant scientific conferences. 4- Scientific laboratories with other universities.

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus) ,

Week	Material Covered
Week 1	The importance of livestock, the importance of fodder crops and their role in meeting the fodder needs of livestock, the reality of growing fodder crops in Iraq.
Week 2	Factors affecting fodder production and quality, exploitation of saline and dry lands in the production of fodder crops.
Week 3	Production of leguminous fodder crops (1) (Jet) Economic importance, suitable environmental conditions, production of Jet seeds.
Week 4	(2) - (Clover) is the same vocabulary as Jat
Week 5	(3) - (hartman, karat, kakouz) the same vocabulary as before
Week 6	Production of cereal fodder crops (1) Yellow corn, including economic importance, suitable environmental conditions, production foundations, and its fodder uses.
Week 7	(2) - (Sorghum, Sudanese cannabis) The same vocabulary as before, with the mention of species belonging to the genus Sorghum (Soryhum). The danger of green feeding to animals as a result of poisoning with hydrocyanic acid (HCN).
Week 8	(3) - (Barley, oats, millet) economic importance, foundations of production, species used for the purpose of fodder, and their exploitation for the purpose of fodder
Week 9	Concentrated feed materials, their importance in animal nutrition, their sources, their nutritional content (chemical composition).
Week 10	Feed mixtures, their definition, importance, types, and the basics of the elements included in the feed mixture.
Week 11	Threshing, its definition, its importance in feeding animals, why do we resort to threshing, determining the appropriate time for cutting according to the stages of growth, drying methods, types of loss of fodder material during the work of threshing.
Week 12	Silage, its definition, the importance of its manufacture, manufacturing steps, determining the stages of cutting, chemical changes to the feed during preservation, methods of preserving silage, preservatives, types of loss in nutritional value resulting from preservation.
Week 13	Pastures, their definition, importance, and types.
Week 14	Foundations of quantitative assessment of pasture germination and determination of pasture productivity.
Week 15	Reasons for the deterioration of natural pastures, methods for improving natural pastures and how to preserve them.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي التطبيقي	
Week	**Material Covered**
Week 1	General evaluation of coarse and concentrated plant feed materials. Nutritional value of plant feed materials.
Week 2	Studying the phenotypic appearance and diagnosing the seeds of the following crops: barley, oats, Sudanese grass, millet, white and yellow corn, beans, jet, clover, and hartman, preparing the soil, and amending the panels designated for planting.
Week 3	The importance of conducting experiments and research in the field of fodder crop production and natural grazing areas, explaining a plan for growing summer fodder crops in the field designated for them, preparing the soil (continuation).
Week 4	Cultivation of the views field with fodder crops.
Week 5	Botanical description of the crop, its types and groups, use of the forage crop in animal nutrition (mowing, grazing, preservation), completion of the remaining field operations.
Week 6	Botanical description of clover, embroidery, exploitation of clover in animal feed (mowing, grazing, preserving).
Week 7	Botanical description of the following crops: hartaman, cocoa, kachun, peas, fodder, and turmeric, and the exploitation of these crops in animal feed.
Week 8	Botanical description of the following cereal fodder crops, yellow and white corn, exploitation of these crops in animal feed, showing scientific films.
Week 9	Botanical description of Sudanese grass, millet, barley, oats, exploitation of these crops in animal feed, field follow-up.
Week 10	Manufacturing green fodder as fodder, preparing work supplies, manufacturing fodder as fodder in the natural and industrial way.
Week 11	Manufacturing green fodder as silage, steps to prepare silage, preparing work supplies, showing a scientific film.
Week 12	Discussing students' reports on their observations, conducting seminars.
Week 13	Scientific visit.
Week 14	Collecting and preserving models of fodder plants, displaying preserved models.
Week 15	Collecting and preserving models of fodder plants, displaying preserved models.

Learning and Teaching Resources

	Text	Available in the Library?
Recommended Texts	Al-Ani, Tariq Ali and Mr. Irfan Muhammad Rashid (1983). Production of fodder crops and pastures. Technical Institutes Foundation. Al-Tikriti, Ramadan Ahmed Al-Tayef, Tawakkol Younis Rizk, and Hikmat Askar Al-Rumi (1981). Fodder crops and pastures, Dar Al-Kutub Foundation for Printing and Publishing, University of Mosul. Mayouf, Mahmoud Ahmed and Abdullah Qasim Al-Fakhri (1982). Introduction of legumes in Iraq. Abdullah, Ghazi Mahmoud (1976). Some methods used in studies of natural pastures. Ministry of Agriculture and Agrarian Reform, Natural Pastures Directorate, Agricultural Affairs Department, Bulletin No. 97.	
		No
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Statistics, design and analysis of experiments			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**TAMO 300**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	3		**Semester of Delivery**	**1**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**Providing the student with experience in how to design experiments, then collect data, classify it, analyze it, then summarize it and come up with a recommendation to solve the problem for which the experiment was conducted.**
Module Learning Outcomes	**Creating a solid scientific basis in the theoretical and practical aspects applied in the field of statistical programs. Providing the student with the skill of collecting primary data and summarizing it to solve the problem to be studied**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **Completely randomized design, advantages, disadvantages, use of the design if one observation is recorded for each experimental unit, A- if the number of repetitions is equal**

	Part B - practical part Statistical analysis of data

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب 15 اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4,8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week 1	The concept, importance, objectives and benefits of the agricultural census Agricultural census methods - types of samples - problems and obstacles to the agricultural census - sources of errors in the agricultural census
Week 2	Measures of dispersion
Week 3	Steps to implement the agricultural census, land statistics, agricultural production statistics - benefits of agricultural statistics
Week 4	General definitions, experiment, design, working experimental unit, experimental error, conditions for controlling experimental error, basic rules for designing experiments, requirements for a good experiment, steps followed in scientific experiments.
Week 5	Completely randomized design, advantages, disadvantages, use of the design if one observation is recorded for each experimental unit, A- if the number of repetitions is equal
Week 6	Completely randomized design, advantages, disadvantages, using the design in the case of recording one observation for each experimental unit, b - in the case of unequal repetitions.
Week 7	Diagnosing the significance of differences between arithmetic means, the coefficient of variation in the experiment. Completely randomized block design, conditions for using the design, advantages and disadvantages of the design, sources of variation.
Week 8	Analysis of variance, determining the number of replicates, estimating the missing value (or more) in segments
Week 9	Latin square design, terms of use, advantages and disadvantages of the design.
Week 10	Sources of variation in Latin square, analysis of variance, missing value estimation or more.
Week 11	Factorial experiments, their conditions, advantages and disadvantages
Week 12	Sources of variation in factorial experiments, analysis of variance, interaction and its types.
Week 13	Split panel design, conditions, advantages, disadvantages
Week 14	Sources of variation in split plate experiments, analysis of variance
Week 15	Correlation and regression

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	Measures of dispersion
Week 2	A continuation
Week 3	Types of experiments, how to plan the experiment, and researcher specifications.
Week 4	Solve exercises to analyze data for a completely randomized design
Week 5	Solve exercises on determining the significance of differences between means
Week 6	Solve exercises to analyze data from a randomized complete block design
Week 7	Exercises to find the missing value in completely randomized blocks
Week 8	Latin square, design, analysis of sources of variation.
Week 9	Solve exercises to analyze the sources of variation in the design of the Latin square
Week 10	Solve exercises to analyze the sources of variation in the design of the Latin square
Week 11	designing factorial experiments
Week 12	Solve exercises for designing factorial experiments
Week 13	To analyze the variation of sources of variation in split panel designs
Week 14	Solve exercises to analyze the variance of sources of variation in split panel designs
Week 15	Solve exercises to find correlation and regression coefficients.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Design and analysis of experiments book	Yes
Recommended Texts		No
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	Floriculture and Landscape			Module Delivery	
Module Type	Core			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☒ Seminar	
Module Code	PLP 304				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	3		Semester of Delivery	2	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1- Introducing the student to the most important basic information about various ornamental and ornamental plants and their reproduction, propagation and propagation** **2. Teaching and training students to recognize the classification of ornamental and ornamental plants.** **3. Teaching and training students how to care for and propagate ornamental and ornamental plants.** **4. Introducing students to the most important garden design systems** **5. Introducing students to the steps of designing and implementing a garden** **6. Introducing the student to the types of gardens.**
Module Learning Outcomes	**A-** **1- The student should have knowledge of the importance of ornamental and ornamental plants** **2-. Learn about the importance of identifying cut flowers** **3- . Learn about the techniques available for caring for indoor ornamental plants** **4- . Identify the groups included in the different types of ornamental plants** **5-. Learn about the nature and types of plants and the extent to which they are affected by the environment of this region.** **6- Identify medicinal and aromatic herbs.** **B-** **1 Distinguishing between garden design systems** **2. The student's ability to design different types of gardens.** **3. The student's ability to distribute plants in the garden.** **4. The student's ability to implement the garden** **5. The student's ability to maintain the garden** **6. The student's ability to solve problems in gardens.**

Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **The science of growing and producing ornamental plants, the importance of ornamental plants, and the groups included in the different types of ornamental plants** **Ornamental trees and the basic characteristics that determine the value of ornamental trees Street trees and windbreak trees** **Environmental requirements for trees** **Shrubs Ornamental shrubs, their importance, types and places of planting** **Its types and nature of growth. Fences and climbers** **1- Famous international designs** **2- Steps to implement the garden** **3- Types of plants used in gardens** **4- How to maintain the garden**
	Part B - practical part To learn about ornamental plants grown in the garden. 2. Identify the types of ornamental bulbs 3. Planting summer annual seeds 4. Cut flowers: their types, production seasons, and marketing methods 5. Shade plants and indoor landscape plants 6- Establishing the basic lines of the garden design, leveling the ground and placing the design on the ground, extending the irrigation network and lighting network in the garden, constructing roads and garden paths, distributing plants in the garden.

Learning and Teaching Strategies

Strategies	**1- The necessity of visiting to gain experience from others.** **2- Obtaining new scientific information in the field of scientific research (videos).** **3- Practical training in the field. Access to modern scientific literature.** **4- Participation in relevant scientific conferences.** **5- Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	32	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction to ornamental plants and garden architecture
Week 2	Classification of ornamental plants according to their use. Ornamental trees (basic characteristics that determine the value of ornamental trees)
Week 3	Environmental requirements for ornamental trees, ornamental shrubs, their types and the purpose of their cultivation
Week 4	Hedge plants and climbers, annual and biennial plants, perennial plants
Week 5	Indoor landscaping and shade plants, medicinal and aromatic herbs, aquatic and semi-aquatic

	plants
Week 6	**Cactus and succulent plants, cut flowers, green spaces and sports fields, method of reproduction**
Week 7	Types of garden designs, geometric system, natural system, free system
Week 8	General rules for garden design, garden design steps
Week 9	garden construction costs,
Week 10	The garden's relationship with neighboring places
Week 11	Types of gardens
Week 12	Private gardens
Week 13	public gardens
Week 14	**Rock gardens**
Week 15	**Water** gardens

Delivery Plan (Weekly Lab. Syllabus)	
week	**Material Covered**
Week 1	**Plant classification, methods of propagating ornamental plants, propagation by seeds (types and methods of cultivation)**
Week 2	**Field application for summer annual seed propagation**
Week 3	**Vegetative propagation (types of vegetative propagation, propagation by cuttings), field application of propagation by plant cuttings**
Week 4	**Visit nurseries to learn about ornamental plants**
Week 5	**Showing scientific films, symptoms of mineral deficiency in ornamental plants and methods of treating them**
Week 6	**Insect pests and diseases that affect ornamental plants and ways to treat them, ways to care for indoor garden plants**
Week 7	**Learn about the types of gardens, practical training in developing different geometric shapes**
Week 8	**How to place the different symbols for the garden components When drawing the map, create a symmetrical rose garden**
Week 9	**Garden radial symmetry practice Draw a map of the landscaped garden**
Week 10	**Draw a map of a children's garden, draw a map of a rock garden**
Week 11	**Draw a map of a water garden, Draw a map of a mixed style garden, Draw a map of the front and back garden.**
Week 12	**Learn about the botanical gardens**
Week 13	**Balcony gardens and roof gardens**
Week 14	**Practical exercises on how to cut and shape plants and discuss reports**
Week 15	**Practical exercises on how to cut and shape plants**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Plant Propagation (American Horticulur Society)** **ALAN TOOGOOD**	Yes
Recommended Texts	**The House Plant Expert** **Dr.D.G. Hessayon 2021**	No
	هندسة وتصميم الحدائق د. طلال محمود الجلبي / دار الحكمة للطباعة والنشر 1990	
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	Organic Agriculture			Module Delivery	
Module Type	Core			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	PLP 305				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	3		Semester of Delivery	2	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	The student learns about organic agriculture, its developments and characteristics compared to conventional agriculture, and appreciates the components of soil and their importance in organic agriculture, as well as the use of safe chemicals in organic agriculture.
Module Learning Outcomes	1-The student must be familiar with the concepts of organic agriculture. 2-Identify agricultural cycles that help improve soil properties using modern agricultural methods instead of traditional agriculture. 3-Emphasizing the importance of soil for plants and the most important physical properties of soil.
Indicative Contents	Indicative content includes the following. Part A-theoretical * The concept of organic farming. * Organic farming requirements . * Organic farming requirements.
	Indicative content includes the following. Part B-practical part: *The concept of the organic farming system. * Establishment steps and standards that must be followed to establish organic farms.

Learning and Teaching Strategies	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	3.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) ,

Week	Material Covered
Week 1	The concept of organic farming.
Week 2	Organic farming requirements.
Week 3	Humic acids, humus formation.
Week 4	Humic acids, composition of humus.
Week 5	Organic fertilizers and soil conditionersTypes of organic fertilizers.
Week 6	Industrial organic fertilizer (compost).
Week 7	Biofertilizers.
Week 8	Pollution.
Week 9	Soil and its importance in organic agriculture.
Week 10	Agricultural cycles.
Week 11	Agricultural soil pollution.
Week 12	**Steps and standards for establishing organic farms**
Week 13	**Nitrogen cycle in nature**
Week 14	**The role of organic agriculture in achieving sustainable development**
Week 15	**Organic agriculture and agricultural pests**

Delivery Plan (Weekly Lab. Syllabus)	
Week	**Material Covered**
Week 1	The concept of the organic farming system.
Week 2	Establishment steps and standards that must be followed to establish organic farms.
Week 3	The agricultural processes and techniques that are followed.
Week 4	Compost.
Week 5	The nitrogen cycle in nature.
Week 6	Natural fertilization (organic and biological fertilizers).
Week 7	Pollution using chemical fertilizers.
Week 8	Pollution.
Week 9	Soil
Week 10	Agricultural soil pollution.
Week 11	**Standards used to establish an organic farm**
Week 12	**Methods of making compost**
Week 13	**Factors affecting organic fertilizer production**
Week 14	**Field observations**
Week 15	**Films for illustration**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
	-Sami Abdel Hamid Hammad, El Metwally Mustafa Selim, Magdy Mohamed El Shazly, 2011, Environment and Organic Agriculture. -Ibrahim Adam Al-Dakhiri, June 2020, Guide to Organic Agriculture in the Arab World, Sudan. -Tamar Tawfik, 2017a, Organic agriculture as a source of sustainable food security in Algeria, Journal of Studies Contemporary Economy, Issue 03/, Algeria. -Nadia SCIALABBA, 2015, Training manual for ORGANIC AGRICULTURE. -Donatella Privitera, 2010, THE IMPORTANCE OF ORGANIC AGRICULTURE IN TOURISM RURAL, Applied Studies in Agribusiness and Commerce,	no

	Agroinform Publishing House, Budapest. - FiBL & IFOAM,2021, organics international: The world of organic agriculture statistics & emerging trends, GERMANY.	
Recommended Texts		No
Websites		

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Industrial Crops			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Code	PLP 306				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	3		**Semester of Delivery**	2	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**Knowing the suitability of the environment for a number of industrial agricultural crops that can be grown in the study area according to the data of the minimum and maximum tolerance and suitability of each crop in terms of soil type, surface, climatic elements, water quantity and salinity.**
Module Learning Outcomes	**The student should know the importance of industrial crops in Iraq** **The student should have an idea about the reality of industrial crop cultivation in Iraq and become familiar with the botanical description of industrial crops**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **Industrial crops are defined by their economic importance**

	Part B - practical part

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**The necessity of visiting to gain experience from others. Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	32	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week 1	Industrial crops are defined by their economic importance
Week 2	General characteristics of oils, partitioning, dietary fats, development of sugar production, fibres
Week 3	Sesame crop, economic importance, original habitat, environment and cultivation of the crop, sesame seed manufacturing processes
Week 4	Flax crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for flax seeds
Week 5	Cotton crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for cotton and flax fiber seeds
Week 6	Soybean crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for soybean seeds
Week 7	Sunflower crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for sunflower seeds
Week 8	Field pistachio crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for field pistachio seeds .
Week 9	Safflower crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for safflower seeds
Week 10	Mustard rape crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for mustard seeds
Week 11	Jute crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for jute fibers
Week 12	Castor crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for castor seeds
Week 13	Sugar beet crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for sugar production
Week 14	Sugarcane crop, economic importance, original habitat, environment and cultivation of the crop, manufacturing processes for sugar production
Week 15	exame

Delivery Plan (Weekly Lab. Syllabus)	
Week 1	Laboratory diagnosis of industrial crop seeds, vitality tests, germination
Week 2	Sesame, botanical description, cultivated varieties, cultivation of the sesame crop, service operations, harvesting and harvesting, cleaning and storage.
Week 3	Flax, botanical description, cultivated varieties, cultivation of the flax crop, service operations, harvesting and harvesting, cleaning and storage
Week 4	Cotton, botanical description, cultivated varieties, cotton crop cultivation, service operations, harvesting and harvesting, cleaning and storage.
Week 5	Soybeans, botanical description, cultivated varieties, soybean crop cultivation, service operations, harvesting and harvesting, cleaning and storage.
Week 6	A field visit to the General Company for Cotton Industries
Week 7	Sunflower, botanical description, cultivated varieties, cultivation of the sunflower crop, service operations, harvesting and harvesting, cleaning and storage.
Week 8	Field pistachios, botanical description, cultivated varieties, cultivation of field pistachios, service operations, harvesting and harvesting, cleaning and storage.
Week 9	Safflower, botanical description, cultivated varieties, cultivation of the safflower crop, service operations, harvesting and harvesting, cleaning and storage
Week 10	Rape (mustard), botanical description, cultivated varieties, mustard crop cultivation, service operations, harvesting and harvesting, cleaning and storage
Week 11	Sugar beets, botanical description, cultivated varieties, cultivation of the sugar beet crop, service operations, harvesting and harvesting, cleaning and storage.
Week 12	Sugarcane, botanical description, cultivated varieties, sugarcane crop cultivation, service operations, harvesting and harvesting, cleaning and storage
Week 13	Jute, botanical description, cultivated varieties, jute crop cultivation, service operations, harvesting and harvesting, cleaning and storage
Week 14	A field visit to the General Company for Vegetable Oil Manufacturing
Week 15	exame

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	زراعة المحاصيل الصناعية في العراق/ عبد الحميد اليونس 1977 /	Yes
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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Fail Group	**FX -** Fail	(راسب)قيد المعالجة راسب	(45-49) (0-44)	More work required but credit awarded
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Natural Resources Economics**	**Module Delivery**	
Module Type	**Core**	☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	**PLP 307**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	**3**	**Semester of Delivery**	**2**
Administering Department	**Plant Production PLP**	**College**	**Technical Agricultural College**
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**1. Keeping pace with scientific development in preparing study requirements in the department.** **2. Work to provide knowledge of marketing concepts and marketing tools in addition to marketing applications** **3. It is necessary to use it in the labor market.** **4. Scientifically qualifying students to continue their studies in the fields of marketing management.** **5. Preparing and qualifying specialized scientific cadres to work in various marketing fields.** **6. Working to develop the skills necessary for creativity in marketing activities in the business environment.** **7. Providing expertise and consultations to international community organizations.** **8. Working to supply the market with qualified graduates full of motivation and inspiration in applying skills** **9. And various marketing activities.** **10. Developing scientific research within the department.** **11. To be an example of marketing excellence in Iraq**
Module Learning Outcomes	**1. Introducing the student to the applications of economics in agriculture in an economical manner and comparing them with the technical aspect.** **2. The student's knowledge of economic laws and economic principles used in agriculture.** **3. Optimal employment of agricultural production elements.** **4. How to achieve optimal levels of production.** **5. How to produce agricultural products in light of market prices**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **1- Providing leading competencies in marketing management for institutions** **2- Public and private sectors** **3- Disseminating marketing knowledge in all institutions, including achieving the aspirations of society** **4- The ability of the department's graduates to develop their marketing skills** **5- Knowledge and leadership in marketing management** **6- Skills to develop and support the spirit of creativity, innovation and leadership** **7- Creating an open environment for cultural and intellectual exchange** **8- Graduates of the Marketing Management Department have the ability to think, solve problems, and manage time** **9- Communication and constructive interaction with stakeholders. Our outputs must be cognitive and acquired skills**

	Part B - practical part 1- Active learning: Encouraging students' active participation in learning processes, such as discussions, group activities, and solving problems, to enhance their deep understanding of mathematical concepts 2- Cooperative learning: Encouraging students to work together in small groups to solve problems related to their studies and exchange ideas, which contributes to enhancing interaction and exchange of knowledge between them. 3- Use of technology: Taking advantage of technology to provide interactive educational tools such as computer programs and online resources to enhance student understanding and motivation 4- Problem-based learning: presenting specific problems and motivating students to think critically and use marketing solution skills

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.** **Obtaining new scientific information in the field of scientific research (videos).** **Practical training in the field. Access to modern scientific literature.** **Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	**The concept of marketing and the importance of marketing**
Week 2	**The marketing mix, the concept of agricultural marketing, and the historical development of agricultural marketing**
Week 3	**the aim of Agricultural marketing objectives**
Week 4	**Introductions to the study of agricultural marketing and the functional approach**
Week 5	**Introduction to marketing organizations and the behavioral approach**
Week 6	**Agricultural production, characteristics of agricultural production, and characteristics of the agricultural product**
Week 7	First month exam
Week 8	The nature of food commodities and their consumption
Week 9	Food manufacturing and processing and the role of marketing in food manufacturing
Week 10	Food marketing mix strategies
Week 11	Target markets for food industries
Week 12	Wholesalers and retailers in supply and demand
Week 13	Food commodity markets
Week 14	**Structural characteristics of food product markets**
Week 15	**Marketing milk and its derivatives, marketing vegetables and fruits**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	الديوه جي، ابي سعيد. 2001الأقتصاد الزراعي. وزارة التعليم العالي والبحث العلمي. جامعة الموصل. الموصل	Yes
Recommended Texts	الطروانة، صلاح يوسف .2010التسويق الالكتروني. دار ورد الأردنية للنشر والتوزيع	No
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Plant Nutrition			Module Delivery	
Module Type	Core			☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	PLP 308				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	3		Semester of Delivery	2	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. Introducing the student to the importance of nutrients for plant growth, their types, 2. the necessary quantity of each element and at each stage of its growth, and how they are transported and represented within the plant. 3.
Module Learning Outcomes	1- The student becomes able to diagnose the symptoms of element deficiency and how to treat them. 2- The student's ability to diagnose element deficiencies 3- The student's ability to address nutritional deficiencies
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **. The inorganic chemical composition of the plant, the factors on which the inorganic chemical composition of the plant depends** **. Nutrient solutions, types of artificial food farms, purposes for which nutrient solution farms are used** **. Mineral nutrition and plant growth** **Absorption and transport of nutrients**

	Part B - practical part . **How to prepare nutrient solutions** . **. How to obtain the required concentrations of nutrients in food solutions** **. Types of fertilizers and when and how to add them** . . **Inorganic mineral nutrients** . . **Mineral nutrition and resistance of plants sensitive to diseases and other harmful pests** .

Learning and Teaching Strategies

Strategies	**1. It is not necessary to conduct scientific experiments to gain skills and experience from others. Obtaining new scientific information in the field of scientific research through field work. Volunteer work in the hospital. Access to modern scientific literature. Participants in relevant scientific conferences. A conference for scientific presentations and psychological description among students.** **2. Play videos and images** **3. Comprehensive scientific research**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	32	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	2.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	A historical overview of plant nutrition, definition of the nutritional element, division of nutrients
Week 2	The inorganic chemical composition of the plant, the factors on which the inorganic chemical composition of the plant depends
Week 3	Plant relationship with different growth media
Week 4	Nutrient solutions, types of artificial food farms, purposes for which nutrient solution farms are used
Week 5	Mineral nutrition and plant growth
Week 6	Mineral nutrition and plant growth
Week 7	Absorption and transport of nutrients
Week 8	Absorption and transport of nutrients
Week 9	Mineral nutrition and resistance of plants sensitive to diseases and other harmful pests
Week 10	Symptoms of nutritional deficiency and toxicity
Week 11	Symptoms of nutritional deficiency and toxicity
Week 12	Symptoms of nutritional deficiency and toxicity
Week 13	Inorganic mineral elements
Week 14	The effect of environmental genetic factors on plant nutrition
Week 15	The effect of environmental genetic factors on plant nutrition
Week 16	The effect of environmental genetic factors on plant nutrition

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	How to prepare nutrient solutions
Week 2	How to obtain the required concentrations of nutrients in food solutions.
Week 3	Types of fertilizers and when and how to add them.
Week 4	Nutrition and yield response
Week 5	Mineral nutrition and yield quality
Week 6	Cycle of micro and macro elements in plant resistance to disease.
Week 7	Inorganic mineral nutrients.
Week 8	Factors affecting the diagnosis of nutrient deficiency
Week 9	Inorganic mineral nutrients.
Week 10	Quantitative estimation of mineral elements in plants
Week 11	Factors that make it difficult to diagnose nutritional deficiencies.
Week 12	Soil salinity and plant nutrition
Week 13	Environmental factors and their impact on plant nutrition
Week 14	Factors that affect the readiness of nutrients.
Week 15	Discussing student reports

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	الكامل في الأسمدة والتسميد (تحليل التربة والنبات والماء) مظفر احمد داود الموصلي	Yes
Recommended Texts		
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	Scientific research methodology			**Module Delivery**	
Module Type	**B**			☒ **Theory**	
Module Code	**TAMO 400**			☐ **Lecture**	
ECTS Credits	**2**			☐ **Lab**	
SWL (hr/sem)	**50**			☐ **Tutorial**	
				☐ **Practical**	
				☒ **Seminar**	
Module Level	**4**	**Semester of Delivery**	**1**		
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**		
Module Leader		**e-mail**			
Module Leader's Acad. Title		**Module Leader's Qualification**			
Module Tutor		**e-mail**			
Peer Reviewer Name		**e-mail**			

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**The student is trained in clear scientific thinking, how to make scientific explanations and apply them in the field, and how to take readings and arrive at a logical analysis of the results.**
Module Learning Outcomes	**- The student will be able to develop a research plan on any scientific topic, apply it, take the results, analyze them statistically, and give a scientific discussion of the results obtained from the research.**
Indicative Contents	Part A - Theoretical part Modern scientific method. The beginning of scientific theory and its steps. The assumptions on which the scientific method is based in dealing with natural phenomena. Basic characteristics of scientific research. Characteristics of a successful researcher. Types of research and its applications. Scientific research institutions. Basis for choosing the problem. Exploratory readings and reviews of previous research. Formulating research hypotheses.

Learning and Teaching Strategies	
Strategies	**- The student will be able to think scientifically about solving any problem, develop a strategy to conduct research and investigate scientific facts to solve the problem, take data, analyze it logically, and come up with recommendations to address the problem.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.33
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Modern scientific method
Week 2	The beginning of scientific theory and its steps
Week 3	The assumptions on which the scientific method is based in dealing with natural phenomena.
Week 4	Basic characteristics of scientific research.
Week 5	Characteristics of a successful researcher.
Week 6	Types of research and its applications,
Week 7	Scientific research institutions,
Week 8	Basis for choosing the problem
Week 9	Methods of presenting information
Week 10	Discussing research
Week 11	Publishing research
Week 12	Introduction to the Internet and its uses
Week 13	Exploratory readings and reviews of previous research,
Week 14	Formulating research hypotheses,
Week 15	Full review

Delivery Plan (Weekly Lab. Syllabus)	
week	**Material Covered**
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Lectures on scientific research methodology / Professor Dr. Iyad Youssef Al-Haj Ismail / 2019	Yes
Recommended Texts		No
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant Breeding**			**Module Delivery**	
Module Type	**C**			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	**PLP 400**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	**4**		**Semester of Delivery**	**1**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		

Relation with other Modules			
Prerequisite module		**Semester**	**Forth**
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1. The objective of plant breeding and improvement, improving production, improving quality, breeding for disease resistance, breeding for special traits.** **2. Plant cell, its components, nucleus, chromosomes** **3. Introducing the student to the most important basic information about different plants, their reproduction, propagation, and breeding** **4. Teaching and training the student to know its plant classification .** **5. Teaching and training the student to take plants tissue.** **6. Introducing and training students on good breeding techniques and the production of new hybrids and breeds .**
Module Learning Outcomes	**1. Introduction, development of plant breeding and improvement** **2 Types of cell division: normal division, meiosis, and double fertilization.** **3.Mendel's laws in plant breeding and genetics, the first law (the law of isolation), the second law (the law of free distribution).** **5. Qualitative traits and their relationship to genetic factors, quantitative traits and their relationship to genetic factors.** **6. Selection methods: individual selection, quantitative selection, group selection**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **Introduction, development of plant breeding and improvement.** **Genetic variations, their importance, origin, and development..** **Cell division, The flowering plants, Root system, the region of cell division.** **Hybridization methods: single hybridization, pair hybridization, and multiple hybridization..**

	Part B - practical part **Types of field plants, their composition, and parts thereof.** **Reproduction in field crops, sexual reproduction, and vegetative reproduction..** **Methods of controlling the insemination process, isolation, and removal of male parts. [9 hrs].** **Genetic resources, collecting them, storing them, and renewing their vitality.** **Pollination system in wheat, how to perform fertilization operations, how to pollinate, obtain hybridization.** **Barley crop, spike installation, floret installation, bud removal, hybridization.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	6.47
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction, development of plant breeding and improvement
Week 2	The objective of plant breeding and improvement, improving production, improving quality, breeding for disease resistance, breeding for special traits.
Week 3	Plant cell, its components, nucleus, chromosomes
Week 4	Types of cell division: normal division, meiosis, and double fertilization.
Week 5	Pollination in plants, self-pollination and its importance, cross-pollination and its importance.
Week 6	Mendel's laws in plant breeding and genetics, the first law (the law of isolation), the second law (the law of free distribution).
Week 7	Genetic variations, their importance, origin, and development.
Week 8	Qualitative traits and their relationship to genetic factors, quantitative traits and their relationship to genetic factors.
Week 9	The relationship between the inheritance of traits and environmental conditions, the interaction between genetics and the environment in plant breeding.
Week 10	Methods of plant breeding and improvement, method of introduction from similar environments, acclimatization, and evaluation.
Week 11	Selection methods: individual selection, quantitative selection, group selection.
Week 12	Hybridization methods: single hybridization, pair hybridization, and multiple hybridization.
Week 13	Creating genetic mutations, physical mutagens, and chemical mutagens.
Week 14	Genetics and development of varieties resistant to plant diseases.
Week 15	The development of cytoplasmic sterility, its importance, and its use in plant breeding.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
week	**Material Covered**
Week 1	**Types of field plants, their composition, and parts thereof.**
Week 2	**Reproduction in field crops, sexual reproduction, and vegetative reproduction.**
Week 3	**Methods of controlling the insemination process, isolation, and removal of male parts.**
Week 4	**Genetic resources, collecting them, storing them, and renewing their vitality.**
Week 5	**Equipment and materials needed by plant breeders: tweezers, scissors, hybridization and pollination tools.**
Week 6	**Fertilization in plants, self-fertilization, cross-fertilization, and double fertilization.**
Week 7	**Morphological characteristics of the plant (external), physiological characteristics (anatomical)**
Week 8	**Methods of measuring the characteristics of field crops, theoretical measurements, laboratory measurements.**
Week 9	**Economic traits and their importance in improving the plant, productive traits, qualitative traits, and special traits.**
Week 10	**Pollination system in wheat, how to perform fertilization operations, how to pollinate, obtain hybridization.**
Week 11	**Barley crop, spike installation, floret installation, bud removal, hybridization.**
Week 12	**Pollination in yellow corn, removing the male inflorescences, encapsulating the female inflorescences, and pollinating them.**
Week 13	**Pink inflorescences in alfalfa crop, how to perform fertilization, how to perform pollination.**
Week 14	**Installing dalia in rice, controlling pollination, removing deadheads, pollination procedure, producing hybrids.**
Week 15	**A scientific visit to one of the plants breeding programs in the research stations.**
Week 16	**Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Plant Breeding** **الدكتور ارشد ذنون حمودي النعيمي**	Yes
Recommended Texts	**Plant Breeding (1)**	No
Websites	arshadthanoon@yahoo.com	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Plant Disease			**Module Delivery**	
Module Type	C			☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	PLP401				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	4		**Semester of Delivery**	1	
Administering Department	Plant Production PLP		**College**	Technical Agricultural College	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	- **Introducing the student to the most important diseases that affect plants and in the various stages of their growth, and what are the factors affecting the increase in the severity of disease infection, and to be able to diagnose the type and severity of the infection.**
Module Learning Outcomes	1.Use special techniques to detect bacteria fungi and algae 2. Identify the available specialties for the diagnosis and examination of microbiology
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **An overview of microbiology screening and diagnosis centers in Iraq** **. Factors affecting microbiology**

	Part B - practical part **Study of microbiology morphology** . Devices and tools used in microbiology examination **. Sample extraction**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل 15 اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	.547
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Importance –Identification –Koch's postolates – disease symptoms
Week 2	Host –pathogen relationship – disease Incitants-Levels of parasitism
Week 3	Effect of the pathogens on their hosts-Toxins –Enzymes –phytohormons
Week 4	Epidemiology of Plant diseases. Pathogens- source of Inoculums-dispersal and deposition of Inoculum.
Week 5	Survival of Inoculums –Inoculums potential –Environmental factors to Plant disease
Week 6	Plant diseases caused by fungi .-characterization Reproduction of fungi-Asexual and sexual reproduction. diseases caused byOomycetes
Week 7	Downy Mildew, Diagnosis Genesis of Downy Mildew fungi.
Week 8	Plant diseases caused by Zygomycetes.
Week 9	Plant diseases caused byAscomycetes
Week 10	Diseases caused by Basidomycetes.,Smut diseases
Week 11	Rust diseases.
Week 12	Bacteria as Plant pathogens-Bacterial Soft Rot of vegetables . Fire Blight of Pome fruits
Week 13	Viruses causal agents of plant diseases
Week 14	Nematode as plant pathogens ,life cycle ,Nature of parasitism, Mechanism of Nematode Effects.
Week 15	Resistant and control of plant pathogen

Delivery Plan (Weekly Lab. Syllabus)	
week	**Material Covered**
Week 1	**Identification of apparatus in the laboratory of plant disease. How used the microscopes ,incubator,and oven**
Week 2	**Kinds of culture media**
Week 3	**Isolation and Identification of plant pathogenic fungi 0**
Week 4	**Koch's postulates to plant pathogenic fungi**
Week 5	**Symptom diseases that caused by plant pathogen.**
Week 6	**Diseases caused by Oomycetes.**
Week 7	**Downy Mildew disease ,Downy Mildew disease on cucurbits and grape**
Week 8	**Plant diseases caused by Zygomycetes. Soft Rot disease**
Week 9	**Plant diseases caused by Ascomycetes.leaf curl of beach. Powdery Mildew of cucurbits and pepper.**
Week 10	**Smut diseases. . Loose Smut of cereals, coverd Smut of bunt wheat .common Smut of Maize**
Week 11	**Rust diseases. Stem Rust on wheat**
Week 12	**Plant diseases caused by Bacteria**
Week 13	**Diseases caused by viruses, Tomato Yellow , leaf curl , Tobacco Mosi viruse**
Week 14	**Diseases caused by Nematodes Root Knot Disease .Ear-cockle disease of wheat .**
Week 15	**Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Plant Disease ابراهيم صادق عليوي دريه ابراهيم حرفوش فوزي موسى ابو العباس	Yes
Recommended Texts	اساسيات علم الفطريات 2018	No
Websites	https://www.noor-publishing.com/catalog/details/store/ae/book/978-620-2-34667-2/%D8%A3%D8%B3%D8%A7%D8%B3%D9%8A%D8%A7%D8%AA-%D8%B9%D9%84%D9%85-%D8%A7%D9%84%D9%81%D8%B7%D8%B1%D9%8A%D8%A7%D8%AA	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
Module Title	Pre-harvest physiology & Storage			Module Delivery	
Module Type	C			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☒ Seminar	
Module Code	PLP 402				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	4		Semester of Delivery	1	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader			e-mail		
Module Leader's Acad. Title			Module Leader's Qualification		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**1. A deep understanding of the preservation and storage process: This course gives students the opportunity to understand the factors that affect the quality of crops and how to preserve and store them correctly, including appropriate environmental conditions and appropriate storage techniques.** **2. Enhancing knowledge about public health and food safety: This course can enhance students' understanding of the concept of food safety and the importance of keeping crops clean and safe to avoid food contamination and avoid food-borne diseases.** **3. Develop planning and organization skills: Students can learn how to organize storage and storing operations in an organized and efficient manner, which requires advance planning and the use of appropriate techniques to achieve the desired results.** **4. Promoting awareness of the importance of sustainability of food resources: The course can highlight the importance of paying attention to sustainability in preservation and storage processes, which encourages students to use techniques and practices that preserve resources and reduce waste.** **5.Enhancing research and analytical skills: The course can encourage students to conduct research and field experiments to understand the effect of various factors on crop quality and effective storage.** **6.Develop the ability to think critically and solve problems: By studying the challenges of memorization and storage and searching for effective solutions, students can develop their critical thinking skills**
Module Learning Outcomes	**1. Deep understanding of physiological processes: A comprehensive understanding of the vital processes that occur in plants after harvest, including respiration, metabolism, microbial infection, and chemical composition changes.** **2. Analysis of modern technologies: Understanding and evaluating modern technologies and innovative methods in the field of care and storage of horticultural crops, such as biotechnology, advanced packaging, and environmental control technologies.** **3. Ability to design storage plans: Develop the skills to design and implement effective storage plans for a variety of horticultural crops based on their physiological and environmental requirements.** **4. Scientific Research and Analysis: The ability of students to research and scientifically analyze specific problems in the field of care and storage of horticultural crops, using appropriate tools and techniques.** **5. Developing communication and networking skills: The ability to communicate effectively with colleagues and specialists in the field, including exchanging knowledge and advice on best practices in the care and storage of horticultural crops.** **6. Critical Thinking and Problem Solving: Develop critical thinking and problem-solving abilities in the context of horticultural crop care and storage, which helps develop innovative and effective solutions.**

Indicative Contents	**. Introduction to the care and storage of horticultural crops:** **Definition of the concepts of care and storage of horticultural crops.** **The importance of this field in the agriculture and food sector.** **Review the history of development and progress in care and storage technologies.** **2. Physiology of horticultural crops:** **Study of the biological processes that occur in plants after harvest.** **Effects of preservation and storage on quality and durability.** **3. Correct harvesting techniques:** **Harvesting methods and techniques suitable for various types of horticultural crops.** **Use the correct tools and equipment in harvesting operations.** **4. Storage and preservation techniques:** **Study the various storage methods and techniques necessary to maintain the quality of horticultural crops.** **Analysis of the optimal climatic and environmental conditions for each type of crop.** **5. Pest and disease control:** **Learn about common pests and diseases that affect horticultural crops during storage.** **Strategies for controlling pests and diseases in safe and effective ways.** **6. Packaging:** **The importance of correct packaging in maintaining the quality and durability of horticultural crops.** **Study appropriate packaging types and materials.** **7. Modern technologies and innovations in care and storage:** **Reviewing recent developments in the field of care and storage technologies, such as refrigeration, air control, and biotechnology.** **8. Quality and food safety standards:** **Analyze the quality and food safety standards required to maintain the quality of horticultural crops**

Learning and Teaching Strategies	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.47
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) ,

Week	Material Covered
Week 1	The importance of storage, stages of growth and maturity of fruits.
Week 2	Composition and structure of fruits and vegetables and their nutritional value.
Week 3	A measure for determining fruit maturity.
Week 4	Physiological and chemical changes that occur to fruits during the storage stage.
Week 5	The process of respiration and its relationship to ripening and storage / the role of ethylene in the fruit ripening process
Week 6	Methods for measuring respiratory rate.
Week 7	Industrial ripening process.
Week 8	Picking, sorting, grading and packing fruits.
Week 9	Picking, sorting, grading and packing vegetable crops.
Week 10	Packing houses.
Week 11	Cooling the fruits before shipping and storing.
Week 12	Storage methods for fruits and vegetables.
Week 13	Deterioration of crops after harvest and during storage.
Week 14	Physiological and bacterial damages that affect the crop during storage.
Week 15	Picking, preparing and storing flowers.

Delivery Plan (Weekly Lab. Syllabus)

Week	Material Covered
Week 1	Measures of complete growth and maturity.
Week 2	Measures of changes in hardness and pectins.
Week 3	Studying the change in the organic acid content of fruits and estimating the acidity percentage.
Week 4	Estimation of vitamin C in some fruits and vegetables.
Week 5	Studying and estimating changes in the sugar content of fruits
Week 6	Study of changes in breathing and methods for estimating breathing rate
Week 7	Study of the physiological effects of ethylene and methods for estimating ethylene production in fruits
Week 8	Artificial ripening of some types of fruits
Week 9	Weight loss after harvest for different types of fruit, leaf and root crops
Week 10	A scientific trip to one of the cold stores
Week 11	Study of the refrigeration cycle, the mechanics of how cooling devices work, and the design of cold stores
Week 12	Storage experiments and studying the changes that occur in fruit fruits
Week 13	Storage experiments and studying the changes that occur in vegetable crops
Week 14	Storage experiments and studying the changes that occur in cut flowers
Week 15	Study of diseases that affect crops during storage and marketing

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		no
Recommended Texts	https://www.agro-lib.site/2020/07/blog-post_39.html	No
Websites	https://www.agro-lib.site/2020/07/blog-post_39.html https://faculty.uobasrah.edu.iq/faculty/572/teaching https://www.kutub.best/2021/05/124.html	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Seed inspection and certification**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Code	**PLP 403**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	**4**	**Semester of Delivery**	**1**		
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**		
Module Leader		**e-mail**			
Module Leader's Acad. Title		**Module Leader's Qualification**			
Module Tutor		**e-mail**			
Peer Reviewer Name		**e-mail**			

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**Introducing the student to the importance of seeds and means of improving the physical and genetic characteristics related to the production, processing, certification of seeds, and marketing of seeds, and learning about international instructions for examining and trading seeds.**
Module Learning Outcomes	**1. Using techniques to teste and estimate the physical and chemical properties of seeds** **2. Determine the specializations available for diagnosis and examination of germs** **3. Identify the important parameters of seeds intended for planting or intended for storage** **4. Post-harvest grain management**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **1. An overview of screening agents in Iraq and ISTA activity** **2. Factors affecting seed germination** **3. The chemical composition of the seed and its relationship to its value as seeds**
	Part B - practical part **1. Study of the Morphology of the seed** **2. Devices and tools used in examining devices** **3. Sample extraction** **4. Components for testing the purity and cleanliness of seeds**

Learning and Teaching Strategies

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.47
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	**Introduction to the development of seed inspection and certification globally, Arab and locally, international seed inspection organizations, seed inspection and certification in Iraq.**
Week 2	**Seed production programs, control of seed production, registration of new varieties.**
Week 3	**Seed grades, specifications of certified seeds, basic requirements for producing certified seeds.**
Week 4	**Seed certification system, objectives, main steps of the system, receipt of certification applications.**
Week 5	**Field inspection, its objectives, standard samples, comparison fields and conditions for their cultivation, method of tests comparison fields.**
Week 6	**Proposed methods for field inspection, sampling units, calculating percentages of purity in sampling units, measuring specifications.**
Week 7	**Stages of field inspection, conditions for accepting fields, field inspection of vegetable crops in Iraq, stages and number of inspection cycles.**
Week 8	**Re-field inspection, field inspection certificate, instructions provided to seed producers at the end of the inspection, qualities of the field inspector.**
Week 9	**Post-harvest procedures, seed drying, importance, drying methods, seed cleaning and packaging.**
Week 10	**Transporting seeds to silos, how to store them inside silos, storage methods.**

Week 11	**Seed samples, types of samples**
Week 12	**Laboratory tests of seeds, definition and objectives, types of laboratory tests.**
Week 13	**Seed treatment, types of pathogens, treatment methods, types of pesticides used, points to be taken into account during treatment.**
Week 14	**Final seals and marking, types of marks, colors of marks.**
Week 15	**Seed legislation**

Delivery Plan (Weekly Lab. Syllabus)	
week	Material Covered
Week 1	Samples, seed shipments, specifications of the shipment for the purpose of test, sampling methods, types of samples
Week 2	Sampling tools, calculating the number of primary samples needed to be sent, bagged seeds and peppers.
Week 3	Practical samples, their definition, how to obtain them, methods of dividing the main sample.
Week 4	Purity test, definition of purity, purpose of purity examination.
Week 5	How to conduct a purity test, components of a purity sample.
Week 6	Calculating the percentage of purity components, calculating the permissible difference in the percentages of purity samples.
Week 7	Germination test, its purpose, tools and machines used, methods for performing germination, evaluating the germination sample, calculating the germination percentage.
Week 8	Seed viability testing, its purpose, seed preparation, solution preparation, steps for conducting the test, calculating (%) viability.
Week 9	Humidity testing, its purpose, scientific basis for testing moisture content, methods used, ovens, distillation.
Week 10	Testing the health status of seeds, its purpose, methods used, and calculating the percentage of infected seeds.
Week 11	A scientific trip to the General Authority for Seed Inspection and Certification, a trip to one of the nearby silos.
Week 12	Field inspection, how to conduct it, how to calculate the percentages of purity components.
Week 13	Seed treatment, receiving, drying, seed grading,
Week 14	Seed cleaning and grading machines.
Week 15	Discussing the reports submitted by students and filling out the examination form

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	**Seed Technology** **تكنولوجيا البذور / عبد الستار سمير الرجبو**	Yes
Recommended Texts	**معجم مصطلحات تكنولوجيا البذور 2013**	No
Websites	https://ketabpedia.com/%D8%AA%D8%AD%D9%85%D9%8A%D9%84/%D985%D8%B9%D8%AC%D9%85%D9%85%D8%B5%D8%B7%D9%84%D8%D%D8%A7%D8%AA%D8%AA%D9%83%D9%86%D9%88%D9%84%D9%88%D8%AC%D9%8A%D8%A7%D8%A7%D9%84%D8%A8%D8%B0%D9%88%D8B1/	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Employability skills**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**TAMO 401**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	**4**		**Semester of Delivery**	**2**	
Administering Department	**plant Production**		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. Developing core skills: Enhancing students' communication, teamwork, and problem-solving skills. 2. Preparing for the job market: Equipping students with the knowledge and skills needed to keep up with the demands of the modern job market. 3. Enhancing critical and creative thinking: Encouraging students to think critically and creatively to develop new and innovative solutions. 4. Adapting to change: Teaching students how to adapt to rapid changes in the work environment and technology. 5. Building self-confidence: Enhancing students' self-confidence and their ability to succeed in different work environments.
Module Learning Outcomes	1. Developing Communication Skills: The ability to communicate effectively verbally and in writing in a variety of work environments. 2. Teamwork: The ability to work effectively as part of a team, including collaboration and conflict resolution. 3. Problem Solving: The ability to analyze problems and develop innovative and effective solutions. 4. Critical Thinking: The ability to think critically and evaluate information to make informed decisions. 5. Time Management: The ability to organize time and manage tasks effectively to achieve goals. 6. Adapt to Change: The ability to adapt to changes in the work environment and technology.
Indicative Contents	1. Introduction to Labor Market Skills: Definition and importance of skills in the modern labor market. 2. Communication Skills: Developing oral and written communication skills. 3. Teamwork Skills: Collaboration and conflict resolution within the team. 4. Critical Thinking and Problem Solving: Critical thinking techniques and problem solving strategies. 5. Time Management and Organization: Time management methods, task organization and priorities.

Learning and Teaching Strategies	
Strategies	**Periodic reports / periodic tests / practical case studies.**

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	General concepts about professionalism, the importance of work for humans in the Holy Quran and the Prophetic Hadith, the concept of the labor market, types of labor market (public sector and private sector) and the nature and environment of each sector.
Week 2	The most important sectors of the labor market in Iraq (public and private), and the laws governing them (Civil Service Law, State Employees Discipline Law, and Labor and Social Security Law), with practical application.
Week 3	Soft skills required in the labor market.
Week 4	CV writing skills, what to mention and what to avoid when writing a CV, with practical applications.
Week 5	Skills for passing the personal interview, how to prepare for it before the interview, mechanisms for dealing with personal interviews, the most important questions asked during the interview and how to answer them, with practical application.
Week 6	Time management with its applications at work.

Week 7	Leadership skills, communication and emotional intelligence, with practical application.
Week 8	Skills for working within a team and how to solve problems, with practical application.
Week 9	Marketing and e-marketing methods, with practical application.
Week 10	Small projects, how to establish them and prepare feasibility studies for them, with practical application.
Week 11	Skills for communicating with the labor market and using modern technologies Facebook, Linkedin with practical applications
Week 12	Decision-making skills, with practical applications.
Week 13	How to develop your skills as a student during your university studies.
Week 14	Success stories of well-known and prominent individuals and companies.
Week 15	View jobs and mechanisms for preparing for them by the student, with practical application

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Human Resources Management: The Distinguished Administrative Series Author: Lebanon Publishers Library Publisher: Lebanon Publishers Library	Yes
Recommended Texts	Human Resources Management: A Brief Guide Author: Abdulaziz Omar Barqaba Al-Amoudi	
Websites	تقرير موجزعن مشروع تقييم سوق العمل وتحليل المهارات، العراق وإقليم كوردستان العراق - UNESCO للأمم المتحدة	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Weeds and weed control**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Code	**PLP 404**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	**4**	**Semester of Delivery**	**2**		
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**		
Module Leader		**e-mail**			
Module Leader's Acad. Title		**Module Leader's Qualification**			
Module Tutor		**e-mail**			
Peer Reviewer Name		**e-mail**			
Scientific Committee Approval Date		**Version Number**			

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**Introducing and training the student to identify the types of weeds plants growing with the main crops in the field, what are their specifications and control techniques, and be able to diagnose them and prescribe the necessary treatment for them.**
Module Learning Outcomes	**1. The student has knowledge about weeds plants cycle.** **2. Identify the available techniques to weeds control.** **3. Identifying the nature of plants and their types and the extent to which they are affected by the field crops.**
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** . Definition of weeds, their spread and reproduction [3 hrs] . Harmful effects of weeds plants, benefits of weeds plants [3 hrs] . How can weeds plants reduce yields [3 hrs] . Methods used to control weed plants [3 hrs]
	Part B - practical part - **Methods of collecting plant samples for the purpose of drying and identifying them. [6 hrs].** - **Identify methods for drying samples and the seed diagnosis mechanism [6 hrs].** - **Identify the types of herbicides, the mechanism of action of the herbicide, and calculate the necessary amount of herbicide per unit area [6 hrs].** - **Identify the types of sprayers, methods of calibrating the sprayer, and preparing the spray solution [6 hrs].**

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Definition of weeds: The losses caused by weeds in the agricultural, social and health aspects of humans.
Week 2	The medical benefits of weeds plants: preserving soil from erosion, how to diagnose soil salinity, weedss are fodder crops.
Week 3	Division of weeds plants, according to the growing season, according to the duration of life, according to the damage they cause, and methods of spreading the weeds.
Week 4	Alelobathy and inhibition in weeds plants.
Week 5	Prevention of weeds plants.
Week 6	The mechanical method of combating weeds, the use of agricultural mechanized equipment in combating weeds, the perennial weed control program.
Week 7	Biological method of control, using insects, pathogens, fish, goats, and others.
Week 8	Using the physiological method of control, using suffocating, temporary crops, using fire, and using water dispersal.
Week 9	Methods of absorption and transport of herbicides, root and cellular transport systems, and common parietal transport.
Week 10	Chemical control of weeds, types of acute poisoning, concentration of herbicides, selection, division, and classification.
Week 11	Herbicides and soil, factors affecting the effectiveness of herbicides in soil, residual effect of herbicides in soil.
Week 12	Herbicides and soil, factors affecting the effectiveness of herbicides in soil, residual effect of herbicides in soil.
Week 13	Study of the herbicides of the Piperidium group (paraquait, diquaite).
Week 14	Study of phenoxy group herbicides
Week 15	Study of the Triazine group (atrazine, cymanrin).
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)	
week	Material Covered
Week 1	Methods of drying weeds plants with a visit to the college field and diagnosis of the weeds.
Week 2	Identification of summer and winter weed seeds.
Week 3	Comparison between mechanical and chemical methods in combating a perennial weed.
Week 4	Implementing a field experiment on a vegetable crop to combat weeds with herbicides.
Week 5	Completion.
Week 6	Types of sprays used in pest control, calculating the amount of herbicide needed per unit area.
Week 7	Diagnosing the weeds remaining from the previous experience.
Week 8	Spray the herbicide Cramaxon on wild reed plants and monitor the results.
Week 9	Spraying the herbicide Terflan in beans and cauliflower fields and monitoring the results.
Week 10	Spraying the herbicide 2,4-D in wheat and barley fields.
Week 11	Use of the herbicide atrazine to control corn weeds.
Week 12	Using the herbicide Lancer and Chemoset to combat perennial weeds in ditches and irrigation canals.
Week 13	Conduct an experiment to determine the remaining effect of the herbicide in the soil.
Week 14	Discussing the results in student reports.
Week 15	A continuation.
Week 16	Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Weed and weed control (مقاومة الحشائش والاعشاب) د. محمد محمود زين الدين د. كمال محمد الهباشة 1992م	Yes
Recommended Texts	**Weed control ,2020**	No
Websites	https://drive.google.com/file/d/1NCG3bdfHR5YFUWIccqb9iXFdPXEsRNR4/view?usp=sharing	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

Module Title	**Plant Tissue Culture**	**Module Delivery**	
Module Type	**C**	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**PLP 405**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		
Module Level	**4**	**Semester of Delivery**	**2**
Administering Department	**Plant Production** PLP	**College**	**Technical Agricultural College**
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	7. Introducing and training students on plant tissue culture technology 8. Introducing the student to the benefits of tissue culture and its uses 9. Learn about callus and how to manage callus farms 10. Learn about Cell suspensions
Module Learning Outcomes	1. The student will be able to use tissue culture technology to propagate commercial plants 2. The student will be familiar with how to prepare agricultural media 3. The student will be aware of the prospects and benefits of plant tissue culture 4. The student will be aware of the benefits of plant growth regulators and how to use them in plant tissue culture 5. The student will be aware of how to acclimatize plants and transport them to the field .
Indicative Contents	Indicative content includes the following. Part A - theoretical part History and present situation of plant tissue cultue and application. [6 hrs] tissue cultue ladoratory. [6 hrs] Nutrient media (Organic and inorganic constituents). [6 hrs] plant growth regulators. [6 hrs] Callus initiation techniques . [6 hrs]

	Part B - practical part **tissue cultue ladoratoryfunction and operation of tissue culture inst. [9 hrs].** **preparation of whol mediam. [12 hrs].** **Sterilization of media and plant materials . [9 hrs].** **Callus initiation medium . [10 hrs].** **Suspension Culture. [9 hrs].**

Learning and Teaching Strategies	
Strategies	**The necessity of practical practice of plant tissue culture technology to gain experience. And obtain new scientific information in the field of scientific research (videos). And obtain new scientific information in the field of scientific research (videos). Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	5.47
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	History and present situation of plant tissue cultue and application
Week 2	tissue cultue ladoratory
Week 3	Nutrient media (Inorganic constituents)
Week 4	Organic Constituents
Week 5	Growth regulators 1
Week 6	Growth regulators 2
Week 7	Exam
Week 8	Sterilization of media
Week 9	Sterilization of plant materials
Week 10	Initiation and growth of callus
Week 11	Callus Initiation medium

Week 12	**Callus Initiation techniques**
Week 13	**Cell Suspension Culture**
Week 14	**Initiation of Suspension Culture**
Week 15	**Suspension Culture methods**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	**tissue cultue ladoratoryfunction and operation of tissue culture inst**
Week 2	**preparation of nutration components of tissue culture mediam**
Week 3	**preparation of some concentrations of plant Growth regulators**
Week 4	**preparation of whol mediam**
Week 5	**In vitro micropropagation of carrots**
Week 6	**In vitro micropropagation of lettuce**
Week 7	**Root Culture of tomatoes**
Week 8	**Stage of somatic embryogenesis in carrots**
Week 9	**Assessment of the previous pradicals , writing report**
Week 10	**In Vitro Micropropagation of some field crops**
Week 11	**In Vitro Micropropagation of some field crops**
Week 12	**In Vitro Micropropagation of some field crops**
Week 13	**Auther and pollen cultures of some field crop**
Week 14	**Assessment of experiments and discussing reports**
Week 15	**Preparatory week before the final Exam**
Week 16	**Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	اساسيات زراعة الانسجة النباتية /محمود توفيق شرباش/ دار المعارف للطباعة والنشر / 2009	Yes
Recommended Texts	تجارب في زراعة الانسجة النباتية	
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Economic insects			**Module Delivery**	
Module Type	C			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	PLP406				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Plant Production PLP		**College**	Technical Agricultural College	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	- **Introducing the student to the importance of bees and honey production and the important cycle in the pollination process and increasing crop productivity and the student becomes able to manage and breed beehives and address their problems.**
Module Learning Outcomes	1. The use of special techniques for detecting insects 2. Identify the specialties available for the diagnosis and examination of insects
Indicative Contents	**Indicative content includes the following.** **Part A - theoretical part** **1- An overview of microbiology screening and diagnosis centers in Iraq** **2- Factors affecting entomology** **3- Identifying bee colonies** **4- Identifying the silkworm and its life cycle**
	Part B - practical part **Insect morphology study [9 hrs].** **. Devices and tools used in microbiology examination [9 hrs].** **. Sample extraction [9 hrs].** **Detecting bee colonies[12 hrs].**

Learning and Teaching Strategies	
Strategies	**The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos). Practical training in the field. Access to modern scientific literature. Participation in relevant scientific conferences. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2

Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	The economic importance of beekeeping, the development of beekeeping, beekeeping in Iraq
Week 2	Honey bee sect, the queen.
Week 3	Honey bee community, workers.
Week 4	Activities and jobs of workers, mothers, males
Week 5	Types and breeds of honey bees
Week 6	Expulsion, its signs, types, seasons of expulsion
Week 7	You want it, the methods of dispersion
Week 8	Feeding communities, their importance, alternatives and supplements.
Week 9	Breeding honey queen bees, breeding success factors, their causes
Week 10	Apiary, types, conditions of spread
Week 11	Diseases and enemies of bees
Week 12	Honey Bee Products
Week 13	Pollinating insects
Week 14	Pollination of bee populations for the purpose of pollinating crops
Week 15	Insects feeding on insects.
Week 16	exame

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	External anatomy of honey bee workers (head chest appendages).
Week 2	External anatomy of honey bee workers (abdomen and appendages)
Week 3	External anatomy of honey bee workers (abdomen and appendages).
Week 4	Beekeeper tools (cells and their types, cell opening tools)
Week 5	Bee tools (personal foundations, foundation fixing tools)
Week 6	Honey bee sect examination
Week 7	Expulsion (parcel holding, division methods)
Week 8	Types of nutrients and feeding methods.
Week 9	Methods of breeding queens, methods of producing queens naturally.
Week 10	Bee pest control (symptoms of bee pest infestation)
Week 11	Preparing honey bee populations for honey sorting, sorting tools, sorting procedure
Week 12	The most important groups of accessory insects
Week 13	Management of honey bee populations for pollination
Week 14	Silkworm, types of silkworm breeding tools
Week 15	External and internal anatomy of silkworm, silkworm breeding methods
Week 16	exame

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Usefull Insects تربية سلالات النحل 2012	Yes
Recommended Texts	معجم الملاح في مصطلحات علم الحشرات 2022	No
Websites	https://www.lib-books.com/book/61836/%E2%80%8Fhttps:/ajax/subscribe.php	

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Harvesting Equipment's**			**Module Delivery**	
Module Type	**C**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 407**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	**4**		**Semester of Delivery**	**2**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	**Introducing the student to the most important machines and machines used in harvesting and reaping crops, what their components are, performing calculations on how to calibrate them, and becoming able to perform maintenance operations on them and how to choose the appropriate type of them.**
Module Learning Outcomes	**1. The ability to handle various agricultural machines.** **2. Know the main parts that make up the harvester.** **3. Know how to carry out the organizational processes for the harvesting process.** **4. Possibility of handling the harvester during work.**
Indicative Contents	**Part one: theoretical** **1. Get an overview of the importance of agricultural mechanization in the field of agricultural production. And types of harvest. (1 hour)** **2. Identify the main parts that make up a grain harvester (1 hour)** **3. Familiarization with the parts and transportation group (2 hours)** **4. Getting to know the study system in the classroom (3 hours)** **5. Identifying the separation and cleaning system (1 hour)** **6. How to detect malfunctions in the harvester (1 hour)** **7. Cotton harvesting machine and factors affecting cotton harvesting (1 hour)** **8. Sugar beet harvesting machine and potato harvesting machine (2 hours)** **Part Two: Practical** **1. Identify the main parts that make up a grain harvester (3 hours)** **3. Familiarization with the parts and transportation group (6 hours)** **4. Getting to know the study system in the classroom (9 hours)** **5. Identifying the separation and cleaning system (6 hours)** **6. How to detect malfunctions in the harvester (3 hours)** **7. Cotton harvesting machine and factors affecting cotton harvesting (3 hours)** **8. Sugar beet harvesting machine and potato harvesting machine (6 hours)**

Learning and Teaching Strategies	
Strategies	**Working to increase knowledge to gain practical experience from others through educational videos and training courses to obtain new scientific information in the field of knowledge. Practical field training and how to take field measurements. Access to modern scientific literature. Scientific laboratories with other universities.**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Automated harvesting and its benefits, methods of automated harvesting
Week 2	The cutting set (cutting knife, pressing paddle, propellers) and its parts are operated and changed
Week 3	The transport group in the harvester and its operating parts
Week 4	Harvester treadmill assembly and its parts
Week 5	Factors influencing the process of policing, both fixed and variable
Week 6	Separation and cleaning group in the harvester, crop flow and change line
Week 7	The packing group has its parts and the function of each part
Week 8	How to detect a malfunction in the harvester, treat every malfunction and repair it
Week 9	Mathematical problems
Week 10	Machine for picking fallen cotton, mechanical style, spindles
Week 11	Cotton collecting machine, its types, parts and the function of each part
Week 12	Factors affecting cotton harvest
Week 13	Sugar beet harvesting machine, its parts and the function of each part
Week 14	Potato harvesting machine, its types, parts and the function of each part
Week 15	Fodder cutting machine, its functions and parts
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

week	Material Covered
Week 1	Identify the main parts of the harvester
Week 2	The cutting set (cutting knife, pinching paddle), its parts and operation
Week 3	The transportation assembly has its working parts and the function of each part
Week 4	The tread assembly (the tread cylinder), its operation, its parts, and its maintenance
Week 5	The harvester's separation and cleaning group, its operation, its parts, and its maintenance
Week 6	The packing group has its parts and the function of each part
Week 7	Harvester malfunctions treated (treatment of all malfunctions)
Week 8	The cotton pulp has its parts and the function of each part
Week 9	Cotton collecting machine, its parts and function of collecting cotton
Week 10	Cotton collecting machine, its parts and function of collecting cotton
Week 11	Sugar beet harvesting machine, its parts, operation, and maintenance
Week 12	The potato harvester has its parts and maintenance
Week 13	Fodder cutting machine, parts, operation and maintenance
Week 14	Daily and seasonal maintenance of the harvester
Week 15	Maintenance and repair of harvester units
Week 16	Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Reaping and harvesting equipment Aziz Ramo Al-Banna	Yes
Websites	https://www.agro-lib.site/2023/09/blog-post_173.html	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Graduation project**			**Module Delivery**	
Module Type	**C**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 408**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	**4**		**Semester of Delivery**	**2**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules			
Prerequisite module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	
Module Learning Outcomes	
Indicative Contents	

Learning and Teaching Strategies	
Strategies	

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	20	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1.33
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

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

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(0 - 49)	**F** - Fail	راسب	(0-44)	Considerable amount of work required

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Republic of Iraq - Ministry of Higher Education and Scientific Research

Northern Technical University

Bachelor's degree in Plant production techniques

Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr

Program Curriculum (2025-2026)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي

الجامعة التقنية الشمالية

بكالوريوس تقنيات الإنتاج النباتي

أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة

المنهاج الدراسي للعام (2025-2026)

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGI	One	1	NTU100	Democracy and Human Rights	حقوق الانسان وديمقراطية	Arabic	2						3	33	17	50	2.00	B	
		2	NTU101	English language	اللغة الإنكليزية	English	2						3	33	17	50	2.00	B	
		3	TAMO 100	General Chemistry	كيمياء عامة	Arabic	2		3				3	78	72	150	6.00	B	
		4	PLP 100	General Insects	حشرات عامة	Arabic	2		2		1		3	78	72	150	6.00	C	
		5	PLP 101	General Botany	نبات عام	Arabic	2			3	1		3	93	82	175	7.00	C	
		6	PLP102	Principle of Horticulture	أسس بستنة	Arabic	2			3	1		3	93	82	175	7.00	C	
						Total	12	0	5	6	3	0	18	408	342	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Two	1	NTU 102	Computer	الحاسوب	Arabic	1		2				3	48	27	75	3.00	B	
		2	NTU 103	Arabic Language	اللغة العربية	Arabic	2						3	33	17	50	2.00	B	
		3	TAMO101	Occupational safety	السلامة المهنية	Arabic	2						3	33	17	50	2.00	B	
		4	PLP 103	Fundamental of soil science	أساسيات تربة	Arabic	2		2	1			3	78	97	175	7.00	C	
		5	PLP 104	Plant anatomy	تشريح نبات	Arabic	2		2		1		3	78	122	200	8.00	C	
		6	PLP 105	Principle of genetics	مبادئ وراثة	Arabic	2			2	1		3	78	122	200	8.00	C	
						Total	11		6	3	2		18	348	402	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGII	Three	1	NTU 200	AL Baath regimes Crimes in Iraq	جرائم نظام البعث في العراق	Arabic	2						3	33	17	50	2.00	B	
		2	NTU 201	English language	اللغة الإنكليزية	English	2						3	33	17	50	2.00	B	
		3	TAMO 200	Biochemistry	كيمياء حيوية	Arabic	2		2				3	63	87	150	6.00	S	
		4	PLP 200	Plant Physiology	فسلجة نبات	Arabic	2		1	2	1		3	93	82	175	7.00	C	
		5	PLP 201	Field Crop	محاصيل حقلية	Arabic	2			2		1	3	78	72	150	6.00	C	
		6	PLP 202	Vegetables Production	انتاج خضر	Arabic	2			2		1	3	78	97	175	7.00	C	
						Total	10	0	3	6	1	2	15	345	405	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Four	1	NTU 202	Computer	الحاسوب	Arabic	1		2				3	48	27	75	3.00	B	
		2	NTU 203	Arabic Language	اللغة العربية	Arabic	2						3	33	17	50	2.00	B	
		3	PLP 203	Fruit production	إنتاج فاكهة	Arabic	2			2	1	1	3	93	132	225	9.00	C	
		4	PLP 204	Agricultural Pullers & Machinery	ساحبات والات زراعية	Arabic	2			2	1		3	78	122	200	8.00	C	
		5	PLP 205	Forestry	غابات	Arabic	2			2		1	3	78	122	200	8.00	C	
		6																	
						Total	11	0	2	6	2	2	18	348	402	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Five	1	TAMO 300	Plane surveying & Engineering Drawing	مساحة ورسم هندسي	Arabic	2			3			3	78	72	150	6.00	S	
		2	PLP 300	Fertilizers & Fertility	خصوبة وتسميد	Arabic	2		1	1	1		3	78	72	150	6.00	C	
		3	PLP 301	Nursery & Plant Propagation	المشاتل والزراعة المحمية	Arabic	2			2	1	1	3	93	57	150	6.00	C	
		4	PLP 302	Plant Growth Regulater	منظمات نمو	Arabic	2		2	1	1		3	93	57	150	6.00	C	
		5	PLP 303	Forage Crop	محاصيل علف ومراعي	Arabic	2			2		1	3	78	72	150	6.00	C	

		6																	
						Total	10	0	3	9	3	2	15	420	330	750	30.00		

UGIII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Six	1	TAMO 301	Statistics, design, and analysis of experiments	الإحصاء وتصميم وتحليل التجارب	Arabic	2			3			3	78	72	150	6.00	S	
		2	PLP 304	Floriculture & Landscape	نباتات الزينة وهندسة الحدائق	Arabic	2			2	1	1	3	93	32	125	5.00	C	
		3	PLP 305	Organic Agriculture	الزراعة العضوية	Arabic	2			2	1		3	78	47	125	5.00	C	
		4	PLP 306	Industrial Crops	محاصيل صناعية	Arabic	2		1	2		1	3	93	32	125	5.00	C	
		5	PLP 307	Natural Resources Economics	اقتصاديات موارد طبيعية	Arabic	3					1	3	63	37	100	4.00	B	
		6	PLP 308	Plant Nutrition	تغذية نبات	Arabic	2		1	2	1		3	93	32	125	5.00	C	
						Total	13	0	2	8	3	3	18	498	252	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Seven	1	TAMO 400	Scientific research methodology	منهجية البحث العلمي	Arabic	1					1	3	33	17	50	2.00	B	
		2	PLP 400	Plant Breeding	تربية وتحسين نبات	Arabic	2			2	1		3	78	97	175	7.00	C	
		3	PLP 401	Plant Disease	أمراض النبات	Arabic	2		1	2	1		3	93	82	175	7.00	C	
		4	PLP 402	Post-harvest physiology & Storage	الخزن وفسلجة مابعد الحصاد	Arabic	2			2	1	1	3	93	82	175	7.00	C	
		5	PLP 403	Seed inspection and certification	فحص وتصديق البذور	Arabic	2		1	2		1	3	93	82	175	7.00	C	
						Total	9	0	2	8	3	3	15	390	360	750	30.0		

UGIV	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Eight	1	TAMO 401	Employability skills	مهارات سوق العمل	Arabic	2						3	33	17	50	2.00	B	
		2	PLP 404	Weeds and weed control	الادغال ومكافحتها	Arabic	2			2		1	3	78	97	175	7.00	C	
		3	PLP 405	Plant Tissue Culture	زراعة أنسجة نباتية	Arabic	2		3		1		3	93	82	175	7.00	C	
		4	PLP 406	Economic insects	حشرات إقتصادية	Arabic	2			2	1	1	3	93	57	150	6.00	C	
		5	PLP 407	Harvesting Equipment	معدات جني وحصاد	Arabic	2			3	1		3	93	57	150	6.00	C	
		6	PLP 408	Graduation project	مشروع بحث تخرج	Arabic	0			2				30	20	50	2.00	C	
						Total	8	0	3	9	3	2	12	420	330	750	30.0		
						Total	81	0	28	53	23	18	156	3195	2823	6000	240.0		Must be 240 ECTS

Note: The student should complete 8 weeks of Summer Internships to fulfill the requirements of the Bachelor's degree , The first four weeks are at the second level and the second four weeks are at the third level (fulfilled).

Structured SWL (hr/w) type		
	CL	Class Lecture
	Lab	Laboratory
	Pr	Practical Training
	Tut	Tutorial
	Lect	Online lecture
	Sem	Seminar

Module type		
	B	Basic learning activities
	C	Core learning activity
	S	Suport or related learning activity
	E	Elective learning activity

SWL:	Student Workload
SSWL:	Structured SWL
USSWL:	Unstructured SWL

Note: Columns O, Q and R are progrmaed, protected and should not be edited