Ministry of Higher Education and Scientific Research, Academic Supervision and Evaluation

Academic Program and Course Description Guide

2025

Northern Technical University - Al-Hawija Technical Institute
Department of Plant Production Technologies

Academic Program Description Form

Northern Technical University

Technical Institute/ Al-Hawiyja

Plant production techniques

Academic or Professional Program Name: Diploma in plant production techniques

Final Certificate Name: Diploma in plant production techniques

Academic System: Courses

Description Preparation Date: 2025/6/11

File Completion Date: 2025/6/11

Signature:
Head of Department
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Date:2025/6/11

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Date:2025/6/11

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Director of the Quality Assurance and University Performance Department:
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Date: 2025/6/11
Signature:

Approval of the Dean
Prof. Dr. Omer Khalil Ahmed

1- vision The program

To be a pioneer in education, research and innovation in the field of plant production, effectively contributing to achieving food security and sustainable agricultural development at the local and regional levels.

2-message The program

The Department of Plant Production Technology aims to provide distinguished education and high-quality practical training, and to conduct advanced applied scientific research that contributes to improving plant production and increasing its efficiency, with a focus on the use of modern technologies and sustainable environmental solutions to support agricultural development.

3-Goals The program

1- Developing curricula to meet the needs of the labor market in the field of .medicinal plant production and the use of modern technologies
2- Providing the human resources necessary for the requirements of economic .and social development plans
3- Providing students with information, skills and scientific expertise to enable .them to contribute to the development process
4- Spreading awareness of the importance of medicinal plants and their health .and economic uses through training programs and workshops
5- To instill a team spirit among students and prepare them for cooperative .scientific life in the agricultural environment
6- Achieving the highest level of interaction between the department and productive scientific institutions whose tasks complement the department's .tasks and objectives
7- Applying sustainable agricultural practices that preserve the environment and ensure the sustainability of natural resources in the production of .medicinal plants
8- Contributing to training, qualification, continuing education courses and .seminars at the Institute

4-Accreditation Programmatic

no There is

5-Effects Foreign Affairs Other

presence side Shepherdess Contribute in:

1- Linking the program to the labor market or community
2- Facilitating employment and practical training
3- **Continuous guidance of the program**

6. Program structure				
Program structure	Number of courses	Study unit	percentage	* comments
(university) requirements	11	22	%(15-10)	Core course
Institute requirements	6	14	%(22-16)	Essential and non-essential
Department requirements	24	59	%(74-63)	Essential and non-essential
Compliant and non-compliant	The student starts 1/7 and ends 1/9 in .the first level			Compliant and non-compliant

7- Level the first **Program Description**/ the chapter the first + the chapter the second								
Course type	The symbol	The pavement, if any	Number of units	Number of practical hours	Number of theoretical hours	name The decision		Requirement type
						In the language English	In Arabic	
compulsory	NTU100		2	-	2	Human Rights and Democracy	human rights and democracy	University requirements
compulsory	NTU101		2	-	2	English language	English1	
compulsory	NTU102		2	1	1	1Computer Application	principles Computer 1	
compulsory	NTU10 3		2	-	2	1Arabic language	language Arabic1	
compulsory	NTU10 4		2	1	1	Sport	sports	
optional	NTU107		2	-	2	French language	language French	
compulsory	TIH101		3	1	2	Statistics &Experiment Design	count and planning experiments	Institute requirements
optional	TIH102		2	1	1	Renewable Energy Systems	Systems renewable energy	
compulsory	TIH103		2	1	1	Soil Science	Soil basics	
compulsory	PPT101		3	2	1	Horticulture Principles	basics gardening	Department requir
compulsory	PPT102		3	2	1	Agronomy Principles	basics crops	
compulsory	PPT103		2	1	1	Plant Protection	protection plants	
optional	PPT104		2	1	1	Nursery & Forestry	Nurseries and forests	
optional	PPT105		2	1	1	Plant Environment	environment plants	
compul	PPT106		3	2	1	Fruit Production	production	

sory							fruit	ements
compul sory	PPT107		2	1	1	Plant Physiology	Physiology plants	
compul sory	PPT108		4	2	2	Vegetation Production	production Greens	
optional	PPT109		2	1	1	General Insects	insects General	
compul sory	PPT110		3	2	1	Agri.Machine&Equipment	Pullers and mach ines agricultur al	
optional	PPT111		2	1	1	Tissue culture	agricult ure tissues	
			47	21	26	the total		

Level the second/ the chapter the first + the chapter the second								
Course type	The symbol	The paved road If found	Number of units	number Practical hours	number theoretical hours	name The decision		Requirement type
						In the language English	In the language Arabic	
NTU 200 compulsory			2	-	2	English language	English2	University requirements
compulsory	NTU201		2	1	1	Computer Application2	principles Computer2	
compulsory	NTU202		2	-	2	Arabic Language2	the language Arabic	
compulsory	NTU203		2	-	2	The Crimes of Baath regimen in Iraq	crimes party system Resurrection in Iraq	
compulsory	NTU204		2	-	2	Professional Ethics	Professional ethics	
compulsory	TIH201		3	2	1	Medicinal Plants Production	production plants Medical	Institute requirements
compulsory	TIH202		2	1	1	Secondary Compounds Chemistry	Chemistry of secondary compounds	
optional	TIH203		2	1	1	Farm management	farm management	
compulsory	PPT201		3	2	1	Drying &Reserving Plants	save drying plants	
compulsory	PPT202		3	2	1	Medicinal Plants Diseases	plant diseases Medical	

compulsory	PPT203		3	2	1	Medicinal Plants Environment & Classification	environment And classification plants Medical	Department requirements
compulsory	PPT204		2	1	1	Organic Chemistry	chemistry membership	
optional	PPT205		2	1	1	Aromatic & Floriculture Medicinal Plants	plants Decorations Aromatic	
compulsory	PPT206		3	2	1	Drugs Processing	manufacturing pharmaceutical	
compulsory	PPT207		3	2	1	Nurseries & Propagation	Nurseries And increase	
compulsory	PPT208		3	2	1	Medicinal Plants Pesticides	insects plants Medical	
optional	PPT209		3	2	1	Plants Nutrition	feeding plants	
compulsory	PPT210		3	3	-	Project	project	
			45	24	21	the total		

1. Expected learning outcomes of the program

knowledge

1- The student should be able to interpret statistical data and use appropriate statistical methods in analyzing agricultural results.
2- The student will be able to identify methods for improving soil fertility and reclaiming degraded .soils. Determine the amount of fertilizers to be added and the methods and timing of planting plants
3- The student should be able to distinguish horticultural plant species and understand their environmental requirements.
4- The student will be able to improve crop productivity using sound agricultural practices .
5- The student will be able to apply pest management strategies in environmentally friendly ways.
6- The student will be able to establish and manage nurseries to produce forest seedlings.
7- The student should be able to evaluate different environmental factors and their impact on plant production.
8- The student should be able to Use pruning, fertilization, and irrigation methods that suit the type of fruit.
9- The student should be able to explain the process of photosynthesis, transpiration in plants, and .osmotic pressure

The student should be able to choose the appropriate machine for different agricultural operations -10 .

.The student should be able to collect, classify and preserve medicinal plants -11
The student should be able to design and coordinate gardens using ornamental plants -12 .
The student should be able to diagnose symptoms of nutritional deficiency -13.
.The student should be able to create an orchard, a canopy, a greenhouse, a glass house, and an apiary -14
. The student must be able to: Extraction of active compounds from medicinal plants -15

Skills

1- Practical skills: The ability to apply modern technologies in the cultivation and production of medicinal plants with high efficiency, taking into account sustainable .agricultural practices
2- Intellectual skills: Ability to analyze agricultural problems related to medicinal plant .production and propose innovative and effective solutions
3- Scientific research: The ability to design and implement applied scientific research aimed at improving the quality and productivity of medicinal plants, analyze data, and .draw scientific conclusions
4- Use of technology: Ability to use modern tools and technologies to monitor and improve plant and medicinal plant production, such as smart irrigation systems, pest .control, and biotechnology
5- Communication skills: Ability to communicate effectively scientifically, prepare technical reports, and work within multidisciplinary teams in the fields of plant .production and medicinal plants
6- Professional and ethical awareness: Commitment to professional and ethical standards in the field of plant production and the use of medicinal plants, while .respecting relevant laws and regulations

The importance of skill learning outcomes:

1- Preparing graduates for the labor market: The practical and technical skills students acquire make them more capable of performing tasks required in the workplace, increasing their .employment opportunities and making them more competitive
2- Enhancing efficiency and productivity: Specialized skills help graduates perform tasks efficiently, reduce errors, and improve production quality, especially in the agricultural and .medical fields
3- 'Enabling innovation and problem solving: Developing practical skills enhances students ability to think critically and innovate, enabling them to address plant production challenges .and find innovative solutions
4- Adapting to technological developments: The world is changing rapidly, and skills-based learning outcomes help students keep up with new technologies and business tools, thus .staying relevant
5- 'Promote self-learning and continuous development: Skill acquisition supports students .ability to continuously learn and develop themselves independently after graduation
6- Achieving Sustainable Development Goals: With the right skills, graduates can contribute to the development of sustainable agricultural practices that preserve the environment and .support food security

How can skill learning outcomes be achieved

1- Intensive practical training: Providing ongoing practical training opportunities in laboratories and agricultural fields, allowing students to apply what they have learned .theoretically and gain real-world experience

2- Practical and applied projects: Involving students in research or applied projects that address .real-life problems in the field of plant production and medicinal plants
3- Workshops and training courses: Organizing specialized workshops and courses focusing on technical skills such as the use of modern equipment, precision agriculture techniques, and .pest control methods
4- ,Field and cooperative training: Establish partnerships with farms, agricultural companies or research centers to provide field training that allows students to experience a real-world .work environment

values

:Values that can be learned from the subject of achieving the learning outcomes of skills in plant production innovation and creativity, cooperation and partnership, i.e. the exchange of knowledge and experiences between individuals and institutions, practical application, encouraging learners to work on practical applied projects, and sustainability, encouraging learners to apply agricultural practices that preserve the .environment and natural resources

Determine the expected learning outcomes:

1- Information:.The ability to grow plants properly
2- Skills:Skills in irrigation, fertilization and plant care
3- Positions: Understanding professional ethics in dealing with farmers, plants and the .environment

The importance of expected learning outcomes:

1- Preparing graduateswho are able to improve agricultural productivity through the application of modern agricultural practices.
2- Quality measurement: The expected outputs can lead to improving the quality of agricultural products through the application of
Food quality and safety standards, increasing consumer satisfaction with agricultural products .
3- Planning: Preparing a curriculum that is compatible with the labor market by using modern educational methods.

Examples of expected learning outcomes:

1- In the field of knowledge: The student should be able to understand the classification of .medicinal plants through special classification keys
He can explain the theory of water ascent into the plant, and the mechanism of opening and closing .He can plan an experiment . the stomata
Field or laboratory experiments through the application of the laws of agricultural experiment .design and analysis
2- In the field of skills: will be able to combat weeds and insects or analyze nutrients The student .in the soil
.Water and the student should be able to communicate with agricultural departments
3- In the field of attitudes: ,the student must be able to convey a positive image of the university .institute and department and be loyal
.In his work

4- : Examples of professional learning value outcomes

1- , The student will be able to conduct laboratory testing of plants
2- .The student will be able to conduct soil and water tests
3- .The student will be able to extract oils from seeds

2. Teaching and learning strategies

1- Theoretical learning: lectures, textbooks
2- .Practical learning: field and laboratory training, practical workshops
3- Project-based learning: applied projects in plant production, scientific .research, and encouraging students to conduct scientific research
4- Collaborative learning: Encourage students to work together on .graduation projects and group discussions
5- Use of technology: Use of e-learning platforms
6- Vocational training: Providing opportunities for vocational training .using modern technologies
7- Continuous assessment: periodic assessment of students to measure .their progress and provide feedback to improve their performance
8- Learning through experience: scientific experiments, learning from .mistakes and improving their performance

3. Evaluation methods

Weekly exams, homework, monthly and daily technical reports, field training, and end-) (of-course exam

4. Faculty

Faculty members

Faculty preparation		Special requirements/skills (if any)		Specialization		Academic rank
lecturer	angel			private	general	
	angel			Physiology	crops	assistant professor
	angel			Fruit nutrition	gardening	assistant professor

	angel			soil fertility	soil	Assistant Professor
	angel			Plant production	Plant production	Assistant Professor
	angel			fruit trees	gardening	Assistant Professor
Technical staff						
	angel	plant protection				Bachelor 2
	angel	medicinal plants				Bachelor's
	angel	Plant production				Bachelor's
	angel	Plant production				Diploma 2
Supporting staff of the institute						
	angel	law				assistant professor
	angel	Arabic language				assistant professor
	angel	Communications and Computer Networks				assistant professor
	angel	Educational Psychology				Assistant Professor

5. Professional development

Orientation of new faculty members

- Training courses, workshops and seminars in the field of plant production
- Courses, workshops and seminars on education and learning
- Courses, workshops and seminars on laboratory equipment
- Courses, workshops and seminars on how to publish scientific research

Professional development for faculty members

- Training courses, workshops and seminars in the field of plant production
- Developing scientific publishing skills in the agricultural field

6. Acceptance criteria

The approved criteria for central admission of the Ministry of Higher Education

and Scientific Research

7. The most important sources of information about the program

National Qualifications Framework(NQF)
Academic accreditation standards
Vision and Mission of the Educational Institution Previous Curricula
Faculty opinions and comments
Student and graduate opinions
Feedback from employers
Similar programs at local and international universities
Local and international labor market needs

8. Program Development Plan

- **Working on updating curricula to keep pace with the labor market**
- **Working on developing educational laboratories in the department**
- **Working on developing the shade, greenhouses and educational fields in the department**

Program Skills Map

مخطط مهارات المنهج

Program Skills Outline for Level 1

Outputs learning Required from The program															
values				Skills				knowledge				Basic or optional	name The decision	code The decision	year/Level
C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
√	√								√			compulsory	rights Man and Democracy	NTU100	The first level of the two semesters
					√	√	√					compulsory	the language English1	NTU101	
				√	√	√	√	√				compulsory	principles Computer1	NTU102	
		√	√			√					√	compulsory	basics soil	TIH103	
√					√				√		√	compulsory	basics gardening	PPT101	
		√				√		√			√	compulsory	basics crops	PPT102	
			√						√		√	compulsory	protection plants	PPT103	
			√			√	√			√	√	optional	Nurseries and forests	PPT104	
√							√				√	optional	environment plants	PPT105	
					√	√	√				√	compulsory	Statistics and planning experiments	TIH101	
			√			√			√		√	compulsory	Fruit production	PPT106	
							√				√	compulsory	Plant physiology	PPT107	
√						√	√			√	√	compulsory	Vegetable production	PPT108	
√					√				√		√	optional	General insects	PPT109	
				√	√	√	√			√	√	compulsory	Tractors and agricultural machinery	PPT110	
√	√	√	√	√	√	√	√	√	√	√	√	Choose	tissue culture	PPT111	

Program Skills Outline Level 2

Outputs learning Required from The program															
values				Skills				knowledge				Basic or optional	name The decision	code The decision	year/Level
C4	C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1				
√				√	√						√	compulsory	language English2	NTU201	Second level of the two semesters
	√					√	√				√	compulsory	principles Computer3	NTU202	
√	√	√	√									compulsory	Ethics Profession	NTU204	
	√			√						√	√	compulsory	production plants Medical	TIH201	
√						√	√				√	compulsory	save And drying plants	PPT201	
	√			√			√			√	√	compulsory	illnesses plants Medical	PPT202	
√	√			√						√	√	compulsory	environment And classification plants Medical	PPT203	
			√	√			√	√			√	compulsory	chemistry membership	PPT204	
						√				√	√	optional	plants Decorations Aromatic	PPT205	
√				√	√	√	√	√			√	optional	Farm Management	TIH203	
√	√	√	√	√	√	√	√	√	√	√	√	compulsory	pharmaceutical manufacturing	PPT206	
		√	√			√	√	√			√	compulsory	Nurseries and propagation	PPT207	
√							√	√			√	compulsory	Medicinal plant insects	PPT208	
√				√						√	√	compulsory	Production of medicinal plants	TIH201	
√	√					√	√			√	√	compulsory	Chemistry of secondary compounds	TIH202	

Adescription Human Rights and Democracy Course

1. Course name
Human rights and democracy
2. Course code
NTU 100
3. semester/year
2025-2024 Level 1, First Semester
4. Available attendance forms
blended learning , Traditional attendance (face-to-face)
5. Number of study hours (total) / Number of total units
30hours / Units 2
6. Date this description was prepared
2025/6/11
7. Course supervisor name
Asst. Prof. Dr. Raad Hamza Awad M.M. Hamza Omar Siddiq :Name :Emailraadawad_hwj@ntu.edu.iq hamzaomer_hwj@ntu.edu.iq
8-(Goals Course (Objectives) Public For the decision maker Introducing the student to the basic concepts of human rights and democracy. Promoting awareness of human values, justice, and freedom. Understanding the legal and international legitimacy foundations of human rights. .Linking the principles of democracy to the practices of public and institutional life

9-Outputs The decision and methods education and learning and evaluation
A-Objectives cognitive **Learn the basic concepts related to human rights and democracy.** **.Analysis of legal texts related to public rights and freedoms**

B - Objectives Skills Private As scheduled . **The ability to discuss legal issues from a legal and humanitarian perspective.** **.Evaluating different democratic practices within the local and international context**
C-Objectives emotional and the value **Promoting human values, tolerance and acceptance of others.** **.Developing a sense of responsibility towards respecting rights and community participation**
Methods education and learning - **Lessons theory Intense, Model Data with films Educational**
Evaluation methods- **Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter**

10 **Course Structure: Human Rights and Democracy (Theoretical Vocabulary) -**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Monthly exams and a final exam	theoretical	,Human rights ,definition objectives.	The student should define the concept of human rights and explain their basic objectives.	2	1
Monthly exams and a final exam	theoretical	The roots of human rights and their development in ,human history human rights in ancient and medieval times.	The student should explain the historical development of the idea of rights throughout the ages.	2	2
Monthly exams and a final exam	theoretical	Human rights in the civilization of Mesopotamia.	The student should explain how human rights principles appeared in ancient societies.	2	3
Monthly exams and a final exam	theoretical	Human Rights in Divine Laws, a special study of human rights in Islam.	The student should mention examples of ancient texts and laws (such as the Code of Hammurabi) that dealt with human rights.	2	4
Monthly exams and a final exam	theoretical	Human rights in ,the Middle Ages rights in ,doctrines ,schools, theories ,corporations their declarations and constitutions .	To explain how the heavenly ,religions dealt with human rights especially in Islam.	2	5
Monthly exams and a final exam	theoretical	Human rights in contemporary and modern ,history international recognition of human rights in the League of Nations.	The student should describe how philosophies and schools of thought have dealt with rights.	2	6
Monthly exams and a final exam	theoretical	Regional recognition of ,human rights European Convention on Human Rights American ,1950 Convention 1969 .	To learn about the role of the League of Nations and the United Nations in recognizing human .rights	2	7
Monthly exams and a final exam	theoretical	**Introduction to Democracy** - Definition of democracy	- The student should be able to distinguish between a democratic .and a non-democratic system - To learn about the characteristics	2	8

		- The difference between democratic and non-democratic systems	.of the democratic system		
Monthly exams and a final exam	theoretical	Types of democracy - Direct democracy Representative democracy Participatory - democracy	- To identify the types of .democracy and their examples - To explain the difference between .them	2	9
Monthly exams and a final exam	theoretical	Basic principles of democracy Majorityrule - Rule of law Respect for - rights and freedoms	- The student should explain the basic principles of any democratic .system - To link principles to human .values	2	10
Monthly exams and a final exam	theoretical	**Active citizenship** - The concept of citizenship - The duties and rights of the citizen - Participation in public life	- The student should realize his role as a citizen - To express the importance of participation in public life	2	11
Monthly exams and a final exam	theoretical	**Democracy and human rights** - The relationship between democracy and the protection of rights - freedom of ,expression assembly and organization	- To link democracy and guaranteeing rights - To analyze the importance of freedom of opinion in democratic systems	2	12
Monthly exams and a final exam	theoretical	**Institutions of the democratic system** - Parliament - Judiciary - Media - Civil society organizations	- To explain the functions of each institution - To understand the balance between powers	2	13
Monthly exams and a final exam	theoretical	Institutions of the democratic system Challenges facing democracy	To explain the functions of each - .institution - To discuss the obstacles to .building a democratic system	2	14-15

11-Course Evaluation

	Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
	2.5	2.5	First and second week	Report 1	1

	2.5	2.5	The third and fourth week	Report 2	2
	2	2	Fifth and sixth weeks	Short Test (1)Quiz	3
	2	2	The seventh and eighth weeks	Short Test (2)Quiz	4
	1	1	Weeks 9 and 10	Short Test (3)Quiz	5
	7.5	7.5	Eleventh and twelfth week	Midterm Exam (1)	6
	7.5	7.5	Weeks 13-14-15	Midterm Exam (2)	7
	40	40	striving	striving	8
	60	60	Final semester exams	Final theoretical exam	9
	%100	%100	100	the total	

12-**Infrastructure, human rights and democracy**	
Available	Classrooms
	Required textbooks
	Main references (sources)
Dr. Muhammad Nour Farhat ,The Human Rights Book Introduction to Human Rights , Dr. Mahmoud Sharif Bassiouni Democracy and Human Rights , Dr. Abdel-Ilah Belqaziz	Recommended books and references (.Scientific journals, reports, etc)
	Electronic references, Internet sites

English Language Course Description The English Language Course at the institutes aims to provide students with basic English language skills that serve Their academic specialization and help them in the lab market.

1. Course name
English language
2. Course code
NTU 101
3. semester/year
2025-2024 Level 1, First Semester
4. Available attendance forms
Traditional attendance (in person)2. Blended learning
5. Number of study hours (total) / Number of units
30hours / Number of units: 2
6. Date this description was prepared
2025/6/11
7. Course supervisor name
:the name :e-mail
8-(Goals Course (Objectives) Public For the decision maker

Develop basic English language skills: listening, speaking, reading, and writing.
Enhancing the student's ability to use the English language in daily and professional situations.
Introducing the student to the English terms related to his major.

9. .OutputsThe decision and methods education and learning and evaluation

A-Objectives cognitive

The student should become familiar with the basic vocabulary and terms related to daily life and his professional specialization.
To distinguish between different tenses and use them in correct sentences.
The student should understand the structure of the English sentence in terms of subject, verb and object.

B - Objectives Skills Private As scheduled .

To form grammatically and verbally correct sentences in everyday life situations.
To pronounce English words and terms correctly and clearly.
To write a paragraph or a short letter in correct language.

C-Objectives emotional and the value

The student must show a desire to learn English and use it in his daily life.
To be confident when speaking English in front of others.
To appreciate the importance of the English language in his academic and professional future.

Methods education and learning -

Lessons theory Intense, Model Data with films Educational

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10. **English language course structure (theoretical vocabulary) -**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Diagnostic, formal and summative	theoretical	Unit one: hello Am/are/is, my/your This is with practice at work	Identify and use the verb am/are/is correctly in simple sentences. Use the pronouns my/ your to describe basic personal information.	2	1
Diagnostic, formal and summative	theoretical	Unit two :your world He/she /they, his/her Questions	Use subject pronouns he/she/they and possessive adjectives his/her accurately. Form and answer basic yes/no and wh - questions using “to be ”.	2	2
Diagnostic, formal and summative	theoretical	Unit three: all about	Provide simple personal information (eg, age, nationality, likes/dislikes). Respond to personal questions using correct sentence structures .	2	3
Diagnostic, formal and summative	theoretical	Unit four:family and friends Possessive adjectives Possessive's Has/have Adjective+ noun	Use possessive adjectives and possessive's to talk about relationships and belongings. Use has/have correctly with singular and plural nouns .	2	4
Diagnostic, formal and summative	theoretical	Unit Five: the way I live Present simple l/you /we /they A and an Adjective + noun	Use the present simple tense with I/you/we/they to describe routines. Use articles a/ an correctly. Create descriptive phrases using adjective + noun structure	2	5
Diagnostic, formal and summative	theoretical	Unit six: every day Present simple he/she Questions and negatives Adverbs of frequency	Use the present simple tense with he/she and form questions and negatives. Use adverbs of frequency (eg, always, usually, never) to describe daily habits.	2	6
Diagnostic, formal and summative	theoretical	Unit seven: my favorite Question words Pronouns This and that	Use question words (eg, what, who, where) to ask for specific information. Distinguish between subject and object pronouns. Use this/that to refer to objects near or	2	7

			far .		
Diagnostic, formal and summative	theoretical	Unit eight :where I live There is /are... Prepositions	Describe a place using There is/There are and common prepositions of place. Talk about furniture, rooms, and locations using basic vocabulary .	2	8
Diagnostic, formal and summative	theoretical	Unit nine: Times past Was /were born Past simple - irregu lar verbs	Use was/were born to describe personal history. Recognize and use common irregular verbs in the past simple tense .	2	9
Diagnostic, formal and summative	theoretical	Unit ten: we had a great time! Past simple - regular & irregular Question Negatives Ago	Use past simple tense for both regular and irregular verbs to describe past events. Form questions and negatives in the past tense. Use the time expression ago to talk about past events .	2	10
Diagnostic, formal and summative	theoretical	Unit eleven: I can do thatl Can /can't Adverbs Requests	Use can/can't to express ability and permission. Use adverbs to describe how something is done (eg, quickly, well). Make and respond to simple requests .	2	11
Diagnostic, formal and summative	theoretical	Unit twelve: Please I'd like... Some and any Like and would like and thank you	Use some/any in affirmative and negative sentences. Express preferences using like and would like. Practice polite expressions such as thank you, please, I'd like ...	2	12
Diagnostic, formal and summative	theoretical	Unit thirteen: here and now Present continuous Present simple & present continuous	Use the present continuous tense to describe current actions. Distinguish between present simple and present continuous in context .	2	13
Diagnostic, formal and summative	theoretical	It's time to go! Future plans Revision writing email and informant letter	Make and talk about future plans using simple future expressions (eg, going to). Review and consolidate key grammar and vocabulary from previous units. Write an email and an informal letter using appropriate format and language .	2	14-15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	First and second week	Report 1	1
2.5	2.5	The third and fourth week	Report 2	2

	2	2	Fifth and sixth weeks	Short Test (1)Quiz	3
	2	2	The seventh and eighth weeks	Short Test (2)Quiz	4
	1	1	Weeks 9 and 10	Short Test (3)Quiz	5
	7.5	7.5	Eleventh and twelfth week	Midterm Exam (1)	6
	7.5	7.5	Weeks 13-14-15	Midterm Exam (2)	7
	40	40	striving	striving	8
	60	60	Final semester exams	Final theoretical exam	9
	%100	%100	100	the total	

12-English language infrastructure

Available	Classrooms, laboratories and workshops
	Required textbooks
	Main references (sources) 2
New Headway (Beginner to Pre-Intermediate) Liz and John Soars - Oxford **Cutting Edge** Longman/Pearson	Recommended books and references (.Scientific journals, reports, etc)
https://learnenglish.britishcouncil.org	Electronic references, Internet sites

Computer Fundamentals Course Description

1. Course name

Computer Principles

2. Course code

NTU 102

3. semester/year

2025-2024 Level 1, First Semester

4. Available attendance forms

Traditional attendance (in person)2. Blended learning

5. Number of study hours (total) / Number of units

30hours / Number of units: 2

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: Assistant Professor Suhail Najm Shihab

:Emaildrsuhel_hwj@ntu.edu.iq

8-(Goals Course (Objectives) Public For the decision maker

,This course aims to provide students with basic knowledge in the field of computers and information technology and enable them to use computers and their basic applications in their academic and professional life.

9-Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

B - Objectives Skills Private As scheduled .

- The computer is used efficiently to run basic programs and manage files.
- Edit documents usingMicrosoft Word in a professional format.
- Creates spreadsheets and applies simple equations usingExcel.

C-Objectives emotional and the value

- Shows interest in self-learning and development in the field of information technology.
- Adheres to digital ethics in the use of computers and the Internet.
- Interacts positively while working within a team on projects and practical applications.

Methods education and learning -
Lessons theory Intense, Model Data with films Educational practical lessons in the computer lab

Evaluation methods-
Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

Explains the basic concepts of information technology and computer components.
Distinguish between different types of software (operating systems, applications, antiviruses).
:Explains the steps for using the basic office suite programsWord ,Excel and ,PowerPoint.
.Explains online communication mechanisms and email etiquette

10-**(Theoretical Vocabulary) Course Structure: Computer Principles**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Diagnostic - Formative - Final	Theoretical + practical	Learn about the basic components of a computer and its importance in daily and professional life.	Introduction to Computer	2	1
Diagnostic - Formative - Final	Theoretical + practical	Distinguish between application software and system software.	Types of software	2	2
Diagnostic - Formative - Final	Theoretical + practical	Explains the function of operating systems and compares their different types.	Operating systems	2	3
Diagnostic - Formative	Theoretical + practical	Creates and edits documents using word processing software.	Word processing(Microsoft Word)	2	4

- Final					
Diagnostic - Formative - Final	Theoretical + practical	Uses spreadsheets to perform simple calculations.	Spreadsheets(Microsoft Excel)	2	5
Diagnostic - Formative - Final	Theoretical + practical	Designs a presentation using various software tools.	Presentations(Microsoft PowerPoint)	2	6
Diagnostic - Formative - Final	Theoretical + practical	Use the Internet and email effectively and safely.	Internet and email	2	7
Diagnostic - Formative - Final	Theoretical + practical	Learn how to organize files and folders on the computer.	File handling	2	8
Diagnostic - Formative - Final	Theoretical + practical	Learn the basics of information protection and securing devices and data.	Cybersecurity	2	9
Diagnostic - Formative - Final	Theoretical + practical	Acquires basic programming concepts using a simple language such asScratch or Python.	Basic programming	2	10
Diagnostic - Formative - Final	Theoretical + practical	Explains database concepts and how to work with them.	Databases	2	11
Diagnostic - Formative - Final	Theoretical + practical	Learn about the types of input and output devices and their functions.	Input and output devices	2	12
Diagnos	Theoretica	Learn how to	Printing and Settings	2	13

tic - Formati ve - Final	+ l practical	prepare a document for printing and adjust printer settings.			
Diagnos tic - Formati ve - Final	Theoretica + l practical	Apply acquired skills in preparing a simple computer project.	Applied project	2	14
Diagnos tic - Formati ve - Final	Theoretica + l practical	Review concepts and skills and prepare for the final exam.	Review and final exam	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12 -Infrastructure Computer Principles

Available	Classrooms, laboratories and workshops
Computer Basics Computer Fundamentals Dr. Ismail , Abdullah Hamid Computer Principles - Moatasem Mohamed El Nour	Required textbooks
	Main references (sources)
Computer Basics - Qais Al-Hadi Babiker Al-Hadi	Recommended books and references - (.Scientific journals, reports, etc)
	Electronic references, Internet sites

B- Objectives Skills Private As scheduled .

Writes grammatically and spelling correctly.
Writes professional letters and reports in correct language.
He speaks Modern Standard Arabic in formal situations.

C_Objectives emotional and the value

Shows interest in improving his language skills.
He is committed to using the Arabic language in a professional and respectful manner.
.It enhances his pride in his Arabic language as a language of communication and identity

Methods education and learning -

Lessons theory Intense, Model Data with films Educational

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

Arabic language course description

1. Course name
Arabic
2. Course code
NTU 103
3. Available attendance forms
Traditional attendance (in person)2. Blended learning
4. semester/year
2025-2024 Level 1, First Semester
5. Number of study hours (total) / Number of total units
Number of units: 2 / hours 30
6. Date this description was prepared
2025/6/11
7. Course supervisor name
Name: Asst. Prof. Dr. Salam Hussein Ali :Emailsalamha-hti@ntu.edu.iq
8-(Goals Course (Objectives) Public For the decision maker This course aims to develop students' language skills in understanding, expression, and writing in Modern Standard Arabic, enabling them to use the language correctly in academic and professional contexts, with a focus on written .and oral communication skills in the workplace

9-Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

Explains the basic rules of the Arabic language (grammar, morphology, spelling).
Distinguish between types of texts and linguistic structures.
.Defines correct styles in formal writing

10-The structure of the Arabic language course (theoretical vocabulary)

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
My formation and conclusion	theoretical	Introduction to Grammatical - Mistakes The Closed Taa, The ,Long Taa and The Open Taa	Distinguish between the closed taa, the open taa, and the long taa in terms of form and function. Corrects common mistakes in using different ta's in Arabic words.	2	1
My formation and conclusion	theoretical	Rules for writing the extended and shortened alif - solar and lunar letters	Distinguish between the extended alif (a) and the shortened alif (i) in terms of written usage. It applies the rules for writing the letter Alif according to its position and linguistic origin.	2	2
My formation and conclusion	theoretical	Dad and Tha	Defines the solar and lunar letters. The definite article "al" is used correctly depending on the type of the first letter .in the word	2	3
My formation and conclusion	theoretical	Writing the hamza	Distinguish between the sounds of Dad and Tha in terms of pronunciation and usage. Corrects common mistakes in writing .words that contain one of the two letters	2	4
My formation and conclusion	theoretical	punctuation marks	He recognizes the types of hamzas ,disconnected, connected, medial) (extreme. Apply the correct spelling rules for writing the hamza in its various .positions	2	5
My formation and conclusion	theoretical	,Noun verb, and the difference between them	Identify the types of punctuation marks and their uses. Use punctuation accurately in writing to improve clarity of meaning.	2	6
My formation and conclusion	theoretical	Effects	Distinguish between noun and verb in terms of meaning and structure. Classifies words in sentences according .to their type: noun, verb, or particle	2	7
My formation and conclusion	theoretical	Number	Explains the types of objects and their functions in the sentence. Analyze sentences to extract different objects	2	8

My formation and conclusion	theoretical	Common language errors applications	Distinguish between numbers in terms of type (singular, compound, conjoined) and agreement. Uses number and countable rules .correctly in different contexts	2	9
My formation and conclusion	theoretical	Noon and - Tanween Meanings of Prepositions	Identify the most common linguistic errors in writing and expression. Corrects common language errors .through practical activities and models	2	10
My formation and conclusion	theoretical	Formal aspects of administrative discourse	Distinguish between the letter noon and tanween in terms of pronunciation and function. Explains the meanings of prepositions in different contexts	2	11
My formation and conclusion	theoretical	Language of administrative discourse	Learn the basic formal components of administrative letters. Adhere to the formal elements when ,writing an administrative letter (header .(.address, date, signature, etc	2	12
My formation and conclusion	theoretical	Introduction to Grammatical - Mistakes The Closed Taa, The ,Long Taa and The Open Taa	Uses formal and direct language that is appropriate to the nature of administrative discourse. Avoid slang and grammatical errors .when writing formal letters	2	13-14
My formation and conclusion	theoretical	Examples of administrative correspondence	Analyzes various forms of ,administrative correspondence (request (.complaint, report, etc. Writes administrative correspondence forms in a correct manner in terms of .form and content	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	First and second week	Report 1	1
2.5	2.5	The third and fourth week	Report 2	2
2	2	Fifth and sixth weeks	Short Test (1)Quiz	3
2	2	The seventh and eighth weeks	Short Test (2)Quiz	4
1	1	Weeks 9 and 10	Short Test (3)Quiz	5
7.5	7.5	Eleventh and twelfth week	Midterm Exam (1)	6
7.5	7.5	Weeks 13-14-15	Midterm Exam (2)	7
40	40	striving	striving	8
60	60	Final semester exams	Final theoretical exam	9
%100	%100	100	the total	

12-Arabic language infrastructure	
Available	Classrooms
1- Clear Dictation: Abdul Majeed Al-Naimi, Daham Al-Kayyal, Dar Al-Mutanabbi Library, Baghdad, 6th ed., 1987 2- Lessons in Language, Grammar, and Spelling for State Employees: Ismail Hamoud Atwan and others, Ministry of Education Press No. (3), Baghdad, 2nd ed., 1984 3- Arabic Language for the Third Intermediate Grade: Fatima Nazim Al-Attabi and others, 1st ed., 2018 4- General Arabic Language for Non-Specialization Departments: Abdul Qadir Hassan Amin and others, Ministry of Higher Education and Scientific Research, 2nd ed., 2000 5- Inspired by Arabic Literature: Haqal Muhammad Amin, Al-Saadoun Press, Baghdad	Required textbooks
	Main references (sources)
	Recommended books and references (.Scientific journals, reports, etc)
	Electronic references, Internet sites

Sports course description

.should be able to identify the most important types of sports and the rules and skills specific to some sports

1. Course name
Sports
2. Course code
NTU 104
3. Available attendance forms
Traditional attendance (in person)2. Blended learning
4. semester/year
2025-2024 Level 1, First Semester
5. Number of study hours (total) / Number of units
30hours / Number of units: 2
6. Date this description was prepared
2025/6/11
7. Course supervisor name
Name: M.M. Mustafa Faridoun Faiq :EmailMustafa.ffhti@ntu.edu.iq
8-(Goals Course (Objectives) Public For the decision maker .Learn about the human body's kinetic mechanism and the common injuries that occur in the human body Applying basic skills for some individual and group games. .Learn about the most important sports laws and regulations and how to manage sports tournaments and competitions

9-Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

To introduce the student to the concepts of physical fitness, health, sports training, and nutrition.
To explain to the student the importance of physical education in preventing diseases and promoting a healthy lifestyle.
To list the components of physical fitness (strength, speed, flexibility, endurance, balance...).

B - Objectives Skills Private As scheduled .

The student must perform basic movement skills: running, jumping, throwing, and balancing.
To perform basic skills in team games (such as passing the ball, shooting, and receiving).
To apply safety rules while practicing sports activities

C-Objectives emotional and the value

The student must demonstrate commitment and discipline in individual and group sports activities.
To interact positively with his colleagues and demonstrate a spirit of cooperation and fair play.
.To appreciate the importance of physical activity in maintaining mental and physical health

Methods education and learning -

Lessons theory Intense, Model Data with films Educational practical lessons in stadiums and sports halls

Evaluation methods-

Commitment And perseverance on the audience, Reports and exams Daily And monthly, exam end the chapter

10-**Structure of the sports curriculum (theoretical and practical vocabulary)**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Written and skill tests	Theoretical practical +	:Sports ,definition importance and types	To introduce the student to the concept of sports and its health and social .importance	2	1
Written and skill tests	Theoretical practical +	Mechanism of human body movement	To explain to the student the basic principles of anatomy and muscle movement.	2	2
Written and skill tests	Theoretical practical +	Common sports injuries	The student must identify the types of injuries (tears, bruises, fractures, etc.).	2	3
Written and skill tests	Theoretical practical +	Basic basketball skills	To learn the names of basic skills (passing, dribbling, shooting, tackling).	2	4
Written and skill tests	Theoretical practical +	International Basketball Laws	To explain the official international ,rules (number of players, playing time (fouls, scoring.	2	5
Written and skill tests	Theoretical practical +	Basic table tennis skills and international rules	,To learn the skills of the game (sending (receiving, hitting.	2	6
Written and skill tests	Theoretical practical +	Basic skills of volleyball and its international laws	,To list the skills of the game (sending (passing, wall, setting.	2	7

Written and skill tests	Theoretical practical +	Swimming	To learn the types of swimming ,freestyle, breaststroke, backstroke) (butterfly.	2	8
Written and skill tests	Theoretical practical +	Basic skills of tennis and its international rules	To determine the basics of the game and the rules (serve, points, errors).	2	9
Written and skill tests	Theoretical practical +	Basic handball skills	To introduce the student to the basic rules of the game, the number of players and the field.	2	10
Written and skill tests	Theoretical practical +	International Handball Laws	To learn about the types of athletics (running, jumping, throwing).	2	11
Written and skill tests	Theoretical practical +	Track and field games ,types) international (game law	,To define skills (passing, shooting (control, covering.	2	12
Written and skill tests	Theoretical practical +	Basic football skills	To explain the types of competitions (...elimination, league, group).	2	13
Written and skill tests	Theoretical practical +	Management of sports competitions and competitions	To implement the regulatory procedures in organizing sporting events.	2	14
Written and skill tests	Theoretical practical +	Sports laws and regulations	To understand sports laws and regulations		15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12 -**Sports infrastructure**

Available	and playgrounds Classrooms

,Foundations of Physical Education and Sports Sciences authored by: Professor Dr. Mahmoud Dawood Al-Rubaie **Educational Curricula and Physical Education Curricula** Authored by: Professor Dr. Munther Hashem Al-Khatib	Required textbooks
	Main references (sources)
Comprehensive Sports Library Educational Science Library - Arab International Academy	Recommended books and references (.Scientific journals, reports, etc)
	Electronic references, Internet sites

Adescription Agricultural Experimental Statistics and Planning Course

This course aims to provide students with the theoretical and practical foundations of statistics and its applications in design and analysis of agricultural and biological experiments. The course focuses on data collection methods, plann agricultural experiments, and statistically analyzing results using appropriate techniques, along with training in the us statistical analysis software such asSPSS ,SAS or ,R.

1. Course name

Statistics and planning of agricultural experiments

2. Course code

TIH101

3. Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4. semester/year

2025-2024 First level, second semester

5. Number of study hours (total)/number of units

45hours / Number of units: 3

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: Assistant Professor Qutaiba Saleh Sheikh

:EmailQutaibah_hwj@ntu.edu.iq

8-(Goals Course (Objectives) Public For the decision maker

Providing the student with the theoretical foundations of statistics

Developing students' skills in designing scientific experiments

Introducing the student to the types of experimental designs

Enabling the student to analyze experimental data

Developing the student's ability to use statistical programs

9-Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

A1- Explains the basic concepts of statistics and experimental design.

Teaching and learning methods: theoretical lectures, classroom discussions, presentations.

Evaluation methods: written tests, assignments.

A2- Distinguish between different experimental designs and their uses -.

Teaching and learning methods: case studies, applied examples, analysis of real experiences.

Evaluation methods: Midterm exam, short reports.

B - Objectives Skills Private As scheduled .

b1.Analyze experimental data using appropriate statistical methods -

b2.Choose the most appropriate experimental design based on the nature of the research problem -

-CObjectives emotional and the value

-c 1 Enhancing students' awareness of the importance of accuracy and scientific integrity in collecting, analyzing, and interpreting data.

-c 2 Developing the spirit of cooperation and teamwork in implementing projects and analyzing experiences within study groups.

C3- Promote respect for others' opinions and appreciation for constructive criticism when discussing and analyzing experimental results.

-c 4 Developing a positive attitude towards using statistical methods in scientific research and agricultural or scientific decision-making.

C5-Instilling discipline and commitment to scientific research ethics

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10- **Course Structure : Statistics and Planning of Agricultural Experiments (Theoretical and Practical (Vocabulary**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watch es	week
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	The concept of statistics and planning agricultural experiments	To introduce the learner to agricultural statistics and its importance in scientific research. To explain the role of statistics in analyzing and interpreting the results of agricultural experiments. To distinguish between basic concepts .such as population, sample, and variable	3	1
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Statistical :measures Centering measures	The learner should list the types of ,centering measures: (arithmetic mean (median, mode. Each metric should be calculated using real or hypothetical data. To compare the centering measures in .terms of use and accuracy	3	2
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Measures of dispersion and variation	To introduce the learner to the concepts of dispersion and difference and their importance. ,To calculate the standard deviation variance, and range. To interpret the dispersion results in light of the performance of different .agricultural treatments	3	3
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Types of agricultural experiments	The learner should be able to distinguish between agricultural experimentation and observation or study. ,To classify experiments into simple ,factorial, field, laboratoryetc. To determine the appropriate type of experiment for each agricultural research problem.	3	4
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Sources of errors and variations in agricultural experiments	The learner should list the sources of error in agricultural experiments ,human, environmental) (methodological. To discuss the impact of these errors on the statistical results. To suggest strategies to reduce errors .and improve the accuracy of results	3	5
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Fundamentals of agricultural experiment design and types of designs used in agricultural experiments	To explain the basic concepts in ,experimental design: (randomization (replication, clustering. To identify the relationship between good design and results analysis. To choose the appropriate design according to the type of data and the purpose of the experiment.	3	6

Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	The concept of statistics and planning agricultural experiments	To explain the basic concepts in ,experimental design: (randomization (replication, clustering. To identify the relationship between good design and results analysis. To choose the appropriate design according to the type of data and the purpose of the experiment	3	7
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Statistical :measures Centering measures	Each metric should be calculated using real or hypothetical data. To compare the centering measures in .terms of use and accuracy	3	8
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Completely randomized design	To familiarize the learner with the completely randomized design and the conditions for its use. To design an experiment using this model. To conduct statistical analysis of the CRD experiment (ANOVA). To interpret the results and identify the .differences between treatments	3	9
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Its ,conditions planning and statistical analysis	The learner should explain the difference betweenCRD andRCBD. To design an experiment using randomized complete blocks. To analyze and interpret the results using appropriate analysis of variance. To determine when this design is best .used in agriculture	3	10
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Randomized Complete Block Design	To familiarize the learner with the complete randomized block design and the conditions for its use. To design an experiment using this model. To conduct statistical analysis of the RCBD experiment (ANOVA). To interpret the results and identify the .differences between treatments	3	11
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Its ,conditions planning and statistical analysis	The learner should explain the difference betweenCRD andRCBD. To design an experiment using randomized complete blocks. To analyze and interpret the results using appropriate analysis of variance. To determine when this design is best .used in agriculture	3	12
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Latin square design	The learner should know the Latin square and determine the conditions for its use. To explain how it is used to control two sources of error. To plan and statistically analyze an .experiment using this design	3	13
Written test Mathematical + problems	Theoretical practical +	Its ,conditions planning	Number of processors = Number of rows = Number of columns Randomness in processor distribution	3	14

interpretation of results Practical activity inside the classroom achievement test		and statistical analysis	Control two major sources of variance The Latin square is plotted as ann × n table.		
Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test	Theoretical practical +	Split panel design ,conditions) planning and statistical .(analysis	To explain the concept and design of split panels. To design an experiment with two different factors, one of which is represented in the main panels and the other in the sub-panels. To analyze the resulting data and interpret the results based on analysis of .variance	3	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
40	40	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
20	20	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure Statistics and Planning Experiments**

Available	Classrooms and laboratory
Available	Required textbooks
	Main references (sources)
https://www.youtube.com/watch?v=c5b66zMRgGE https://www.youtube.com/watch?v=7tLsbV-yAAo	Recommended books and references (.Scientific journals, reports, etc)
https://faculty.uobasrah.edu.iq/uploads/teaching/1694192747.pdf	Electronic references, Internet sites

Adescription Soil Basics Course

,This course aims to introduce students to the basic concepts of soil science, including its composition, physical chemical, and biological components, and its functions in the ecosystem and agricultural system. It also focuses on understanding the processes occurring in soil, its types, classification, and role in supporting plant growth, as well as the factors affecting soil fertility and its management to improve agricultural production.

1. Course name

Soil basics
2. Course Name/Code
TIH103
3. Available attendance forms
Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning
4. semester/year
2025-2024 Level 1, First Semester
5. Number of study hours (total) / Uint
30 hours /2
6. Date this description was prepared
2025/6/5
7. Course instructor's name
Name: M.M. Ahmed Ibrahim Khalaf :Emailahmedibrahim.haw@ntu.edu.iq

8-(Goals Course (Objectives) Public For the decision maker

1- **Providing the student with basic knowledge about the concept of soil and its importance in agriculture and the environment.**
2- **Enabling the student to understand the composition of soil and its physical, chemical and biological components**
3- **Develop the student's ability to interpret the physical and chemical properties of soil and their effect on plant growth.**
4- **Introducing the student to the types of soil and classifying them based on their different properties.**
5- **Providing the student with the basic skills to take soil samples and analyze them in the field or laboratory.**
6- **Raising students' awareness of the importance of soil conservation, methods of improving its fertility, and sustainable management.**

.9Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

A1-The student explained the basic components of soil (mineral, organic, water, air) -
A2-- Distinguish between different types of soil and their physical and chemical properties.
A3- Explain the effect of soil properties on plant growth and fertility -.
A4- Apply soil sampling and analysis skills in the field or laboratory -.
A5- Describe the role of microorganisms in soil and their biological importance -.
A6- Identify agricultural practices that help maintain soil fertility and quality -.

B - Objectives Skills Private As scheduled .

B1- Theoretical lectures using presentations.

B2- Practical activities in laboratories and fields to take and analyze soil samples.

B3- Case studies and class discussions to apply the concepts -.

-CObjectives emotional and the value

-c 1 Raising awareness of the importance of soil as a vital natural resource that must be preserved.

-c 2 To enhance students' respect for the environment and for soil as an essential part of the agricultural ecosystem.

-C 3 Develop a positive attitude towards adopting sustainable agricultural practices to maintain soil health.

-c 4 Instilling the spirit of cooperation and teamwork in field and practical activities related to soil studies.

-C 5 .Encourage students to be responsible in using natural resources and not to cause soil degradation

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10-Course Structure: Soil Basics (Theoretical Vocabulary)					
road Evaluation	**road education**	**Unit name/topic**	**Outputs learning Required**	**watches**	**week**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture , explanations ,discussions , questions PowerPoint ,presentations extracurricular interactions and activities, field observations	Soil science and knowledge of the branches it includes, the importance of each branch, and the goal of soil analysis	Understanding soil properties Soil classification study Land and Soil Management soil analysis soil-plant interaction	1	**the first**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture , explanations ,discussions , questions PowerPoint ,presentations extracurricular interactions and activities, field observations	Soil morphological characteristics	Soil horizons and horizon symbols, soil formation factors and processes	1	**the second**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture ,explanations ,discussions ,questions PowerPoint ,presentations extracurricular interactions and activities, field observations	Physical properties of soil	,Soil texture, soil structure , soil aeration, porosity density, soil water holding ,capacity, moisture content water conductivity All these characteristics and their relationship to plants	1	**the third**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture , explanations ,discussions , questions PowerPoint ,presentations extracurricular interactions and activities, field observations	Chemical properties of soil	Knowing the acidity and alkalinity of the soil according to the American Salinity Laboratory classifications, oxidation and reduction, electrical conductivity, cations and ,anions distributed in the soil adsorption and precipitation ?What happens in the soil	1	**Fourth**
semester exam Monthly exam jugs	Lecture ,explanations ,discussions ,questions PowerPoint ,presentations extracurricular interactions and activities, field observations	soil water	Types of water in the soil - microscopic - capillary) (gravity	1	**Fifth**
semester exam Monthly exam jugs	Lecture , explanations ,discussions	soil temperature	Understanding the effect of soil temperature on plant growth	1	**Sixth**

Oral tests	, questions PowerPoint ,presentations extracurricular interactions and activities, field observations		soil temperature measurement Mechanical and biological effects of soil temperature Thermal requirements of different plants Factors affecting soil temperature The relationship between soil temperature and water		
semester exam Monthly exam jugs Oral tests	Lecture , explanations ,discussions , questions PowerPoint ,presentations extracurricular interactions and activities, field observations	Organocolloids	Understanding organic colloids in soil Organic colloids and soil fertility The role of organic colloids in water retention Interaction of organic colloids with other materials in the soil Organic colloids and their effect on soil biological activity Organic colloids and nutrient absorption capacity	1	**Seventh**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture , explanations ,discussions , questions PowerPoint ,presentations extracurricular interactions and activities, field observations Images fromGPS	clay minerals	The effect of clay minerals on soil fertility Chemical effects of clay minerals The difference between kaolinite and montmorillonite Factors affecting the formation of clay minerals The interaction between clay minerals and nutrients in the soil	1	**The eighth**
semester exam Monthly exam jugs Oral tests	Lecture , explanations ,discussions , questions PowerPoint ,presentations extracurricular interactions and activities, field observations	cation exchange capacity The saturation rate of the bases	The concept of cation exchange capacity Its role in influencing soil fertility Factors affectingCEC The concept of base saturation ratio and how to calculate it	1	**Ninth**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture ,explanations ,discussions ,questions PowerPoint ,presentations extracurricular interactions and activities, field observations	Electrical conductivity and the percentage of adsorbed sodium	What is meant byEC ? Methods of estimating it in the field and laboratory American classification of salts according to the American Salinity Laboratory table Classification and tolerance of plants to salinity	1	**tenth**
semester exam Monthly exam jugs Oral tests Tests through field	Lecture ,explanations ,discussions ,questions PowerPoint	soil salinity	What are the specifications of ?saline soil Identifying the Shura and Sabkha soils ,Types of salts present in soil	1	**eleventh**

and laboratory observations	,presentations extracurricular interactions and activities, field observations		their solubility and the degree .of effect on plants		
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture ,explanations ,discussions ,questions PowerPoint ,presentations interactions and extracurricular .activities	Nutrients and their importance	?What is a nutrient Learn about the divisions of macro and micronutrients and their importance	1	**twelfth**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture ,explanations ,discussions ,questions PowerPoint ,presentations extracurricular interactions and activities, field observations	Calcareous and gypsum soils	What are lime and gypsum in soil , how to estimate them in the laboratory, and how to distinguish between these ?soils	1	**thirteenth**
semester exam Monthly exam jugs Oral tests Tests through field and laboratory observations	Lecture ,explanations ,discussions ,questions PowerPoint ,presentations extracurricular interactions and ,activities laboratory observations	Preparation of saturated dough and soil suspension	Saturated dough specifications How to prepare and estimate it to measurepH, ions and salinity	1	**fourteenth**
semester exam Monthly exam jugs Oral tests	Lecture ,explanation ,discussion ,questions PowerPoint ,presentation	Soil classifications	,Russian classification modern American classification, and how it began	1	**fifteenth**

Course Structure: Basics of Soil and Practical Vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Diagnostic - Formative - Final	practical	Watch the softness of the soil.	Watch the softness of the soil.	1	1
Diagnostic - Formative - Final	practical	Watch the softness of the soil.	Watch the softness of the soil.	1	2
Diagnostic - Formative - Final	practical	Collecting soil samples .	Collecting soil samples.	1	3
Diagnostic - Formative - Final	practical	Preparing samples and estimating humidity.	Preparing samples and estimating humidity.	1	4
Diagnostic - Formative - Final	practical	Estimation of apparent and true density and porosity.	Estimation of apparent and true density and porosity.	1	5
Diagnostic - Formative - Final	practical	Soil texture assessment .	Soil texture assessment.	1	6
Diagnostic - Formative - Final	practical	Preparing the saturated paste and soil suspension and determining the saturation percentage.	Preparing the saturated paste and soil suspension and determining the saturation percentage.	1	7
Diagnostic - Formative - Final	practical	Measurement of soil reaction and electrical conductivity of soil extract.	Measurement of soil reaction and electrical conductivity of soil extract.	1	8
Diagnostic - Formative - Final	practical	Qualitative detection of ions.	Qualitative detection of ions.	1	9
Diagnostic - Formative - Final	practical	Estimation of cations.	Estimation of positive ions.	1	10
Diagnostic - Formative - Final	practical	Estimation of anions.	Estimation of negative ions.	1	11
Diagnostic - Formative - Final	practical	Soil humus assessment	Estimation of organic matter in soil.	1	12
Diagnostic - Formative - Final	practical	Estimation of total carbonates in soil.	Estimation of total carbonates in soil.	1	13
Diagnostic - Formative - Final	practical	Estimation of gypsum in soil.	Estimation of gypsum in soil.	1	14
Diagnostic - Formative - Final	practical	Methods for measuring cation exchange capacity andSAR.	Estimation of cation exchange capacity and exchangeable sodium ratio in soil.	1	15

11-Course Evaluation				
Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure Soil Basics**	
Available	Classrooms, laboratory and field
Soil basics ,**Principles of Soil Science** , Dr. Abdullah Najm Al-Ani, 1980 College of Agriculture, University of Baghdad - ,Fundamentals of Soil Science, Dr. Abdul Fattah Al-Ani Technical Education Authority ,1984	Required textbooks
	Main references (sources)
,Soil Fertility and Fertilization, Dr. Kamel Saeed Jawad Higher Education Press ,1988 4 Soil Reclamation and Improvement , Dr. Shafiq Ibrahim Abdel Aal, 1981, University of Sulaymaniyah	Recommended books and references (.Scientific journals, reports, etc)
Soil chemical analysis – m – l – Jackson, new Delhi , 1973 5 Text book of soil chemical analysis. p. r . Hesse , New York , 1971 https://fagr.stafpu.bu.edu.eg/Agronomy/2331/crs-6377/Agronomy.pdf	Electronic references, Internet sites

Adescription Horticulture Basics Course

This course aims to introduce students to the basic concepts of horticulture and to study the scientific and applied foundations upon which the production and care of horticultural plants are based. The course includes an introduction to the main horticultural divisions (such as fruit, vegetable, and ornamental horticulture) and the basic agricultural processes related to them, such as propagation, irrigation, fertilization, pruning, and cultivation. It also covers the environmental factors affecting plant growth, different planting systems, and the principles of horticultural design.

The course focuses on developing students' practical skills through practical application, in addition to promoting positive

values and behaviors related to the agricultural and environmental fields.

1. Course name

Gardening Basics

2. Course code

PPT101

3. Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4. semester/year

2025-2024 Level 1, First Semester

5. Number of study hours (total)/number of units

45hours/3 units

6. Date this description was prepared

2025/6/11

7. Course instructor's name

Name: Assistant Professor Jassim Mohammed Khalaf
:EmailDrjasim_hwj@ntu.edu.iq

8-(Goals Course (Objectives) Public For the decision maker

1- identification The student In concept gardening And its importance
2- to understand foundations Scientific For growth And development plants Gardening
3- Acquisition The student Skills Basic For care With plants
4- classification crops Gardening
5- development skills the job Field And the laboratory
6- Recognition on Tools and equipment used in gardening

.9Outputs The decision and methods education and learning and evaluation

-AObjectives cognitive

A1- Define the basic concepts of horticulture and its economic and environmental importance.
A2- Distinguish between types of horticultural crops (fruits, vegetables, ornamental, medicinal).
A3- Explain the effect of environmental factors on the growth and development of horticultural plants.
. A4- Describes the basic methods of propagation, fertilization, irrigation, and pruning

B - Objectives Skills Private As scheduled .

B1 -Mastering plant propagation skills
B2- Ability to prepare soil and planting media
.B3- Carrying out irrigation, fertilization, pruning, weeding, and thinning operations
B4- Distinguishing between symptoms of diseases and pests
B5- Using greenhouses or hydroponic systems (soilless cultivation) in horticulture
B6- Design a small garden or a home garden

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

C-Objectives emotional and the value

C1- Developing environmental awareness , enhancing students' awareness of the .importance of plants and their role in maintaining environmental balance
C2-Instilling the value of manual labor and self-reliance
C3-Enhancing the love of nature and plants
C4-Consolidating the values of cooperation and teamwork
C5-Commitment to ethical and professional behavior
C6-Encouraging positive trends towards sustainable agriculture

Course structure - 10 Gardening Essentials (Theoretical Vocabulary)					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Diagnostic formative Final	theoretical	Environmental factors	The impact of environmental factors on the production of horticultural crops (weather (factors	1	1
Diagnostic formative Final	theoretical	Environmental factors	The impact of environmental factors (environmental factors) on the production of .horticultural crops	1	2
Diagnostic formative Final	theoretical	Reproduction	Methods of propagating .garden plants include: 1 Sexual reproduction 2. Asexual .(vegetative) reproduction	1	3
Diagnostic formative Final	theoretical	crop problems	Vegetable crops and their .production problems in Iraq	1	4
Diagnostic formative Final	theoretical	Environmental factors	Factors affecting the growth of :vegetable crops include Weather factors 2. Soil .1 factors 3. Plant growth .regulators	1	5
Diagnostic formative Final	theoretical	Methods of propagating seedlings	Seedlings and their production their benefits - their effect on - plant growth - acclimatization - or hardening of seedlings .beds	1	6
Diagnostic formative Final	theoretical	agricultural operations	Vegetable crop service .operations	1	7
Diagnostic formative Final	theoretical	greenhouse conditions	Production of vegetables in protected conditions (protected .(agriculture	1	8
Diagnostic formative Final	theoretical	Types of fruits and methods of production	.Fruit orchard production	1	9
Diagnostic formative Final	theoretical	Pruning methods and timing	Growing and pruning fruit .trees	1	10
Diagnostic formative Final	theoretical	Grape cultivation and pruning	- Vineyard production .breeding and pruning	1	11
Diagnostic formative Final	theoretical	Citrus fruits and their production methods	.Citrus production	1	12
Diagnostic formative Final	theoretical	Ornamental plants and their identification	The importance of ornamental plants and their botanical .classifications	1	13
Diagnostic formative Final	theoretical	Garden and park .planning	Basic rules for planning .gardens and parks	1	14
Diagnostic formative Final	theoretical	Garden shapes and .systems	.Garden shapes and systems	1	15

Course Structure: Fundamentals of Horticulture (Practical Vocabulary)					
Evaluation method	Teaching method	/ Unit name topic	Required learning outcomes	watches	week
,Diagnostic formative and final	practical	Crop Service	Learn about the most important horticultural . service operations	2	1
,Diagnostic formative and final	practical	Field visit to observe the orchard species	Visit one of the nearby orchards and see some trees ,apple, pear, quince, apricot) (peach, pear	2	2
,Diagnostic formative and final	practical	Citrus propagation methods	Identify the types of citrus fruits, distinguish between them, and how they are .propagated	2	3
,Diagnostic formative and final	practical	Palm tree service and propagation	Palm trees - methods of propagation - service .operations	2	4
,Diagnostic formative and final	practical	Olive service and production	Olives - Propagation methods .Service operations -	2	5
,Diagnostic formative and final	practical	Vegetable Crop Service	Learn about some horticultural vegetables	2	6
,Diagnostic formative and final	practical	Vegetable crop propagation	- Methods of propagation flowers and fruits	2	7
,Diagnostic formative and final	practical	Soil preparation and cultivation for horticultural crops	Preparing the soil of the dhal planting some horticultural - crop seeds	2	8
,Diagnostic formative and final	practical	Field visits to orchards	Visiting nearby gardening stations - Writing student reports	2	9
,Diagnostic formative and final	practical	Learn about nurseries and how to plan them	Planning garden walkways .and learning about nurseries	2	10
,Diagnostic formative and final	practical	plant diseases	Some diseases and insect pests that affect horticultural crops	2	11
,Diagnostic formative and final	practical	Machines and equipment used	Learn about the machines and tools used in fruit picking .operations	2	12
,Diagnostic formative and final	practical	Storing fruits after harvest	Methods of storing fruits after harvest - Marketing	2	13
,Diagnostic formative and final	practical	Service operations in gardens	Carrying out some service operations in the institute's gardens	2	14
,Diagnostic formative	practical	Visit gardening stations	Discussion of student reports written after visiting the	2	15

and final			gardening stations		

11-Course Evaluation				
Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**	
Gardening Basics	Required textbooks
Principles of Horticulture, Dr. Bahram Khorshid ,Al-Dawudi, 1987 - College of Agriculture .University of Salah Al-Din	Main references (sources)
,Basant Science, Dr. Salomi, Mr. Hussam Ali Ghaleb .College of Agriculture, University of Basra -1981 ,Fundamentals of Horticulture, D. B. Ormond, T. L. Sen N. S. Andrews, 1967, Dar Al-Ma'rifa	Recommended books and references (.scientific journals , reports , etc)
https://drive.google.com/file/d/1jeOsYFId1NiCYBrICqYVqrwcqol8cSPa/view	Electronic references , Internet sites

Adescription Crops Fundamentals Course

This course aims to introduce students to the basic concepts of crop science. It covers the general principles of field crop production, their types, and the environmental factors affecting their growth and production. The course includes a study of soil, climate, cropping systems, planting dates, crop rotation, and various agricultural operations such as plowing, irrigation, fertilization, pest control, and harvesting.

1. Course name

Crop basics
2. Course code
PPT102
3. Available attendance forms
Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning
4. semester/year
2025-2024 Level 1, First Semester
5. Number of study hours (total)
45hours/3 units
6. Date this description was prepared
2025/6/11
7. Course instructor's name
Name: Assistant Professor Qutaiba Saleh Sheikh :EmailQutaibah_hwj@ntu.edu.iq
8-(Goals Course (Objectives) Public For the decision maker Introducing students to the basics of crop science Developing students' understanding of the importance of field crops Introducing the student to different types of crops Explain the environmental factors affecting crop growth Explanation of basic agricultural operations Linking the theoretical aspect with practical application

.9Outputs The decision and methods education and learning and evaluation
-AObjectives cognitive -1A Explains the basic concepts of field crop science. 2A- Distinguish between different types of crops and their classifications. 3A- Explain the effect of environmental and agricultural factors on crop growth and production.

B- Objectives Skills Private As scheduled .

b- Analyze common agricultural problems such as poor production or poor-1 selection of planting dates.

2b- Compare different agricultural systems in terms of efficiency and productivity.

-CObjectives emotional and the value

C1- Developing environmental awareness , enhancing students' awareness of the .importance of plants and their role in maintaining environmental balance

C2-Instilling the value of manual labor and self-reliance

C3-Enhancing the love of nature and plants

C4-Consolidating the values of cooperation and teamwork

C5-Commitment to ethical and professional behavior

C6-Encouraging positive trends towards sustainable agriculture

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10-**Course Structure: Fundamentals of Theoretical Vocabulary Crops**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
- Diagnostic - Formative - Final	theoretical	Identify field crops and classify field .crops	To introduce the learner to the field crop The learner should list the divisions of .field crops To distinguish between types of field crops	1	1
Diagnostic - Formative - Final	theoretical	Soil service ,operations - tillage its importance, when ,to perform it .judging good tillage	To introduce the learner to the concept of agricultural plowing: To explain to the learner the importance of plowing The learner should determine the .appropriate time to plow The learner evaluates the quality of .plowing	1	2
Diagnostic - Formative - Final	theoretical	Smoothing, its importance, benefits ,of leveling adjustment and .dividing the field	To explain to the learner the concept of smoothing and leveling, the importance of modifying the soil surface and dividing the field. To explain the benefits of these processes ,in improving water distribution facilitating agriculture, and reducing competition between plants. To identify the tools and machines used .in these operations	1	3
Diagnostic - Formative - Final	theoretical	Crop cultivation methods, factors affecting each method, crop service operations, patching ,and weeding ,thinning ,fertilization irrigation, pest .control	To list the different methods of planting crops (seeding, manual, mechanical) and the advantages and disadvantages of each . To discuss the factors affecting the choice of cultivation method, such as soil type, climate, and available resources. To evaluate the effect of each method on .crop growth and quality	1	4
Diagnostic - Formative - Final	theoretical	Sunflower .cultivation	To familiarize the learner with the specifications of the sunflower crop. To determine the appropriate environmental conditions for its cultivation. To explain the stages of cultivation from soil preparation to harvest. To discuss the importance of the crop to .the local economy and related industries	1	5
Diagnostic - Formative - Final	theoretical	.Cotton cultivation	The learner will identify the environmental characteristics suitable for cotton cultivation. To discuss the stages of cotton cultivation from land preparation to harvest. To evaluate the importance of cotton crops in the agricultural and industrial .economy	1	6
Diagnostic -	theoretical	Yellow corn .cultivation	To familiarize the learner with the specifications of the yellow corn crop. To determine the appropriate	1	7

Formative - Final			environmental conditions for its cultivation. To explain the stages of cultivation from soil preparation to harvest. To discuss the uses of the crop in .nutrition and industry		
Diagnostic - Formative - Final	theoretical	.Rice cultivation	The learner will identify the environmental characteristics suitable for rice cultivation. To discuss the stages of rice cultivation from land preparation to harvest. To assess the importance of rice crop in .food security	1	8
Diagnostic - Formative - Final	theoretical	.Sesame cultivation	To familiarize the learner with the specifications of the sesame crop. To determine the appropriate environmental conditions for its cultivation. To explain the stages of cultivation from soil preparation to harvest. To discuss the uses of the crop in the .food industry	1	9
Diagnostic - Formative - Final	theoretical	.Soybean cultivation	The learner will identify the environmental characteristics suitable for soybean cultivation. To discuss the stages of soybean cultivation from land preparation to harvest. To evaluate the importance of soybean crop in human and animal nutrition	1	10
Diagnostic - Formative - Final	theoretical	- Wheat cultivation origin - suitable environmental conditions - planting .date	The learner will identify the environmental characteristics suitable for wheat cultivation. To discuss the stages of wheat cultivation from land preparation to harvest. To assess the importance of wheat crop .in food security	1	11
Diagnostic - Formative - Final	theoretical	- Agriculture - Fertilization - Harvesting stages Transformation processes for the .grain industry Sugar beet cultivation - suitable environmental factors, planting date and method, sowing and fertilization	To familiarize the learner with the specifications of sugar beet crop. To determine the appropriate environmental conditions for its cultivation. To explain the stages of cultivation from soil preparation to harvest. To discuss the conversion processes of .sugar beet production	1	12
Diagnostic - Formative - Final	theoretical	,Irrigation, maturity ,harvesting date conversion processes and factors affecting .sucrose content Broad bean cultivation – suitable environmental factors – most – important varieties	The learner will identify the environmental characteristics suitable for growing broad beans. To discuss the stages of planting broad beans, from preparing the land to harvesting. To evaluate the importance of fava beans .in human nutrition	1	13

		– cultivation cultivation methods –			
Diagnostic - Formative - Final	theoretical	- Weeding - weeding fertilizing - ripening .picking - harvesting - Lentil and chickpea cultivation - suitable environmental factors - planting - date - hoeing - weeding	To familiarize the learner with the specifications of lentil and chickpea crops. To determine the appropriate environmental conditions for their cultivation. ,To explain the stages of their cultivation from soil preparation to harvest. To discuss the importance of the two .crops in food security	1	14
Diagnostic - Formative - Final	theoretical	- Fertilization ripening - harvesting .harvesting - .Agricultural tools	The learner should list the basic agricultural tools used in various operations. To explain the function of each tool and how to use it correctly. To discuss the importance of tool .maintenance	1	15

Syllabus structure: Fundamentals of practical vocabulary crops-

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Diagnostic - Formative - Concluding	practical	- Field Crop Seeds Seed Structure and Importance of Its Parts	The importance of identifying field crop seeds - learning about the structure of the seed and the importance of its parts - training students to identify field crop seeds and present the results in the form .of a report	2	1
Diagnostic - Formative - Final	practical	Students carry out soil preparation operations on the farm (ploughing and - (smoothing learning about the machines and tools used for this purpose and the characteristics of .each one	Students carry out soil preparation operations on the farm (ploughing and smoothing) - learning about the machines and tools used for this purpose and the .characteristics of each one	2	2
Diagnostic - Formative - Final	practical	Students carry out soil preparation operations on the farm - learning about the machines and tools used for this purpose and the characteristics of .each one	Students carry out soil preparation operations on the farm - learning about the machines and tools used for this purpose and the .characteristics of each one	2	3
Diagnostic - Formative - Final	practical	Students practice productive barley cultivation on the .farm using seeds	Students practice productive barley cultivation on the farm .using seeds	2	4
Diagnostic - Formative - Final	practical	Students observe field crops grown in other ways in the nursery/on Meroz/Ntra...and the characteristics of each one. Students record their observations and submit them in the .form of a report	Students observe field crops grown in other ways in the nursery/on Meroz/Ntra...and the characteristics of each one. Students record their observations and submit them .in the form of a report	2	5
Diagnostic - Formative - Final	practical	Students conduct germination tests on seeds and explain the importance of conducting these tests and the conditions that must be followed during .implementation	Students conduct germination tests on seeds and explain the importance of conducting these tests and the conditions that must be followed during .implementation	2	6
Diagnostic formative Final	practical	Students carry out field crop service operations - carrying out patching and fertilization	Students carry out field crop service operations - carrying out patching and fertilization operations according to the - needs of field crops	2	7

		operations according to the needs of field crops - irrigating .field crops	.irrigating field crops		
Diagnostic - Formative - Final	practical	Students fertilize the .crops	.Students fertilize the crops	2	8
Diagnostic - Formative - Final	practical	Students combat ,weeds by weeding hoeing, or spraying .with pesticides	Students combat weeds by weeding, hoeing, or spraying .with pesticides	2	9
Diagnostic - Formative - Final	practical	Training students to plan and design agricultural courses that suit the country's regions and different environmental .conditions	Training students to plan and design agricultural courses that suit the country's regions and different environmental .conditions	2	10
Diagnostic - Formative - Final	practical	Showing scientific films and slides related to methods and techniques of .field crop production	Showing scientific films and slides related to methods and techniques of field crop .production	2	11
Diagnostic - Formative - Final	practical	Training students to use devices to measure the quality of produce Estimating oil) ,percentage estimating protein ,percentage estimating moisture .(percentage	Training students to use devices to measure the quality of produce ,Estimating oil percentage) estimating protein percentage, estimating .(moisture percentage	2	12
Diagnostic - Formative - Final	practical	Training students on methods of examining and ,grading crop seeds the devices and tools used for this purpose, and the characteristics of .each	Training students on methods of examining and grading crop seeds, the devices and ,tools used for this purpose .and the characteristics of each	2	13
Diagnostic - Formative - Final	practical	Observing and diagnosing the growth of existing winter field crops in .the field	Observing and diagnosing the growth of existing winter .field crops in the field	2	14
Diagnostic - Formative - Final	practical	Discussing the students' reports submitted by them on the various activities and tasks – they carried out watching films and .field models	'Discussing the students reports submitted by them on the various activities and – tasks they carried out watching films and field .models	2	15

11-Course Evaluation

Relative	degree	Calendar appointment	Evaluation methods	T

% weight		(week)		
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**	
Available	Required textbooks
	Main references (sources)
https://www.noor-book.com/%D9%83%D8%AA%D8%A7%D8%A8-%D8%A7%D9%84%D9%85%D8%AD%D8%A7%D8%B5%D9%8A%D9%84-%D8%A7%D9%84%D8%AD%D9%82%D9%84%D9%8A%D8%A9-pdf#google_vignette https://www.faculty.uobasrah.edu.iq/uploads/teaching/1651879561.pdf https://hama-univ.edu.sy/newsites/agricultural/wp-content/uploads/2019/10/%D8%A3%D8%B3%D8%A7%D8%B3%D9%8A%D8%A7%D8%AA-%D8%A7%D9%84%D9%85%D8%AD%D8%A7%D8%B5%D9%8A%D9%84-%D8%A7%D9%84%D8%AD%D9%84%D9%82%D9%84%D9%8A%D8%A9-%D8%A7%D9%84%D8%AC%D9%84%D8%B3%D8%A91.pdf	Recommended books and references (.Scientific journals, reports, etc)
	Electronic references, Internet sites

Plant Protection Course Description

,This course aims to introduce students to the fundamentals of plant protection against various agricultural pests (ins fungi, viruses, nematodes, etc.), with a focus on the scientific and applied principles of pest control. The course includ study of pest behavior and spread, methods of diagnosing them, and their economic impact on crops. It also revi Integrated Pest Management(IPM) strategies using agricultural, biological, chemical, and mechanical methods. The co includes a practical component that allows students to identify real pest samples and apply detection and control meth in the field or laboratory.

1. Course name
plant protection
2. Course code

PPT103
3. Available attendance forms
Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning
4. semester/year
2025-2024 Level 1, First Semester
5. Number of study hours (total)/units
30 hours/2 units
6. Date this description was prepared
2025/6/11
7. Course instructor's name
Name: M.M. Ahmed Abdel Khalaf :e-mail ahmedabd-hwj@ntu.edu.iq
8-(Goals Course (Objectives) Public For the decision maker Learn about the general characteristics of insects and their taxonomic position within the animal kingdom. Study of the external and internal structure of insects and the functions of their organs. Understanding the growth, metamorphosis and reproduction patterns of insects. Distinguish between different insect orders, their most important characteristics and representatives. Learn about the importance of insects and their role in the ecosystem and humanity. .Providing students with basic skills in collecting and classifying insects

.9Outputs The decision and methods education and learning and evaluation
A-Objectives cognitive **A- Identify the general characteristics of insects and their taxonomic position within arthropods-1.** **2A - Describe the external and internal structure of insect bodies and the functions of their vital systems.** **3A- Distinguish between the types of growth and transformation in insects.** **4A- Classifying insects into their different orders and identifying the most important species representing each order.**

B - Objectives Skills Private As scheduled .

B1- Analysis of the ecological and economic roles of insects (beneficial and harmful).

B2- Acquire skills in collecting, preserving, taxidermy and classifying insects using appropriate tools.

C-Objectives emotional and the value

C- Developing interest and scientific curiosity towards the world of insects and their role in the ecosystem -1.

-c 2 Raising environmental awareness of the importance of insects in biological balance, and their role in pollination and biological control.

C- Establishing scientific values such as accuracy, objectivity, and systematic observation in the study of living organisms -3.

-c 4 Deepening respect for life in all its forms, including small creatures that may be considered harmful from a common perspective.

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10-**theoretical vocabulary Plant protection** **Course structure**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Diagnostic - Formative Final-	theoretical	Harm and damage of insects and their benefits.	the harms and To know benefits of insects.	1	1
Diagnostic - Formative Final-	theoretical	The spread of insects in nature.	To list the factors for the success of insects and their spread in nature.	1	2
Diagnostic - Formative Final-	theoretical	Insect reproduction and growth.	To mention the reproduction and growth of insects.	1	3
Diagnostic - Formative Final-	theoretical	Types of nutrition in insects.	To list the types of nutrition in insects.	1	4
Diagnostic - Formative Final-	theoretical	Environments in which insects live.	To explain the environments in which insects live.	1	5
Diagnostic	theoretical	Non-insect animal pests, order Acaridae.	,Non-insect animal pests order Acaridae.	1	6

- Formative Final-					
Diagnostic - Formative Final-	theoretical	Non-insect animal pests, order Rodentia.	,Non-insect animal pests order Rodentia.	1	7
Diagnostic - Formative Final-	theoretical	Non-insect animal pests, order of birds and rodents.	,Non-insect animal pests order of birds and rodents.	1	8
Diagnostic - Formative Final-	theoretical	The economic importance of diseases	The economic importance of plant diseases and the losses resulting from them.	1	
Diagnostic - Formative Final-	theoretical	Some definitions in plant pathology.	Some definitions in plant pathology.	1	10
Diagnostic - Formative Final-	theoretical	The way the cause enters.	The way in which the pathogen enters plant tissue .	1	11
Diagnostic - Formative Final-	theoretical	Methods of transmission and spread of plant diseases.	Methods of transmission and spread of plant diseases .	1	12
Diagnostic - Formative Final-	theoretical	Factors predisposing to plant diseases.	Factors predisposing to plant diseases.	1	13
Diagnostic - Formative Final-	theoretical	Fungi, their - characteristics ,methods of nutrition methods of reproduction and division.	- Fungi, their characteristics ,methods of nutrition methods of reproduction and division.	1	14
Diagnostic - Formative Final-	theoretical	Nematodes as plant pathogens - Nematode body structure - Type of damage they cause	Nematodes as plant pathogens - Nematode body structure	1	15

Course Structure Plant Protection Practical Vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and summative	practical	External appearance of insects	The external appearance of - insects	1	1
,Diagnostic formative and summative	practical	- The eyes.	insect eyes	1	2
,Diagnostic formative and summative	practical	Mouth parts and their modifications	Mouth parts and their modifications - thorax in insects leg appendages and their - modifications - wings and their modifications.	1	3
,Diagnostic formative and summative	practical	The abdomen in insects - their appendages.	The abdomen in insects - their appendages.	1	4
,Diagnostic formative and summative	practical	Types of larvae and pupae.	- Metamorphosis in insects types of larvae and pupae.	1	5
,Diagnostic formative and summative	practical	Principles of insect classification.	Principles of insect classification, their positions in the animal kingdom, the most important animal phyla and their characteristics.	1	6
,Diagnostic formative and summative	practical	Dream rank - general - characteristics - external appearance the most important factors harmful to plants.	Dream rank - general characteristics - external appearance - the most important factors harmful to plants.	1	7
,Diagnostic formative and summative	practical	Rodents - external appearance - species common in Iraq.	- Rodents - external appearance species common in Iraq.	1	8
,Diagnostic formative and summative	practical	birds	Birds - Species harmful to agricultural crops - Species common in Iraq.	1	9
,Diagnostic formative and summative	practical	Some laboratory - instructions - equipment and tools - light microscope practical application on the equipment and its maintenance.	- Some laboratory instructions equipment and tools - light microscope - practical application on the equipment and its maintenance.	1	10
,Diagnostic formative and summative	practical	Types of culture media - preparing them - - sterilizing the media how to place them in dishes.	- Types of culture media preparing them - sterilizing the media - how to place them in dishes.	1	11

,Diagnostic formative and summative	practical	Isolation of pathogens from plant parts, seeds and soil.	Isolation of pathogens from plant parts, seeds and soil.	1	12
,Diagnostic formative and summative	practical	Examine the isolation results and diagnose the causes.	Examine the isolation results and diagnose the causes.	1	13
,Diagnostic formative and summative	practical	Carrying out a pest control operation for one of the parts spread throughout the institute diagnosing the - disease and determining the appropriate pesticide.	Carrying out a pest control operation for one of the parts - spread throughout the institute diagnosing the disease and determining the appropriate pesticide.	1	14
,Diagnostic formative and summative	practical	Diseases caused by worms (root knot ,disease of vegetables slow decay of citrus fruits, and wheat (warts.	Diseases caused by worms (root knot disease of vegetables, slow decay of citrus fruits, and wheat (warts.	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**

Available	Halls, laboratory and field
plant protection - Field Crop Pests - Kamel Salman Jabr - Imad Ahmed Mahmoud - 1990 Ministry of Education Press	Required textbooks
General Entomology - Dr. Mohamed Ismail Introduction to Entomology - Dr. Saad Abdel Majeed and others	Main references (sources)
	Recommended books and references (.Scientific journals, reports, etc)
https://agriculture.uodiyala.edu.iq/wp-content/uploads/2023/09/%D9%83%D9%84-	Electronic references, Internet sites

%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA-%D8%A7%D8%B3%D8%B3-%D9%88%D9%82%D8%A7%D9%8A%D8%A9-%D8%AF.-%D8%AD%D8%B3%D9%8A%D9%86-%D8%B9%D9%84%D9%8A-%D9%85%D8%B7%D9%86%D9%8A-%D9%82%D8%B3%D9%85-%D8%A7%D9%84%D8%AA%D8%B1%D8%A8%D8%A9-1.pdf	

Course Description Nurseries and forests

This course aims to introduce students to the basics of establishing and managing forest plant nurseries and their rol reforesting degraded areas and conserving biodiversity. The course includes a study of nursery types, plant propagat methods, soil preparation, seedling care, and strategies for managing natural and agricultural forests.

1. Course name

Nurseries and forests

2. Course code

PPT 104

3. Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4. semester/year

First Level First Semester 2025-2024

5. Number of study hours (total)/number of units

30 hours / Number of units: 2

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: M.M. Ahmed Abdel Khalaf
:Emailahmedabd-hwj@ntu.edu.iq

8. Course objectives (general objectives of the course)

1. The student understands the role of nurseries in agriculture and plant production.
2. The student learns about the types of nurseries and their classifications (governmental, private, commercial, research).
3. Identify the environmental and administrative factors that affect the success of the nursery.
4. Study of different methods of plant propagation (sexual and asexual).
5. ,Practical training on propagation techniques such as cuttings, layering, grafting tissue culture, and seed cultivation.
6. Gain skills in preparing agricultural environments, sterilizing soil, and caring for plants.

9. Course outcomes , teaching, learning and assessment methods

أ- Cognitive objectives

.A-1 Explains basic concepts and terminology related to sexual and asexual propagation of plants.

A. Explain the importance of the nursery stage in producing strong and suitable vegetable seedlings for -2 planting.

A. Classify the types of nurseries (open, protected, air-conditioned) and compare their characteristics -3 and purposes of use in vegetable cultivation.

ب- Skill objectives

,b. Carry out the processes of preparing the growing environment, sterilizing the medium, irrigation -1 fertilization, and thinning.
b. Participates in the establishment of Experimental nursery and its practical management-2.
.b-3 ,Performs the processes of preparing the growing environment, sterilizing the medium, irrigation fertilization, and thinning.
.b. Participates in establishing and managing an experimental nursery in a practical manner-4

C- **Affective goals**

Commitment to environmentally sustainable agricultural practices -A1.
A2- Taking into account ethical and health issues in the use of fertilizers and pesticides.
A3- Enhancing food security through the production of healthy and safe vegetables.

10. Course Structure: Nurseries and Forests **(Theoretical and Practical (Vocabulary**

Evaluation method	**Teaching method**	Unit name/topic	Required learning outcomes	watches	week
Diagnostic Formative- Final-	+ Theoret practical	Definition of nurseries and plant propagation	.1 about The student should know .nurseries and their importance .2 Shows the methods of plant reproduction .3 ,To learn the terminology of nurseries trees, and seedlings. Types of nurseries and the purpose of their .establishment and design	2	1
Diagnostic Formative- Final-	+ Theoret practical	seed trees	.1 ,To know seed trees, types of trees selection of seed trees .2 the factors The student mentions taken into consideration when .establishing and selecting seedbeds .3 Learn how to use the equipment used .in seed extraction and how it works	2	2
Diagnostic Formative- Final-	+ Theoret practical	Examining seeds and estimating their germination rate	.1 about the The student will learn types of seeds and the size and shape of some types of forest tree .seeds .2 Know the dormancy of seeds, its types, and the reason for its .occurrence .3 To learn how to apply the process of examining seed vitality and seed .germination	2	3
Diagnostic Formative- Final-	+ Theoret practical	**Vegetative propagation**	.1 vegetative propagation To know and its types .2 the methods of vegetative Mention .propagation and its importance	2	4
- Diagnostic Formative- Final-	+ Theoret practical	**Use of growth regulators**	.1 Knows how to use growth regulators for pens .2 Learn to apply pre-treatments to seeds before planting to break seed .dormancy	2	5
Diagnostic Formative- Final-	+ Theoret practical	**Vegetative propagation and the use of growth regulators**	.1 Learn how to collect pens .2 Know when to take the cuttings and plant them	2	6

- Diagnostic Formative- Final-	+ Theoret practical	Methods of collecting plant cuttings, and using growth hormones in , rooting cuttings Seed storage and how to measure their viability	1. The student should know the plant mind and its types. 2. Learn ways to cultivate the mind 3. Knows methods of storing and vitality of seeds 4. To learn to calculate the germination percentage, germination rate and germination speed	2	7
- Diagnostic Formative- Final-	+ Theoret practical	Fences used in the nursery	1. Identify the types of living and non-living fences and their specifications 2. Carries out the process of individualizing the seedlings, taking into account the points that must be met during individualization.	2	8
Diagnostic Formative- Final-	+ Theoret practical	Fences used in the nursery	1. Identify the types of living and non-living fences and their specifications 2. Carry out the process of individualizing the seedlings, taking into account the points that must be met during individualization.	2	9
- Diagnostic Formative- Final-	+ Theoret practical	Irrigation systems.	1. Mention the irrigation systems used in nurseries. 2. Apply irrigation systems in the nursery	2	10
Diagnostic Formative- Final-	+ Theoret practical	Plowing and fertilizing	1. Knows plowing methods 2. Knows the types of fertilizers and fertilization periods 3. A practical visit to the fields of Al-Hawija Technical Institute	2	11
Diagnostic Formative- Final-	+ Theoret practical	Weeding, weeding and control agricultural tools	1. To learn how to weed the nursery soil, thinning, weed control, disease and insect control. 2. Learn to use agricultural tools for nursery service operations. Control infected nursery plants.	2	12
- Diagnostic Formative- Final-	+ Theoret practical	Media used in plant growth and propagation	1. To learn the most important agricultural media, how to sterilize the media, sterilization methods, and the most important soil sterilizers. 2. To show the necessary methods for establishing nurseries, planning and designing the nursery land 3. Field observations in the nursery, writing reports on the establishment of nurseries	2	13
- Diagnostic Formative- Final-	+ Theoret practical	Plant hormones (growth regulators)	1. To know growth and development, characteristics of growth hormones, auxins, cytokinins, and gibberellins. 2. How to treat plant cuttings and cuttings with plant hormones.	2	14

			It mentions the most important .3 agricultural media, how to sterilize the media, sterilization methods, and .the most important soil sterilizers		
Diagnostic Formative- Final-	+ Theoret practical	Agricultural media and soil sterilizers	the To know what a nursery is and .1 most important types of methods and .places that produce seedlings To learn the process of .2 acclimatization or hardening of seedlings	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-Infrastructure	
Available	**Classrooms, laboratories and workshops**
Available	**Required textbooks**
Salman , Mohammed Abbas. 1988. Propagation of horticultural plants . Ministry of Higher Education and - Scientific ResearchUniversity of Baghdad. Iraq. Khalil , Mahmoud Abdel Aziz 2019. Encyclopedia of Horticultural Plants ` Basics - Nurseries and Their Care- Propagation . Dar Al-Kitab Al - Hadith.	**Main References (Sources)**
nothing	**Recommended books and references (.scientific journals, reports, etc)**
nothing	**..... ,Electronic references, websites**

Plant Ecology Course Description

This course examines the various environmental factors that influence plant growth and development, with an emph on the interaction between the plant and its physical, chemical, and biological environment. The course includes a stud climate, soil, light, water, temperature, and nutrients, and their impact on plant physiological processes. The course a discusses the influence of environmental factors on plant distribution and the ecological adaptations of plants in vari environments, in addition to strategies for plant protection and improving agricultural production under chang .environmental conditions

1. Course name

Plant environment

2. Course code
PPT105
3. Available attendance forms
Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning
4. semester/year
2025-2024 Level 1, First Semester
5. Number of study hours (total)
30Hour / Number of units 2
6. Date this description was prepared
11/6/2025
7. Course instructor's name
Name: Assistant Professor Qutaiba Saleh Sheikh :EmailQutaibah_hwj@ntu.edu.iq
8-(Goals Course (Objectives) Public For the decision maker 1- Understanding the effect of different environmental factors on plant growth and vital functions. 2- Explaining the plant's interaction with climatic factors such as light, heat and humidity. 3- Analysis of soil properties and their relationship to plant nutrition. 4- Learn about plant strategies for adapting to diverse environments. 5- Applying environmental principles to improve agricultural production and maintain environmental balance.

.9Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

1- **Explain the different environmental factors and their effect on plant growth and physiological functions.**
2- **Analysis of the relationship between soil and its properties and their effect on plant nutrition.**
3- **Determine how climate (light, temperature, humidity) affects the distribution and adaptation of plants.**

B- Objectives Skills Private As scheduled .

1- **Evaluate the environmental adaptation strategies followed by plants in different environments.**
2- **Applying environmental resource management principles to improve plant production and preserve the environment.**

C-Objectives emotional and the value

1- **The future**
2- Response
3- Evaluation

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10-**Course Structure Plant Environment Theoretical Vocabulary**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watch es	week
,Diagnostic formative and summative	theoretical	Definition of ecology, its historical development and its divisions.	Definition of ecology, its historical development and its divisions.	1	1
,Diagnostic formative and summative	theoretical	Energy (radiation): visible ,radiation, infrared radiation ultraviolet radiation.	,Energy (radiation): visible radiation infrared radiation, ultraviolet radiation .	1	2
,Diagnostic formative and summative	theoretical	Light quality (light intensity), photoperiod length.	,Light quality (light intensity) photoperiod length.	1	3
,Diagnostic formative and summative	theoretical	The importance of light for plants in the process of photosynthesis and the effect of light on plants.	The importance of light for plants in the process of photosynthesis and the effect of light on plants.	1	4
,Diagnostic formative and summative	theoretical	,Temperature (heat flow (changes in temperature.	Temperature (heat flow, changes in (temperature.	1	5
,Diagnostic formative and summative	theoretical	Thermal inversion, the preferred temperature of the plant.	Thermal inversion, the preferred temperature of the plant.	1	6
,Diagnostic formative and summative	theoretical	Maximum, minimum and optimum temperature.	Maximum, minimum and optimum temperature.	1	7
,Diagnostic formative and summative	theoretical	Heat and its actual value for the plant.	Heat and its actual value for the plant.	1	8
,Diagnostic formative and summative	theoretical	Atmospheric pressure factors affecting) ,atmospheric pressure distribution of atmospheric (pressure.	Atmospheric pressure (factors ,affecting atmospheric pressure (distribution of atmospheric pressure.	1	9
,Diagnostic formative and summative	theoretical	,Wind (wind movement ,types of wind, air masses (effect of wind on plants.	,Wind (wind movement, types of wind (air masses, effect of wind on plants.	1	10
,Diagnostic formative and summative	theoretical	The effect of wind on plants.	The effect of wind on plants.	1	11
,Diagnostic formative and summative	theoretical	Water (the amount of water on the Earth's surface and (its cycle in nature.	Water (the amount of water on the (Earth's surface and its cycle in nature.	1	12
,Diagnostic formative and	theoretical	,Air humidity, evaporation clouds, fog and frost.	Air humidity, evaporation, clouds, fog and frost.	1	13

summative					
,Diagnostic formative and summative	theoretical	Dew, rain and rainfall distribution.	Dew, rain and rainfall distribution.	1	14
,Diagnostic formative and summative	theoretical	The water factor and its relationship to plants, and the factors that affect water balance and plant water condensation.	The water factor and its relationship to plants, and the factors that affect water balance and plant water condensation.	1	15

Course structure : Plant environment, practical vocabulary

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watc hes	week
a test	practical	Environmental devices (sampling devices (nets))	Environmental devices (sampling devices (nets))	1	1
a test	practical	Soil properties measurement	Soil properties measurement	1	2
a test	practical	Microbiological contamination of water	Microbiological contamination of water	1	3
a test	practical	Pollutants	Pollutants	1	4
a test	practical	Methods of testing .contaminated water	Methods of testing .contaminated water	1	5
a test	practical	,Community, density .frequency	.Community, density, frequency	1	6
a test	practical	Estimation of dissolved .oxygen in water	Estimation of dissolved oxygen .in water	1	7
a test	practical	,Definition of water hardness and what are the sources of ?hardness	Hard water, sources of hardness	1	8
a test	practical	Forests and their construction ,(industrial and natural) distribution of living organisms in the forest	,Forests (artificial and natural) distribution of living organisms in the forest	1	9
a test	practical	Residues of living organisms added to the soil	Residues of living organisms added to the soil	1	10
a test	practical	Factors affecting the decomposition of organic matter in soil	Factors affecting the decomposition of organic matter in soil	1	11
a test	practical	Preparation of standard and normative solutions	Preparation of standard and normative solutions	1	12
a test	practical	Fires, their types, plant adaptations to fires	Fires, their types, plant adaptations to fires	1	13
a test	practical	Types of plant environments in Iraq	Types of plant environments in Iraq	1	14
a test	practical	Environmental devices (sampling devices (nets))	Environmental devices (sampling devices (nets))	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**	
Available	Halls, laboratory, field and canopy
plant environment .Environmental Science for Agricultural Students, Dr .Hekmat Abbas, Dr. Raad Hashem Bakr	Required textbooks
Principles of Ecology, Brij Kobal, A.D. - Douaj, translated ,by - Dr. Rizan Mohammed Saleh, Mr. Bashir Ali Bashir .University of Salahaddin - College of Science, 1990	Main references (sources)
Environment and the Quality of Our Environment, Dr. Qaisar Majeed and Taher Mohammed Saleh - University of Baghdad	Books and references recommended by scientific .journals, reports, etc
	Electronic references, Internet sites

Fruit production course description

This course covers the basic principles of fruit tree cultivation and production, with an emphasis on the growth requireme of different trees, modern tree care techniques, and methods for increasing production and quality. The course includ ,study of fruit species, appropriate agricultural techniques, tree pruning, fertilization, irrigation, pest and disease con harvesting, and storage. It also addresses the importance of selecting suitable varieties for different environments methods for improving fruit tree productivity.

1. Course name

Fruit production

2. Course code

PPT 106

3. Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4. semester/year

2025-2024 First level, second semester

5. Number of study hours (total) / Units

45 / 3

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf

:Email Drjasim_hwj@ntu.edu.iq

8. (Goals Course (Objectives) Public For the decision maker

1- Learn about different types of fruits and their cultivation requirements.
2- Application of modern technologies in planting and caring for fruit trees.
3- Learn about the appropriate fertilization and irrigation methods for fruit trees.
4- Learn about pest and disease control methods in fruit farms.

.9Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

1- **Distinguish between different types of fruits and their agricultural growth requirements.**
2- **Applying the correct methods in planting and caring for fruit trees, such as pruning, irrigation and fertilization.**
3- **Identifying effective methods for controlling pests and diseases that affect fruit farms.**

B - Objectives Skills Private As scheduled .

1- **Evaluation of the impact of environmental and agricultural factors on fruit quality and production.**
2- **Harvesting and storing operations in ways that preserve fruit quality for longer periods**

C-Objectives emotional and the value

1- Analyzing fruit production problems and proposing appropriate agricultural solutions to improve productivity.
2- Preparing field and practical reports that illustrate fruit production applications on real farms.

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10. **Course structure: producing the fruit of theoretical vocabulary -**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	theoretical	The most important problems of fruit .production in Iraq	Explains the geographical distribution of fruits in Iraq and the world - the most important problems of fruit production in Iraq.	1	1
,Diagnostic formative and final	theoretical	Citrus fruits (native country - nutritional (value	To know citrus fruits ,origin, nutritional value) reproduction, most important varieties, most ,important citrus divisions (suitable environment.	1	2
,Diagnostic formative and final	theoretical	overview (native habitat - nutritional (value	- Palm trees (native habitat - nutritional value reproduction - most - important varieties (suitable environment	1	3
,Diagnostic formative and final	theoretical	Olive (original country - nutritional value - (reproduction	- Olives (original country - nutritional value reproduction - most - important varieties (suitable environment	1	4
,Diagnostic formative and final	theoretical	,Description of banana jujube and loquat - native country) (nutritional value	Banana, jujube and loquat native habitat - nutritional) value - reproduction - most - important varieties (suitable environment.	1	5
,Diagnostic formative and final	theoretical	Geographical distribution of fruit in Iraq	Geographical distribution of fruits in Iraq and the world - the most important problems of fruit production in Iraq.	1	6
,Diagnostic formative and final	theoretical	Grapes (native country nutritional value -	- Grapes (original habitat - nutritional value reproduction - most important varieties - suitable	1	7

			(environment		
,Diagnostic formative and final	theoretical	Apples and pears are native to	,Apples and pears: origin ,nutritional value reproduction, most important varieties, and .suitable environment	1	8
,Diagnostic formative and final	theoretical	Quince (native home)	- Quince (native habitat - nutritional value reproduction - most - important varieties .(suitable environment	1	9
,Diagnostic formative and final	theoretical	- Figs (native country nutritional value	- Figs (native habitat - nutritional value reproduction - most - important varieties (suitable environment	1	10
,Diagnostic formative and final	theoretical	Peaches, apricots, and pears (native)	Peaches, apricots and pears - origin - nutritional value) reproduction - most - important varieties (suitable environment	1	11
,Diagnostic formative and final	theoretical	Pomegranate and persimmon (native country - nutritional value	Pomegranate and persimmon (original habitat - nutritional value - reproduction - most - important varieties (suitable environment.	1	12
,Diagnostic formative and final	theoretical	,Pistachios, walnuts and pecans are native - to the world nutritional value	Pistachios, walnuts and pecans: origin, nutritional value, reproduction, most important varieties, suitable environment.	1	13
,Diagnostic formative and final	theoretical	Modern trends in fruit production	Modern trends in fruit production	1	14
,Diagnostic formative and final	theoretical	The importance of hormones and their .areas of use	The importance of hormones and their areas .of use	1	15

Course structure : Fruit production, practical vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	practical	Fruit tree service	Fruit tree service (weeding and manual hoeing around a group of trees - raising and pruning a number of (trees.	2	1
,Diagnostic formative and final	practical	And weeding	View the available types of citrus fruits and distinguish between them.	2	2
,Diagnostic formative and final	practical	And prepare a suitable bed or anvils for planting it	Sexual reproduction in ,citrus (extracting the seeds cleaning them, and	2	3

			preparing a suitable bed or anvils for planting them-		
,Diagnostic formative and final	practical	Identify the most - important citrus rootstocks used in .propagation	Planting seeds in the wooden vine - Identifying the most important citrus rootstocks used in propagation.	2	4
,Diagnostic formative and final	practical	Morphological description of the date palm	Morphological description of the date palm (root - system - stem - trunk - (leaves - flowers identification of cultivated varieties and differentiation between them.	2	5
,Diagnostic formative and final	practical	Practicing the correct process of removing seedlings to prepare them for planting	Vegetative propagation in palm trees - pulling and preparing the offshoots for planting - identifying good offshoots - practicing the correct process of pulling off the offshoots for the purpose of preparing them for planting.	2	6
,Diagnostic formative and final	practical	Identifying the olive - tree's vegetative mass Identifying the necessary maintenance operations	Identify the olive tree's vegetative system - Identify the necessary maintenance ,operations (irrigation fertilization, thinning, and pruning) - Identify the methods of harvesting olives	2	7
,Diagnostic formative and final	practical	Using cuttings for - propagation Distinguishing between types of cuttings - Preparing suitable beds for planting	Olive propagation (sexual (and vegetative propagation using cuttings for - - propagation distinguishing between - types of cuttings preparing suitable beds for planting.	2	8
,Diagnostic formative and final	practical	,Watching banana jujube, and loquat trees learning about their - propagation methods	Viewing banana, jujube and loquat trees - learning about their propagation methods and the most important tree maintenance operations.	2	9
,Diagnostic formative and final	practical	Grapes according to breeding methods and other important service operations	The most important methods of grape cultivation - pruning grape trees according to cultivation methods and other important service operations.	2	10
,Diagnostic formative and final	practical	Apple, pear and quince trees and learn about the most important service operations for these trees	View apple, pear and quince trees and learn about the most important service operations for these trees.	2	11
,Diagnostic formative and final	practical	Fig trees and learning about the most important service	Watching fig trees and learning about the most important service	2	12

		operations for these trees	operations for these trees.		
,Diagnostic formative and final	practical	Improvement of the crop, including thinning, shaving and .trimming	The process of improving ,the crop includes thinning shaving and cutting.	2	13
,Diagnostic formative and final	practical	Study of the nature of pregnancy in different fruit trees	Study of the nature of pregnancy in different fruit trees.	2	14
,Diagnostic formative and final	practical	A scientific visit to nearby horticultural .stations or orchards ,Harvesting, sorting and packaging .operations	A scientific visit to nearby horticultural stations or ,orchards. Harvesting sorting, and packaging .operations	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**

Fruit production Evergreen Fruit (bound), Harb Rashid - Mansour Naseh .Al-Rawi, Dar Al-Takni	Required textbooks
Deciduous Fruit, Alaa Abdel Razzaq - Maged Abdel Wahab - Ahmed Abu Saad, 1990 Ministry of Higher Education .Press	Main references (sources)
.Viticulture, Dr. Ibrahim Hassan, 1982, Mosul	Recommended books and references (.scientific journals, reports, etc)
https://uomosul.edu.iq/agriculture/wp-content/uploads/sites/11/2023/09/organized_organized.pdf	Electronic references, Internet sites

Plant physiology course description

This course examines the basic physiological processes occurring in plants, with an emphasis on understanding mechanisms of growth and development, photosynthesis, water and nutrient uptake and transport, respiration, hormo regulation, plant responses to the environment, and plant movement. The course also addresses the applications of th concepts in agriculture and biotechnology.

1. Course name

Plant physiology

2. Course code

PPT107

3. Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4. semester/year

First Level First Semester 2025-2024

5. Number of study hours (total) / Number of units

Number of units: 2 / hours 30

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: Asst. Prof. Dr. Qutaiba Saleh Sheikh

:e-mail Qutaibah_hwj@ntu.edu.iq

8. Course objectives (general objectives of the course)

.The student understands the basic principles that govern physiological processes in plants -1
.Explain the mechanisms of water and nutrient absorption and transport within the plant -2
Distinguish between vital processes such as photosynthesis, respiration and transpiration in terms of -3 .mechanism and importance
.Explain the effect of different environmental factors on the physiological functions of the plant -4
.Apply physiological concepts in analyzing agricultural problems related to growth and production-5
Acquire practical skills in conducting physiological experiments and interpreting their results -6 scientifically.

9. Course outcomes, teaching, learning and assessment methods.

A-Cognitive objectives

Introducing the student to the basic concepts in plant physiology -1.
.Explain the vital processes that occur inside the plant -2

B-Skill objectives

Use of laboratory tools and equipment for plant physiology experiments.
Conduct simple experiments that demonstrate processes such as:
Measuring the rate of transpiration or photosynthesis , the effect of plant hormones

C- Affective goals

Promote appreciation of the importance of plants to the environment, economy and health.
Developing a spirit of scientific curiosity and investigation into the mechanisms of plant life.
Respect for biosafety rules in the laboratory.

10- Course Structure Plant Physiology **(Theoretical and practical (vocabulary**

Evaluation method	**Teaching method**	Unit name/topic	Required learning outcomes	watches	week

Diagnostic Formative- Final-	+ Theoret practical	Definition of- physiology and its relationship to other sciences Understanding the- levels of physiological ,organization (cellular (tissue, plant, macro	Understanding the systematic structure of physiology and its agricultural applications	2	1
Diagnostic Formative- Final-	+ Theoret practical	Explain the biological- properties of water Clarify the absorption- pathways (active/passive)	Explanation of the mechanism of xylem transport and root pressure	2	2
Diagnostic Formative- Final-	+ Theoret practical	Explain the types of transpiration explain the role of- stomata and environmental conditions	Linking transpiration to water use efficiency	2	3
Diagnostic Formative- Final-	+ Theoret practical	Understanding ionic- absorption (transport (mechanisms Differentiating- between phloem and xylem transport	Analysis of ion movement and its effects on plant growth	2	4
- Diagnostic Formative- Final-	+ Theoret practical	Explaining light- : Photosystems reactions I & II Explaining the- electron path	Characterization of electrochemical mechanisms in plastids	2	5
Diagnostic Formative- Final-	+ Theoret practical	Explain the Calvin- cycle and the limiting factors of .photosynthesis	Measuring the relationship between light NAR intensity and	2	6
- Diagnostic Formative- Final-	+ Theoret practical	,Krebs ,- Glycolysis ETC and Comparison- explained between aerobic and anaerobic respiration	Understanding the relationship between breathing and physiological growth	2	7
- Diagnostic Formative- Final-	+ Theoret practical	Mid-term assessment- Reinforcing key- concepts	Recall and analyze physiological concepts	2	8
Diagnostic Formative- Final-	+ Theoret practical	Explaining the stages- of growth Studying meristematic- and hormonal activity	Analysis of the differences between growth types	2	9
- Diagnostic Formative- Final-	+ Theoret practical	Explain the effect of- auxins, cytokinins, and .gibberellins	Applying the effect of hormones on rooting and branching	2	10

Diagnostic Formative- Final-	+ Theoret practical	Conclusion of the relationship between these hormones and stress and maturation	andABA ,Understand the role of ethylene- salicylic acid	2	11
Diagnostic Formative- Final-	+ Theoret practical	Linking physiological processes to the environment	Analysis of the effect of drought and- salinity on vital functions	2	12
- Diagnostic Formative- Final-	+ Theoret practical	Description of anatomical and physiological adaptations	Physiological responses to high and low- temperatures	2	13
- Diagnostic Formative- Final-	+ Theoret practical	Design a production system based on physiological indicators	Application of physiology in irrigation and- fertilization Use of physiological indicators of- productivity	2	14
Diagnostic Formative- Final-	+ Theoret practical	Integrate all concepts and link them to the .application	Comprehensive assessment of all concepts- Preparation for the final exam-	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-Infrastructure	
Available	**Classrooms, laboratories and workshops**
Available	**Required textbooks**
· **Taiz , L., Zeiger, E., Møller, IM, & Murphy, A.** (2015). *Plant Physiology and Development* (6th or 7th Edition). Sinauer Associates. This is one of the most famous and comprehensive references in plant physiology worldwide. · **Salisbury , F.B., & Ross, C.W.** (1992). *Plant Physiology* (4th Edition). Wadsworth Publishing. – A classic textbook explaining basic concepts in a clear, undergraduate- level style. · **Hopkins , W.G., & Hüner , N.P.A.** (2008). *Introduction to Plant Physiology* (4th Edition). Wiley. – A simple and convenient reference for early undergraduate students.	**Main References (Sources)**
nothing	**Recommended books and references (.scientific journals, reports, etc)**
nothing	**..... ,Electronic references, websites**

Adescription Vegetable production schedule

This course aims to introduce students to the basic concepts and agricultural practices related to vegetable crop production, with emphasis on the environmental, technical, and economic aspects of vegetable production in open fields and greenhouses.

1- Course name

Vegetable production

2- Course code

PPT108

3- Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4- semester/year

First Level Second Semester 2025-2024

5- Number of study hours (total)

60hours/4 units

6- Date this description was prepared

2025/6/11

7- Course supervisor name

Name: Ahmed Abdel Khalaf
:Emailahmedabd-hwj@ntu.edu.iq

8- Course objectives (general objectives of the course)

1. Introducing students to the importance of vegetable production science, methods of cultivation, and the most suitable families in the conditions of different regions:
2. Enabling the student to gain knowledge and understanding of the areas where winter and summer vegetable crops are grown.
3. Knowing and understanding the methods of producing vegetable crop seeds and their classification.
4. Familiarity with the biological processes, environmental influences on plants, and .climatic requirements of vegetable crop species
5. .Knowing the importance of seeds, their vitality and applications
6. Identify important families, their types, the differences between them, and scientific .terms
7. Knowing plant mutations and their basic functions

9- Course outcomes , teaching, learning and assessment methods

A-Cognitive objectives

-A1 Learn about the different classifications of vegetable crops in terms of plant family, part used, and cultivation methods.

-A2 Understanding the environmental, climatic and soil requirements for producing different vegetable crops.

-A3 Understanding the physiological processes related to the growth and development of vegetable crops.

B-Skill objectives

Analysis of the factors affecting the productivity and quality of vegetable crops - B1.

Evaluation of appropriate agricultural practices for the different stages of vegetable crop production - B2.

Propose scientific solutions to common problems in vegetable crop production such as pests, diseases, and - B3 unfavorable conditions.

The ability to apply scientific principles in agricultural operations, fertilization, irrigation, harvesting, and post- - B4 harvest.

C- Affective goals

C1- Commitment to environmentally sustainable agricultural practices.

C2- Taking into account ethical and health issues in the use of fertilizers and pesticides .
C3- Enhancing food security through the production of healthy and safe vegetables .

10- Vegetable Production Course Structure **(Theoretical and Practical (Vocabulary**

Evaluation method	**Teaching method**	Unit name/topic	Required learning outcomes	watches	week
Diagnostic Formative- Final-	+ Theoreti practical	Scientific classification of vegetable crops	The student should know the concept of Vegetables and the scientific .crops classification of crops To study the importance of studying scientific division To distinguish between successive cultivation in Open fields and greenhouses	4	1
Diagnostic Formative- Final-	+ Theoreti practical	Morphological description of vegetable crops	To identify the forms and functions . of both the root and the stem .Modifications of aerial stems To show the parts of the paper, its shapes and functions Flower components, inflorescences, and fruit types	4	2
Diagnostic Formative- Final-	+ Theoreti practical	Agricultural cycles	.1 To know the importance of agricultural cycles, their types and benefits .2 To learn the basics of agricultural cycle design .3 To distinguish between vegetable plant seeds	4	3
Diagnostic Formative- Final-	+ Theoreti practical	Cucurbitaceae family	.1 To mention the characteristics of the Cucurbitaceae family and its most .important genera .2 The botanical description of the .is known Cucurbitaceae family .3 Learn the economic importance and timing of planting cucumber, melon .and squash crops	4	4
- Diagnostic Formative- Final-	+ Theoreti practical	*Citrullus vulgaris* crop zucchini And *Cucurbita pepo* L.	.1 Learn about the economic importance and the original habitat. Learn when .to plant squash and zucchini crops .2 Knows the environmental conditions suitable for the growth of squash and zucchini crops	4	5
Diagnostic Formative- Final-	+ Theoreti practical	familyLeguminosae	Characteristics of the legume family and its most important genera Botanical description of the legume family Broad bean, cowpea, pea, bean and chard crops	4	6

- Diagnostic Formative- Final-	+ Theoreti practical	familyCruciferae *Rahanus*) Radish *Sativus)*	Know the characteristics of the Crusader family and its most important genera the botanical description of Learn .the cruciferous family Know the economic and nutritional importance of garlic and when to plant it	4	7
- Diagnostic Formative- Final-	+ Theoreti practical	Umbelliferae	Mention the characteristics of the tent family and its most important .genera The botanical description of the . is known Apiaceae family Learn about the most important .crops of the Apiaceae family	4	8
Diagnostic Formative- Final-	+ Theoreti practical	Carrot, celery and parsley crops	Know the economic importance of carrot, celery and parsley crops Know the planting date and the environmental conditions affecting it ,Learn how to grow carrots, celery .and parsley	4	9
- Diagnostic Formative- Final-	+ Theoreti practical	Chenopodiaceae family	Mention the characteristics of the Ramara family and its most .important genera The botanical description of the .is known family Ramaragidae Learn how to grow beets, chard, and .spinach	4	10
Diagnostic Formative- Final-	+ Theoreti practical	familyCompositae	Know the characteristics of the compound family and its most important genera The botanical description of the .Asteraceae family is known Learn how to grow artichokes and .melons	4	11
Diagnostic Formative- Final-	+ Theoreti practical	And the lettuce crop narcissistic family Amaryllidacea	To know the economic importance of lettuce crop To learn the processes of serving the lettuce crop	4	12
- Diagnostic Formative- Final-	+ Theoreti practical	Onion crop and its economic and nutritional importance	To learn the most important types of narcissistic family and what their .characteristics are To show the botanical description of the narcissus family To know the economic and nutritional importance	4	13
- Diagnostic Formative- Final-	+ Theoreti practical	*Allium* Garlic crop *sativum* L.	To know the economic and nutritional importance of garlic and when to plant it To know the economic and nutritional importance of leek crop	4	14

Diagnostic Formative- Final-	+ Theoreti practical	Methods of planting and producing vegetable seedlings	the To know what a nursery is and most important types of methods .and places that produce seedlings To learn the process of acclimatization or hardening of seedlings	4	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-Infrastructure	
Available	**Classrooms, laboratories and workshops**
Available	**Required textbooks**
• Ahmed Abdel Moneim Hassan, Basics and Technology of Vegetable Production, 1st Edition, Faculty of Agriculture, Cairo University, 2015 • Ahmed Abdel Moneim Hassan, The production of vegetables of moderate and cold seasons in the desert land, 1st edition, Arab ..House for Publishing and Distribution, 1994 • Mitadi Bourass , Bassam Abu Turabi and Ibrahim Al-Basit, Production of Vegetable Crops, Damascus University .Publications, Faculty of . Agriculture, 2010-2011	**Main References (Sources)**
Anonymous.1977. Growing your own vegetables. US D.Ainforma Bull Agric	**Recommended books and references (.scientific journals, reports, etc)**
https://www.youtube.com/channel/UCeVhKlGOPCUbVIA6JyYVc7A	**..... ,Electronic references, websites**

General Entomology Course Description

This course aims to provide students with basic knowledge of entomology, including its classification, external and inte structures, lifestyles, and behavior. The course covers the morphology, growth, reproduction, and life cycles of insects well as their classification into major orders and groups, with a focus on species of agricultural, medicinal, or environme importance. The course also enables students to learn about insect collection, preservation, and identification meth using classification keys.

1) Course name

General insects

2) Course code

PPT109

3) Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4) semester/year

2025-2024 Level 1, First Semester

5) Number of study hours (total) / units

30/ 2

6) Date this description was prepared

11/6/2025

7) :Course instructor name

Name: M.M. Mustafa Faridoun Faiq
:Email mustafa.ffhti@ntu.edu.iq

8-(Goals Course (Objectives) Public For the decision maker

-1 Learn about the structure of the insect body and the functions of its different parts.
-2 Understand the basic life processes of insects.
-3 Distinguish between different insect orders and their morphological characteristics.
-4 Classification of common insects using taxonomic keys.

9-Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

1- Explain the structure of the insect body and the functions of its basic parts.
2- Distinguish between the different types of insect metamorphosis and their life cycles.
3- Classification of insects into different orders based on their morphological characteristics

B - Objectives Skills Private As scheduled .

-1 **Analyzing the relationship between the insect's morphology and its function or environment.**
-2 **Evaluating the role of insects in the ecosystem, agriculture and medicine**

C-Objectives emotional and the value

-1 Work as part of a team to prepare a practical project (such as an insect box).
-2 Submit written reports and oral presentations on the insect species studied.

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10-Course Structure General Insects Theoretical Vocabulary

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
Diagnostic - Formative Final-	theoretical	A historical overview of the development of agricultural pest control and international bodies involved in pest	A historical overview of the development of agricultural pest control and international bodies involved in pest control.	1	1

		control.			
Diagnostic - Formative Final-	theoretical	Methods of pest control (natural and (applied.	Methods of pest control (natural and applied).	1	2
Diagnostic - Formative Final-	theoretical	,Mechanical control biological control.	,Mechanical control biological control.	1	3
Diagnostic - Formative Final-	theoretical	,Chemical control modern trends in pest control.	Chemical control, modern trends in pest control.	1	4
Diagnostic - Formative Final-	theoretical	Pests of protected agriculture.	Pests of protected agriculture.	1	5
Diagnostic - Formative Final-	theoretical	Cotton pests, wheat pests.	Cotton pests, wheat pests.	1	6
Diagnostic - Formative - Final	theoretical	Corn pests, cruciferous pests.	Corn pests, cruciferous pests.	1	7
Diagnostic - Formative - Final	theoretical	Stored goods pests.	Stored goods pests.	1	8
Diagnostic - Formative - Final	theoretical	,Onion and garlic pests clover and clover pests .	,Onion and garlic pests clover and clover pests.	1	9
Diagnostic - Formative - Final	theoretical	Cucurbit pests, pests of the Solanaceae family.	Cucurbit pests, pests of the Solanaceae family.	1	10
Diagnostic - Formative - Final	theoretical	Stone fruit pests	Stone fruit pests Stone	1	11
Diagnostic - Formative - Final	theoretical	Apple pests, grape pests.	Apple pests, grape pests.	1	12
Diagnostic	theoretical	Citrus pests, fig pests.	Citrus pests, fig pests.	1	13

- Formative - Final					
Diagnostic - Formative - Final	theoretical	,Pomegranate pests olive pests.	Pomegranate pests, olive pests.	1	14
Diagnostic - Formative - Final	theoretical	Pests of palm trees and ornamental plants.	Pests of palm trees and ornamental plants.	1	15

Course Structure General Insects Practical Vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and summative	practical	Collect a group of insects.	Methods of collecting and ,preserving insects collecting a collection of insects.	1	1
,Diagnostic formative and summative	practical	Pest control tools and how to use them	Pest control tools and how to use them.	1	2
,Diagnostic formative and summative	practical	pesticide preparations	,Pesticide preparations (dry (liquid, gaseous.	1	3
,Diagnostic formative and summative	practical	Protected agriculture pests	Dusting, spraying.	1	4
,Diagnostic formative and summative	practical	wheat pests	Protected agriculture pests ,aphids, whiteflies, worms) (spiders.	1	5
,Diagnostic formative and summative	practical	Corn stalk borer, corn ,cobworm, aphid cabbage aphid, worm	Wheat pests (sunna, sow worm) Cotton pests (cotton ,nut worm, cotton leafworm (aphid.	1	6
,Diagnostic formative and summative	practical	stored product pests	Corn stalk borer, corn earworm, aphid, cabbage aphid, cruciferous worm.	1	7
,Diagnostic formative and summative	practical	Onion thrips, onion fly, jet weevil, spotted jet aphid	Stored product pests (wheat and rice weevils, flour (beetles, fig moths.	1	8
,Diagnostic formative and summative	practical	whitefly, watermelon fruitworm	Onion thrips, onion fly, jet weevil, spotted jet aphid.	1	9
,Diagnostic	practical	tomato fruit worm	,Whitefly, melon fruitworm	1	10

formative and summative			,leafminer, cucurbit aphid spider mite, tomato fruitworm.		
,Diagnostic formative and summative	practical	,Grape leaf miner grape leafworm.	From apricot, apricot stem borer.	1	11
,Diagnostic formative and summative	practical	fig leaf worm, fig fruit worm, spiders	Cod fruitworm, embroidery ,bug, grape leaf miner grape leafworm.	1	12
,Diagnostic formative and summative	practical	olive fly	Mealybug, citrus leaf miner, fig leaf miner, fig fruit miner, spider mites.	1	13
,Diagnostic formative and summative	practical	Palm borer, palm stem borer	,Pomegranate fruit worm pomegranate aphid, olive mealybug, olive fly.	1	14
,Diagnostic formative and summative	practical	Collect a group of insects.	,Palm weevil, palm borer palm stem borer.	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**

Available General and Applied Entomology - Dr. Abdullah Falih Azzawi - 1980 - Al-Zahraa Press - Baghdad	Required textbooks
Field Crop Pests - Kamel Salman Jabr, Imad Ahmed Mahmoud - 1990 - Ministry of Higher Education Press	Main references (sources)
	Recommended books and references (.Scientific journals, reports, etc)
https://faculty.uobasrah.edu.iq/uploads/teaching/1597119015.pdf	Electronic references, Internet sites

Description of the agricultural machinery and equipment course

This course covers the types of tractors and agricultural machinery used in various agricultural operations such plowing, planting, irrigation, harvesting, and transportation. The course focuses on the components and types tractors, their operating principles, as well as identifying various agricultural machinery, their functions, and th uses in increasing agricultural production efficiency and reducing physical and time-consuming effort. The cou also covers the maintenance of this equipment and how to select it according to the type of crop and soil conditi .

1) Course name

Agricultural tractors and equipment

2) Course code

PPT110

3) Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

4) semester/year

2025-2024 First level, second semester

5) Number of study hours (total) / Number of units

45 / 3

6) Date this description was prepared

2025/6/11

7) Course supervisor name

Name: M.M. Mustafa Faridoun Faiq
:Emailmustafa.ffhti@ntu.edu.iq

8-(Goals Course (Objectives) Public For the decision maker

1- Learn about the types of tractors and their main components.
2- Understanding the principles of operation and maintenance of tractors and various agricultural machines.
3- Learn about the types of agricultural machinery and their uses in agricultural operations.
4- Choosing the right agricultural machinery for the crop type and soil conditions

.9Outputs The decision and methods education and learning and evaluation

A-Objectives cognitive

1- **Learn about the types of tractors, their main components and functions.**
2- **Understanding the principles of operation and maintenance of tractors and various agricultural machines.**
3- **Distinguish between types of agricultural machinery and their uses in various agricultural operations.**

B - Objectives Skills Private As scheduled .

1- **Selecting the appropriate agricultural equipment and machinery according to the type of soil and crop.**

-2 **Applying occupational safety procedures during the operation and maintenance of agricultural equipment.**

C-Objectives emotional and the value

-1 **Evaluating the efficiency of agricultural equipment use and analyzing its impact on improving production and reducing costs.**

-2 **Preparing technical and operational reports that demonstrate equipment performance and maintenance operations.**

Methods education and learning -

Lessons theory Intense, Model Data with films educational, application practical in field with all a lecture

Evaluation methods-

Commitment And perseverance on the audience, reports , homework and exams Daily And monthly, exam end the chapter

10-**Course structure: Agricultural tractors and equipment, theoretical vocabulary**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	theoretical	Types of agricultural .tractors - Public Safety	The importance of agricultural mechanization the tractor is a source of - power in the field	1	1
,Diagnostic formative and final	theoretical	The main parts of the tug and the function of .each part	The main parts of the tug and the function of each part	1	2
,Diagnostic formative and final	theoretical	Fuel system - Air - technology system (Cooling system	Tug systems	1	3
,Diagnostic formative and final	theoretical	- Parts of each system - how each part works - malfunctions .maintenance	- Lubrication system Electrical system	1	4
,Diagnostic formative and final	theoretical	- Parts of each system - how each part works - malfunctions maintenance	,Transmission, clutch saddle box	1	5
,Diagnostic formative and final	theoretical	Vertical and differential transport - group, final transport the structure of the tugboat, its parts, its benefits, the importance of each .part	Ploughing, importance of plowing, qualities of good plowing	1	6
,Diagnostic formative and final	theoretical	- Use of these plows - their parts maintenance - plowing .methods	Reversible plows - how they work	1	7
,Diagnostic	theoretical	The nature of the work	Chisel, rotary and subsoil	1	8

formative and final		of these plows - the - use of these plows their parts - their maintenance - plowing methods	plows - how they work		
,Diagnostic formative and final	theoretical	Leveling, planning and channel cutting machines - the nature ,of the machines' work ,their use, types, parts and operation	Soil smoothing machines (combs, ploughs)	1	9
,Diagnostic formative and final	theoretical	The seed drill, its ,parts, its operation laboratory and field standards for these machines, maintenance .of these machines	Mechanized agriculture - its importance, fertilizer spreader	1	10
,Diagnostic formative and final	theoretical	Weeding and - fertilizing machines types - nature of work - parts - operation - - calibration .maintenance	Potato planter - types - how - it works - parts - operation calibration - maintenance	1	11
,Diagnostic formative and final	theoretical	Its types - nature of - work - parts operation - calibration .maintenance -	Crop service machines, pest control machines - their types - their nature of work	1	12
,Diagnostic formative and final	theoretical	Operation - Calibration .Maintenance -	Green fodder cutting machines and baling presses nature	1	13
,Diagnostic formative and final	theoretical	- Operation - - Calibration .Maintenance	,Harvester - Classification - External Structure Function - Parts	1	14
,Diagnostic formative and final	theoretical	,Tug maintenance importance of maintenance, types and how to perform it	,Tug maintenance ,importance of maintenance types and how to perform it	1	15

Course structure: Agricultural tractors and equipment, theoretical vocabulary -10					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	practical	- General Driver Safety Safety Benefits .Application	View machinery, equipment and tow trucks in the field - General driver safety - Application of safety benefits.	2	1
,Diagnostic formative and final	practical	Tugboat driving training in first gear - engine parts (fixed and moving)	Duties before starting - Starting - and stopping the engine Training on driving the tugboat in first gear - Engine parts (fixed (and moving	2	2
,Diagnostic formative and final	practical	- The function of each part - possible malfunctions .how to avoid them	Fuel systems for diesel and gasoline engines - the function of each part - possible malfunctions	2	3

			how to avoid them -.		
,Diagnostic formative and final	practical	- Identify its parts plowshares, horizontal and .vertical adjustment	Reversible plows (disc and - rotary) - Identifying their parts Plow mesh and horizontal and vertical adjustment.	2	4
,Diagnostic formative and final	practical	Chisel plough, rotary - (plough, subsoil plough ,their parts, their mesh their adjustment, ploughing in the field using these ploughs, carrying out maintenance after .ploughing	Seedbed preparation machines ,screw plough, rotary plough) ,subsoil plough) - their parts networking, adjustment, field ,ploughing using these ploughs post-ploughing maintenance.	2	5
,Diagnostic formative and final	practical	.Its uses and maintenance	,Seedbed smoothing machines their uses and maintenance.	2	6
,Diagnostic formative and final	practical	Leveling, planning and ,digging machines networking of these ,machines, field work maintenance	Leveling, planning and digging machines	2	7
,Diagnostic formative and final	practical	,Pulley, Calibration Laboratory and Field	Agricultural machinery (sowing and sowing) disassemble the machine	2	8
,Diagnostic formative and final	practical	Its types, calibration procedure, machine maintenance after operation	potato planting machine	2	9
,Diagnostic formative and final	practical	Its types, how to work in - the field, and its maintenance after work	Institute of sweat and fertilization its types, how to work in the - field, and its maintenance after .work	2	10
,Diagnostic formative and final	practical	Spraying process after ,calibrating the sprinkler maintenance after spraying process	,Pest control equipment - types spraying process after calibrating the sprinkler	2	11
,Diagnostic formative and final	practical	Reciprocating and rotary ,mower, its connection ,calibration procedure maintenance	,Reciprocating and rotary mower its connection, calibration procedure, maintenance	2	12
,Diagnostic formative and final	practical	Green fodder cutting and baling machines - their parts, operation, and operation of these machines in the field	Green fodder cutting and baling ,machines - their parts, operation and operation of these machines in the field	2	13
,Diagnostic formative and final	practical	Harvester - Training on driving the harvester at all forward and reverse speeds, daily maintenance of the harvester	Harvester - Training on driving the harvester at all forward and reverse speeds, daily maintenance of the harvester	2	14
,Diagnostic formative and final	practical	Show scientific films and .slides	. Show scientific films and slides	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3

2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**	
Tractors and agricultural machinery Agricultural machinery and equipment, types , use , and maintenance, Abdul Hussein Anm Subhi, 1988, Education Press Agricultural Mechanization in Iraq, Badi' Qaddouri, Talib Al-Sarraj, 1971, Ministry of Planning, Baghdad	Required textbooks
	Main references (sources) 2
,Agricultural Tractors, Dr. Eng. Abdul Salam Mahmoud Baghdad University Press ,1986	Recommended books and references (.scientific journals, reports, etc)
,Agricultural Tractor Maintenance, Al-Najjar/Ali Al-Saleh Dar Al-Hikma Press, Baghdad ,1990	Electronic references, Internet sites

Description of the course on medicinal plant production

This course aims to introduce students to the foundations and principles of medicinal plant production from an agricultural and economic perspective. It covers the various stages of production, from selecting suitable soil and propagation methods to harvesting and post-harvest treatments. It also covers the environmental factors affecting the growth and quality of medicinal plants, and the best agricultural practices for increasing production and improving the concentration of active compounds.

1) Course name

Production of medicinal plants

2) Course code

TIH 201

3) : Available attendance forms

Traditional attendance (in-person) Field scientific attendance - Blended learning

4) : Chapter/Year

Second Level - First Semester 2025-2024

5) : Number of study hours (total): Units

45 hours / 3

6) Date this description was prepared

2025/6/11

7) Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
:EmailDrjasim_hwj@ntu.edu.iq

8) Course objectives (general objectives of the course)

- Providing the student with the skills and knowledge necessary to produce medicinal plants efficiently.
- Introducing the student to agricultural practices that affect the quality and quantity of active ingredients.
- Developing the student's ability to plan and manage the environmental and economic aspects of medicinal plant production.
- Enabling the student to identify agricultural problems and proposed solutions in this field.
- Qualifying the student for work or scientific research in the fields of medical agriculture and herbal industries.

9) Course outcomes , teaching, learning and assessment methods

1-Cognitive objectives

1.1 Explain the environmental and agricultural factors affecting the production of medicinal plants.
1.2 Identify the different propagation methods of medicinal plants (seed, vegetative, tissue (culture.
1.3 Describe the soil, irrigation, and fertilization requirements of medicinal plants.
1.4 Explain the agricultural procedures for improving the quality and quantity of active compounds.

2-Skill objectives

2.1 Implement basic agricultural operations to produce medicinal plants in an agricultural or experimental environment.
2.2 Apply irrigation and fertilization programs appropriate to the growth stages of medicinal plants.
2.3 Diagnose agricultural problems (such as pests or nutrient deficiencies) and develop appropriate solutions.
2.4 Conduct practical experiments to improve agricultural treatments affecting the quality of medicinal plants.

3-Emotional goals

3.1 Demonstrate an appreciation for the importance of medicinal plants to health and the national economy.
3.2 Commit to ethical behavior in dealing with plant resources and agricultural techniques.
3.3 Work effectively within a team during practical projects and agricultural activities.
3.4 Demonstrate responsibility for the safe and sustainable use of fertilizers and pesticides.

10-**Course structure: Production of medicinal plants, theoretical vocabulary**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	theoretical	Definition of medicinal plants	/ Know medicinal plants Definition of medicinal plants / Historical overview Importance of medicinal / .plants	1	1
,Diagnostic formative and final	theoretical	Geographical distribution of medicinal plants	Understand the geographical distribution of medicinal plants in Iraq and the Arab world, and the most important problems of medicinal plant production .in Iraq	1	2
,Diagnostic formative and final	theoretical	Drug classification (medical substances)	Classification of drugs (medicinal substances) according to their location .in the plant	1	3
,Diagnostic formative and final	theoretical	Its properties, its - spread in seeds .flowers - stem - leaves	alkaline materials	1	4
,Diagnostic formative and final	theoretical	- Ferns - definition - areas of growth distribution - a brief - history of life - reproduction - classification .importance	Explains the drugs .extracted from ferns	1	5
,Diagnostic formative and final	theoretical	- Definition of lichens - Where they are found Uses of lichens	lichens Drugs extracted from	1	6
,Diagnostic formative and final	theoretical	Lichen products - their balance in the ecosystem	Types of lichens	1	7
,Diagnostic formative and final	theoretical	Biological and - economic importance Use of seaweed in agriculture - Marine environment - Physical and chemical - properties - Light Temperature - Water movement and their effect on algae	.Drugs extracted from algae	1	8
,Diagnostic formative and final	theoretical	Soil algae, factors ,affecting their growth their negative and ,positive importance - and freshwater algae algae cultivation	. Freshwater algae	1	9

,Diagnostic formative and final	theoretical	- Extraction Importance - Benefits and therapeutic - properties Relationship to humans - Treatment with volatile essential oils	. Volatile oils such as citrus	1	10
,Diagnostic formative and final	theoretical	Its properties and - distribution in plants geographical distribution its importance and - - medical benefits methods of use	. Bitter substances - colocynth	1	11
,Diagnostic formative and final	theoretical	Geographical distribution its importance and - medical benefits - its properties and spread in plants - its cultivation	. Active ingredients - walnuts	1	12
,Diagnostic formative and final	theoretical	Its properties in plants and its geographical distribution - its medicinal benefits and uses	Mucus and gums - cucumber	1	13
,Diagnostic formative and final	theoretical	Notes to be taken into consideration when dealing with medicinal plants - Doses - Methods of use	Notes to be taken into consideration when dealing - with medicinal plants . dosages - methods of use	1	14
,Diagnostic formative and final	theoretical	General review	General review	1	15

Course structure : production of medicinal plants, practical vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	practical	Seeds - Medicinal flowers in the - laboratory, castor oil - goat horn - fenugreek black seed	Identify plant types.	2	1
,Diagnostic formative and final	practical	- Eucalyptus - Pine .Willow - Spurge	Identifying types of medicinal plants in the institute's fields	2	2
,Diagnostic formative and final	practical	Preparing the land	Preparing the land for planting some types of medicinal plants, including herbs, trees, and shrubs.	2	3
,Diagnostic formative and final	practical	- Nettle - Chamomile Black seed	First: Annual herbs.	2	4
,Diagnostic formative and final	practical	- Castor oil - goat horn chasteberry	Second: Shrubs	2	5
,Diagnostic formative and final	practical	- Pine - Cypress - Eucalyptus - Seabuckthorn Buckthorn	Third: Trees.	2	6

,Diagnostic formative and final	practical	- Nettle - Chamomile Black seed with explanation - their - economic importance - their medical benefits active ingredients and their effect on humans	Cultivation of herbal medicinal plants.	2	7
,Diagnostic formative and final	practical	- Castor oil - Goat horn Chasteberry - Benefits Medicinal properties - Active ingredients - and their effects on humans - Monitoring agricultural operations	Planting shrubs.	2	8
,Diagnostic formative and final	practical	- Pine - Cypress - Eucalyptus - Seabuckthorn Explaining the economic importance	Planting medicinal tree seeds.	2	9
,Diagnostic formative and final	practical	Various service operations	Follow-up of the above ,agricultural operations ,including irrigation weeding and fertilization.	2	10
,Diagnostic formative and final	practical	Using my scalpel and cleaving devices from chamomile flowers and orange seeds	Extraction of volatile and fixed oils	2	11
,Diagnostic formative and final	practical	Collecting, drying and preserving the active parts of cultivated plants	Collecting the active parts of cultivated plants, drying them and preserving them.	2	12
,Diagnostic formative and final	practical	UsingPaper chromate graphy of thin layer chromatography	Separation of active parts	2	13
,Diagnostic formative and final	practical	UsingData show	Introducing students to weights and measures in ancient medicine for ancient tools	2	14
,Diagnostic formative and final	practical	Using different methods such as (preparing herbal tea)	Applications in the preparation of herbal and medicinal medicines	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12	Direct questions and homework	14

		and 13		
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**	
Production of medicinal plants	Required textbooks
	Main references (sources)
:The book of medicinal plants and herbal medicine . Author . Abdul Redha Al-Mayah Al-Basaer House and Library for Printing, Publishing and .Distribution . 2013	Recommended books and references .scientific journals, reports, etc
	Electronic references, Internet sites

Secondary Compounds Chemistry Course Description

This course focuses on the study of organic secondary compounds produced by organisms (especially plants) ,that are not directly involved in growth or basic metabolism, but play important roles in biological defense .adaptation, and specialized biological activities

1) Course name

Chemistry of secondary compounds

2) Course code

TIH 202

3) : Available attendance forms

Traditional attendance (in-person) Field scientific attendance - Blended learning

4) : Chapter/Year

Second Level - First Semester 2025-2024

5) Number of units / Number of study hours (total)

30 hours / Number of units: 2

6) Date this description was prepared

2025/6/11

7) Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
:EmailDrjasim_hwj@ntu.edu.iq

8) Course objectives (general objectives of the course)

Introducing the student to secondary organic compounds , in terms of their nature, sources, and vital role in living organisms, especially in plants.

Enable the student to classify natural products according to their chemical and functional properties (glycosides, phenols, alkaloids, terpenes, ketones).

Providing the student with knowledge about methods of extraction, separation and purification of ,secondary compounds using advanced chromatographic techniques (column chromatography, thin layer (paper, liquid-gas chromatography.

9) Course outcomes , teaching, learning and assessment methods

1 -Cognitive objectives

Explain the concept of secondary organic compounds and their importance in plants.
Classification of natural products into major groups based on chemical composition and biological function.
Describe the different methods of obtaining secondary compounds from their natural sources.

2- Skill objectives

Carry out the extraction and separation steps of secondary compounds using appropriate laboratory techniques.

The use of chromatography to separate the components of a plant or chemical mixture.

3- Affective goals

Demonstrate an appreciation for the importance of secondary compounds and their role in the pharmaceutical and food industries.

Commitment to scientific integrity and accuracy in recording and analyzing results.

Show interest in spectroscopic and chromatographic techniques as essential components of pharmaceutical research.

10-**Course Structure : Secondary Compounds Chemistry, Theoretical and Practical Vocabulary**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	**+ Theoretical practical**	Introduction, definition of organic secondary ,compounds classification of natural products, methods of obtaining organic ,secondary compounds separation and purification	Definition of organic ,secondary compounds classification of natural products, methods of obtaining organic ,secondary compounds separation and purification	1	1
,Diagnostic formative and final	**+ Theoretical practical**	Separation of ,secondary compounds ,chromatography column chromatography, thin ,layer chromatography ,paper chromatography liquid-gas chromatography	Able to separate secondary ,compounds chromatography, column chromatography, thin layer chromatography, paper chromatography, liquid-gas chromatography	1	2
,Diagnostic formative and final	**+ Theoretical practical**	Methods for identifying the structural composition of secondary compounds, both physical and chemical	Able to recognize the structural composition of secondary compounds, both .physical and chemical	1	3
,Diagnostic formative and final	**+ Theoretical practical**	Natural analysis methods: electronic dishes, infrared dishes (IR)	**Understands methods of natural analysis**	1	4
,Diagnostic formative and final	**+ Theoretical practical**	Nuclear Magnetic Resonance(NMR) plate Mass plates	**Nuclear resonance imaging (NRI)**	1	5
,Diagnostic formative and final	**+ Theoretical practical**	Identify the five types of organic secondary - compounds glycosides - phenols-	Identify the five types of organic secondary .compounds	1	6
,Diagnostic formative and final	**+ Theoretical practical**	Alkaloids - isoprenoids (terpenes) - quinones.	**Knows alkaloids**	1	7
,Diagnostic formative and final	**+ Theoretical practical**	Glycosides - Chemical and physical properties - Types of glycosides -	**Known** as glycosides	1	8

		Examples of glycosides - Their uses			
,Diagnostic formative and final	**+ Theoretical practical**	Phenols - Chemical and Physical Properties - Types of ,Phenols, Examples Uses	**Explains** phenols	1	9
,Diagnostic formative and final	**+ Theoretical practical**	,Covalent bonds chemical and physical ,properties, types examples, uses	**Explains the cotions**	1	10
,Diagnostic formative and final	**+ Theoretical practical**	Turbines, their ,classification ,existence, importance and uses	**Classify** turbines, their ,classification, existence .importance, and uses	1	11
,Diagnostic formative and final	**+ Theoretical practical**	Alkaloids, their ,classification ,existence, importance and uses	**Explains** alkaloids, their ,classification, existence .importance, and uses	1	12
,Diagnostic formative and final	**+ Theoretical practical**	Alkaloids, their ,classification ,existence, importance and uses	**Explains** alkaloids, their ,classification, existence .importance, and uses	1	13
,Diagnostic formative and final	**+ Theoretical practical**	Review topics	Review topics	1	14
,Diagnostic formative and final	**+ Theoretical practical**	Review topics	Review topics	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure Chemistry Secondary Compounds**	
not available	Required textbooks
	Main references (sources)

Natural Organic Chemistry (Secondary Compounds) • Author: Dr. Ahmed Abdullah Al-Shami **Drugs and medicinal plants** Author: A group of professors from colleges of pharmacy in the Arab world **Chemistry of drugs and medicinal plants** Author: Dr. Abdul Basit Muhammad Al-Sayyid	Recommended books and references (.Scientific journals, reports, etc)
	Electronic references, Internet sites

Farm Management Course Description

This course aims to provide students with the basic knowledge and skills related to managing and operating farms with economic and productive efficiency. ,The course covers the organizational ,financial, and technical aspects of farm management, including planning, costs, production, marketing human resources, and agricultural data analysis.

1) Course name

farm management

2) Course code

TIH 203

3) : Available attendance forms

Traditional attendance (in-person) Field scientific attendance - Blended learning

4) : Semester/Year

Second Level - First Semester 2025-2024

5) Number of units / Number of study hours (total)

30 hours / Units 2

6) Date this description was prepared

2025/6/11

7) Course supervisor name

Name: M.M. Ahmed Ibrahim Khalaf

:Email ahmedibrahim.haw@ntu.edu.iq

8) Course objectives (general objectives of the course)

- **Enabling the student to understand the scientific foundations for managing and operating farms efficiently.**
- **,Training students to prepare integrated agricultural business plans (productivity, financial (organizational.**
- **Developing students' skills in analyzing costs and benefits and using agricultural records.**
- **Qualifying the student to make informed administrative decisions based on realistic data.**

9- Course outcomes , teaching, learning and assessment methods

1 -Cognitive objectives

1.1 Explain the concepts and foundations of farm management and its economic and production objectives.
1.2 Classify farm types according to the nature of production (plant, animal, mixed).
1.3 Analyze the components of the agricultural plan (planning, resources, cost, revenue).
1.4 ,Explain the methods of managing the various resources within the farm (human, financial (natural.

2- Skill objectives

2.1 Prepare an integrated agricultural operation and production plan that includes technical and financial aspects.
2.2 Use appropriate tools and models to calculate costs and analyze revenues.
2.3 Accurately organize and document agricultural and production records.
2.4 Evaluate the overall performance of the farm and identify problems and possible solutions.

3- Affective goals

3.1 Demonstrate commitment to agricultural work ethics and managerial responsibility.
3.2 Appreciate the importance of good management in raising agricultural production efficiency and achieving food security.
3.3 Work as a team and assume responsibility within agricultural work teams.
3.4 Demonstrate interest in long-term planning and sustainability in agricultural resource management.

10-**Course Structure: Farm Management, Theoretical and Practical Vocabulary**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	+ **Theoretical practical**	Definitions of farm management and its objectives.	**Definition of management**	1	1
,Diagnostic formative and final	+ **Theoretical practical**	Production costs.	Knowing the costs of production.	1	2
,Diagnostic formative and final	+ **Theoretical practical**	The main economic principles and rules used in farm management.	Explain the main economic principles and rules used in farm management.	1	3
,Diagnostic formative and final	+ **Theoretical practical**	A- The principle of diminishing returns.	**Know the principle of diminishing returns**	1	4
,Diagnostic formative and final	+ **Theoretical practical**	B - The principle of farm costs and the theory of comparative costs.	Explains the principle of farm costs and the theory of comparative costs.	1	5
,Diagnostic formative and final	+ **Theoretical practical**	C- The principle of determining the level of production. D- The	**Know** the principle of determining the level of production. - The principle	1	6

		principle of equal returns and the principle of opportunity costs.	of equal returns and the principle of opportunity costs.		
,Diagnostic formative and final	+ **Theoretical practical**	Substitution or replacement to reduce costs	**Explain** substitution or replacement to reduce cost	1	7
,Diagnostic formative and final	+ **Theoretical practical**	Farm planning and budgeting.	**Knows** farm planning and budgeting.	1	8
,Diagnostic formative and final	+ **Theoretical practical**	Farm management methods A - complete and partial plan.	**Understands** farm management methods – full and partial plan.	1	9
,Diagnostic formative and final	+ **Theoretical practical**	B - The method of substitution and replacement between projects	Method of substitution and replacement between projects	1	10
,Diagnostic formative and final	+ **Theoretical practical**	C- Direct comparison method. D- Partial change method.	.Direct comparison method .Partial change method	1	11
,Diagnostic formative and final	+ **Theoretical practical**	,Farm accounts extinction and methods of calculating it.	Solves farm and depreciation accounts and methods of calculating them	1	12
,Diagnostic formative and final	+ **Theoretical practical**	Managing production elements with work efficiency and capital management.	Knows how to manage production elements efficiently and manage capital.	1	13
,Diagnostic formative and final	+ **Theoretical practical**	Economics of farm purchase and valuation methods.	Understands the economics of farm purchase and valuation methods.	1	14
,Diagnostic formative and final	+ **Theoretical practical**	Economic efficiency measures for the farm and farm budgeting.	Calculates farm economic efficiency measures and prepares farm budget.	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure Farm Management**	
Available	Required textbooks
	Main references (sources)
Farm Management , Author: Dr. Mohamed Abdel Fattah Youssef .**Farm Management and Operation** , Author: Dr Abdulaziz bin Abdullah Al-Abdullatif **Agricultural Production Economics and Management** , Author: Dr. Khaled Abdel Fattah	Recommended books and references (.Scientific journals, reports, etc)
	Electronic references, Internet sites

Description of the course on preserving and drying medicinal plants

This course covers the scientific and practical foundations of preserving and drying medicinal plants to preserve their active properties and utilize them for therapeutic and industrial purposes. The course includes a study of factors affecting the quality of plant materials after harvest, such as temperature, humidity, light, and oxygen, as well as traditional and modern drying techniques and proper storage of plant materials.

1. Course name

Preserving and drying plants

2. Course code

PPT201

3. : Available attendance forms

Traditional attendance (in-person) Field scientific attendance - Blended learning

4. : Semester/Year

Second Level - First Semester 2025-2024

5. : Number of study hours (total)

45 hours :3units

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
:EmailDrjasim_hwj@ntu.edu.iq

8. Course objectives (general objectives of the course)

1- **Providing the student with theoretical knowledge** about the scientific principles of preserving and drying medicinal plants, and the importance of these processes in maintaining the quality and effectiveness of plant materials .

2- **Enabling the student to understand the factors affecting** the quality of medicinal plants during and after the drying process, such as temperature, humidity, ventilation, and light.

3- **Qualifying the student to use and evaluate different drying techniques** (solar, air, industrial, freeze drying, vacuum drying, etc.) in terms of efficiency, quality, and economic feasibility.

4- **Introducing the student to appropriate storage and packaging methods** that ensure the safety and .stability of active compounds in plants

9. Course outcomes , teaching, learning and assessment methods

A - Cognitive objectives

A.1 Explain the basic concepts of medicinal plant preservation and drying processes.
A.2 Identify the physical and chemical properties of medicinal plants that affect the preservation and drying process . A.3Distinguish between different drying techniques and their areas of use. A.4 Explain the relationship between drying conditions and the quality ofthe active ingredients in plants. A.5 Explainthe general principles of storing medicinal plants after drying.

B- Skill objectives

B.1 Apply different techniques for drying medicinal plants in the laboratory or semi-industrial environment.
B.2 Use measuring and evaluation tools to determine the quality of dried plants.
B.3 Analyze the loss of active ingredient due to different drying conditions.
B.4 Implement steps for preservingand packaging medicinal plants in a scientific and safe manner.
B.5 Prepare accurate technical reports on the resultsof practical experiments related to drying and preservation.

C- Affective goals

A.1 Demonstrate commitment to work ethics in handling medicinal plant materials.
A.2 Appreciate the importance of quality in the production chain of herbal and medicinal products. A.3 Work within a team while conducting practical experiments and joint reports . A.4 Demonstrate interest in applying scientific knowledge to serve public health and alternative medicine. A.5Assume responsibility for maintaining healthand environmental standards in the handling of driedplants .

10-**Course structure** **Preservation and drying of plants theoretical vocabulary**					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	theoretical	Introduction: The importance of herbs and plants in ancient and modern medicine	recognize On the importance of herbs and plants in ancient and modern medicine	1	1
,Diagnostic formative and final	theoretical	General rules and appropriate times for collecting medicinal plants	Identify general rules and appropriate times for .collecting medicinal plants	1	2
,Diagnostic formative and final	theoretical	Drying herbs and medicinal plants	To be able to dry herbs and medicinal plants	1	3
,Diagnostic formative and final	theoretical	Natural drying methods	Distinguish between natural drying methods	1	4
,Diagnostic formative and final	theoretical	Industrial drying methods	Industrial drying methods	1	5
,Diagnostic formative and final	theoretical	Preserving herbs and medicinal plants	To preserve herbs and medicinal plants	1	6
,Diagnostic formative and final	theoretical	Storage of herbs and medicinal plants	Able to store herbs and medicinal plants	1	7
,Diagnostic formative	theoretical	Methods of using herbs and medicinal	Methods of using herbs and medicinal plants, herbal	1	8

and final		plants, herbal and ,medicinal plant juice herbal and medicinal plant syrup, medicinal plant honey.	,and medicinal plant juice herbal and medicinal plant syrup, medicinal plant honey.		
,Diagnostic formative and final	theoretical	Herbal and medicinal plant tincture, herbal and medicinal plant oils, herbal and medicinal plant ointments, herbal and medicinal plant powder.	Herbal and medicinal plant tincture, herbal and medicinal plant oils, herbal and medicinal plant ointments, herbal and medicinal plant powder.	1	9
,Diagnostic formative and final	theoretical	Herbal tea and ,medicinal plants herbal baths and medicinal plants.	Herbal tea and medicinal plants, herbal baths and medicinal plants.	1	10
,Diagnostic formative and final	theoretical	Methods of use and treatment	Uses of herbs and medicinal plants.	1	11
,Diagnostic formative and final	theoretical	Cloves - Ginger	Increase the number of herbs and medicinal plants.	1	12
,Diagnostic formative and final	theoretical	Castor oil - black seed oil	Extraction of herbs and medicinal plants.	1	13
,Diagnostic formative and final	theoretical	The part taken for use	Uses of herbs and medicinal plants.	1	14
,Diagnostic formative and final	theoretical	Where it is located and collected	herbs as medicinal plants.	1	15

Course Structure Preservation and Drying of Plants Practical Vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	practical	Conducting medicinal plant collections	Conducting medicinal plant collections	2	1
,Diagnostic formative and final	practical	Carrying out some drying operations for herbs and medicinal plants	Carrying out some drying operations for herbs and medicinal plants	2	2
,Diagnostic formative and final	practical	Carrying out some drying operations for herbs and medicinal plants	Carrying out some drying operations for herbs and medicinal plants	2	3
,Diagnostic formative and final	practical	Carrying out some drying operations for herbs and medicinal plants	Carrying out some drying operations for herbs and medicinal plants	2	4
,Diagnostic formative and final	practical	Carrying out some drying operations for herbs and medicinal plants	Carrying out some drying operations for herbs and medicinal plants	2	5
,Diagnostic formative and final	practical	Preservation of some medicinal herbs and plants	Preservation of some medicinal herbs and plants	2	6
,Diagnostic formative and final	practical	Storage of some medicinal herbs and plants	Storage of some medicinal herbs and plants	2	7
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	8
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	9
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	10
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	11
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	12
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	13
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	14
,Diagnostic formative and final	practical	Training on the use of available herbs and medicinal plants	Training on the use of available herbs and medicinal plants	2	15

11-Course Evaluation

Relative	degree	Calendar appointment	Evaluation methods	T

% weight		(week)		
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12 -**Infrastructure**

Preservation and drying of medicinal plants	Required textbooks
file:///C:/Users/Dell/Downloads/25412540001254.pdf	Main references (sources)
https://agriculture.uodiyala.edu.iq/uploads/2020/09/20.%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA%20%D9%82%D8%B3%D9%85%20%D8%A7%D9%84%D8%A8%D8%B3%D8%AA%D9%86%D8%A9 A%D9%85%20%D8%B9%D8%A8%D8%AF%20%D8%A7%D9%84%D8%AC%D8%A8%D8%A7%D8%B1%20%D9%853/%D8%AA%D8%AE%D8%B2%D9%8A%D9%86%20%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA%D8%A7%D8%AA%20%D9%88%D8%A7%D9%84%D9%85%D9%88%D8%A7%D8%AF%20%D8%A7%D9%84%D8%B7%D8%A8%D9%8A%D8%A9.ppt	Recommended books and references (.Scientific journals, reports, etc)
https://acmls.org/wp-content/uploads/2024/07/198-website.pdf file:///C:/Users/Dell/Downloads/Noor-Book.com.pdf	Electronic references, Internet sites

Description of the course of medicinal plant diseases

,This course focuses on the study of diseases affecting medicinal plants, in terms of their causes symptoms, impact on the quality and quantity of active compounds, and methods of diagnosis and control. The course covers various plant pathogens, such as fungi, bacteria, viruses, and nematodes, as well as physiological diseases resulting from unfavorable environmental conditions.

1- Course name

diseases of medicinal plants

2- Course code

PPT202

3- : Available attendance forms

Traditional attendance (in-person) Field scientific attendance - Blended learning

4- : Chapter/Year

Second Level - First Semester 2025-2024

5- Number of units / Number of study hours (total)

45 hours: 3units

6- Date this description was prepared

2025/6/11

7- Course supervisor name

Name: M.M. Ahmed Abdel Khalaf
:Emailahmedabd-hwj@ntu.edu.iq

8- Course objectives (general objectives of the course)

-1 **Introducing the student to the various causes of medicinal plant diseases and their impact on production.**

-2 Enabling the student to recognize the symptoms of diseases and diagnose them in the field and laboratory.

-3 Providing students with the skills to propose integrated pest control programs that take into account the safe use of medicinal plants.

Raising awareness of the environmental and health risks associated with treating medicinal crop -4 diseases.

-5 Qualifying the student to contribute to improving plant health and sustainable production in the medicinal herbs sector.

10. Course outcomes , teaching, learning and assessment methods

1-Cognitive objectives

1.1 Describe the various pathogens that affect medicinal plants (fungi, bacteria, viruses, nematodes).

1.2 Explain the effect of diseases on plant growth and the quality of active compounds.

1.3 Distinguish the symptoms of various diseases on medicinal plants.

1.4 Explain field and laboratory diagnostic methods for medicinal plant diseases.

1.5 Review the various and appropriate control strategies for medicinal plants.

2-Skill objectives

2.1 Conduct practical tests to diagnose medicinal plant diseases in the laboratory and field.

2.2 Use tools and techniques to detect plant pathogens.

2.3 Evaluate the severity of infection and determine appropriate measures to control diseases.

2.4 Implement integrated pest management programs (agricultural, biological, chemical) in a safe manner.

3-Emotional goals

3.1 Demonstrate a commitment to professional ethics in handling medicinal plants.

3.2 Appreciate the importance of disease prevention and control to maintain the quality of plant production.

3.3 Assume responsibility for following safe environmental practices during control.

10-**Course structure: Medicinal plant diseases, theoretical and practical vocabulary**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	theoretical Practical+	Classification of plant diseases	Able to classify plant diseases according to pathogen, symptoms and agent.	1	1
,Diagnostic formative and final	theoretical Practical+	Oomycetes	,Explanation of oomycetes their characteristics, the most important diseases they cause, late blight on ,potatoes, seedling death ,downy mildew on onions cucurbits and grapes.	1	2
,Diagnostic formative and final	theoretical Practical+	zygotic fungi	Classification of zygotic ,fungi, their classification most important characteristics and the diseases they cause.	1	3
,Diagnostic formative	theoretical Practical+	cyst fungi	Sac fungi, their most ,important characteristics	1	4

and final			the diseases they cause and their resistance, powdery mildew diseases on cucurbits, grasses, grapes and roses.		
,Diagnostic formative and final	theoretical Practical+	imperfect fungi	Imperfect fungi, diseases caused by them, date palm ,pollen blackening disease ,apple stem black spot ascochyta spot of broad beans.	1	5
,Diagnostic formative and final	theoretical Practical+	basidiomycetes	Basidiomycetes, their characteristics, the most important diseases they cause, rust and smut fungi.	1	6
,Diagnostic formative and final	theoretical Practical+	plant pathogenic bacteria	,Plant pathogenic bacteria their characteristics, the most important diseases they cause, and sources of infection with pathogenic bacteria.	1	7
,Diagnostic formative and final	theoretical Practical+	plant pathogenic viruses	Viruses that cause plant diseases, methods of transmission and spread of viral diseases, the most important diseases caused by viruses.	1	8
,Diagnostic formative and final	theoretical Practical+	Non-parasitic diseases and their causes	,Non-parasitic diseases their causes, symptoms, and nutrient deficiencies Npk, Cu, Mg, Br, Fe.Zn, Mn, S	1	9
,Diagnostic formative and final	theoretical Practical+	Plant diseases resulting from irregular irrigation and high groundwater levels	Plant diseases resulting ,from irregular irrigation ,high ground water level blossom end rot on leaves ,and tomato fruits gummosis of stone fruit trees.	1	10
,Diagnostic formative and final	theoretical Practical+	Methods of controlling plant diseases	Methods of controlling ,plant diseases: agricultural .biological, chemical ,Bacterial pesticides antibiotics, mycotoxins produced by some fungi ,that infect grains, fruits and food.	1	11
,Diagnostic formative and final	theoretical Practical+	Mycoplasmas as plant pathogens	Mycoplasmas as plant pathogens, their characteristics, the most important diseases they cause, their symptoms, their life cycle, and methods of combating them.	1	12
,Diagnostic formative and final	theoretical Practical+	plant viruses	,Plant viruses, their forms the chemical composition of the virus, general ,symptoms of viral diseases factors affecting the external manifestations of	1	13

			infection with viruses.		
,Diagnostic formative and final	theoretical Practical+	Life cycle of eelworms	,Life cycle of nematodes parasitism, changes caused by nematodes in plant tissue, resistance to nematodes, and the most important diseases they cause.	1	14
,Diagnostic formative and final	theoretical Practical+	Classification of plant diseases according to the pathogen	Classification of plant diseases according to the pathogen, symptoms and agent.	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12 -**Infrastructure**

medicinal plant diseases Plant Diseases and Their Control: Written by Ali Kamel El- ,Ghamrawy, Mustafa El-Nagari, and Tawfiq Abdel-Haq - Anglo-Egyptian Library - 165 - Mohamed Farid Street .Cairo	Required textbooks
	Main references (sources)
	Recommended books and references (.scientific journals, reports, etc
https://govkrd.b-cdn.net/Ministries/Ministry%20of%20Agriculture%20and%20Water%20Resources/Arabic/%D8%A7%D9%84%D9%85%D9%86%D8%B4%D9%88%D8%B1%D8%A7%D8%AA/%D8%A7%D9%84%D8%A8%D8%AD%D9%88%D8%AB/%D8%A7%D9%84%D8%A7%D9%81%D8%A7%D8%AA%20%D9%88%D8%A7%D9%84%D8%A7%D9%85%D8%B1%D8%A7%D8%B6%20%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA%D9%8A%D8%A9%20%D8%A7%D9%84%D8%AC%D8%B2%D8%A1%20%D8%A7%D9%84%D8%A7%D9%88%D9%84%20%D9%A2%D9%A0%D9%A0%D9%A3.pdf	Electronic references, Internet sites

Course Description: Ecology and Classification of Medicinal Plants

This course focuses on the study of the environmental factors that influence the growth and distribution of medicinal plants, as well as the scientific principles and foundations for their classification. The course addresses the habitats of medicinal plants in various ecosystems (such as deserts, forests, and mountainous regions), and the influence of climatic, vegetative, and geological conditions on their chemical composition and medicinal efficacy.

The course also includes a study of the various classification systems for medicinal plants, with a focus on classifying plants of therapeutic importance in terms of plant families, genera and species, and identifying their morphological and anatomical characteristics using classification keys.

1. Course name

Environment and classification of medicinal plants

2. Course code

PPT 203

3. : Available attendance forms

Traditional (face-to-face) attendance, field study - blended learning

4. : Chapter/Year

Second Level - First Semester 2025-2024

5. : Number of study hours (total)

45 hours:3

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: M.M. Ahmed Ibrahim Khalaf
:Emailahmedibrahim.haw@ntu.edu.iq

8. Course objectives (general objectives of the course)

-1 Identify the environmental factors that affect the growth and quality of medicinal plants.
-2 Understanding the geographical and ecological distribution of plants of medicinal value.
-3 Mastering the basics of plant classification and applying them to medicinal plants.
-4 Identify the most important plant families that include medicinal species.
-5 Enhancing the skills of collecting, describing, and classifying medicinal plants practically.

9. Course outcomes , teaching, learning and assessment methods

A - Cognitive objectives

,Explain the relationship between the environment and the geographical distribution of medicinal plants and identify plant classification systems.

B- Skill objectives

Applying field and laboratory identification and classification skills for medicinal plants.

C- Affective goals

Demonstrate appreciation for plant diversity and the importance of preserving the plant environment.

10. **Course structure : Environment and classification of medicinal plants, theoretical vocabulary**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	+ Theoretical practical	.Environmental factor ,Factors, light temperature	Understand the .environmental factor Factors, light, temperature	1	1
,Diagnostic formative and final	+ Theoretical practical	,Environmental factor .air, wind	Environmental factor .explains , air, wind	1	2

,Diagnostic formative and final	+ Theoretical practical	,Soil factor, soil type .soil composition	Soil factor, soil type, soil .composition	1	3
,Diagnostic formative and final	+ Theoretical practical	Soil moisture, soil solution, humus.	,Soil moisture, soil solution humus.	1	4
,Diagnostic formative and final	+ Theoretical practical	,Topographic factors slope trend	Topographic factors, slope trend	1	5
,Diagnostic formative and final	+ Theoretical practical	,Biological factors animal influence, plant influence and interaction	Biological factors, animal influence, plant influence and interaction	1	6
,Diagnostic formative and final	+ Theoretical practical	Classification according to the part ,used, root, stem, bark .etc	Classification according to ,the part used, root, stem .bark, etc	1	7
,Diagnostic formative and final	+ Theoretical practical	Classification according to the nature of herbs	Classification according to the nature of herbs	1	8
,Diagnostic formative and final	+ Theoretical practical	Classification by ,habitat. Tropical .. …… ,subtropical .etc	.Classification by habitat ,Tropical, subtropical .etc .. ……	1	9
,Diagnostic formative and final	+ Theoretical practical	Classification by therapeutic value: anti-cancer, anti-cholesterol	Classification by therapeutic value: anti-cancer, anti-cholesterol	1	10
,Diagnostic formative and final	+ Theoretical practical	Classification by ,Ayurvedic formula .roots, flowers, ... etc	Classification by Ayurvedic .formula, roots, flowers, ... etc	1	11
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	1	12
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	1	13
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	1	14
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10

1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12 **Infrastructure, environment and classification of medicinal plants -**	
Available	Classrooms and laboratory
https://sciences.uodiyala.edu.iq/uploads/00%20Abdullah%20New%20website/Lectures/bio	Required textbooks
	Main references (sources)
	Recommended books and references (.scientific journals, reports, etc
https://sciences.uodiyala.edu.iq/uploads/00%20Abdullah%20New%20website/Lectures/bio	Electronic references, Internet sites

Organic Chemistry Course Description

This course covers the fundamental principles of organic chemistry, focusing on the structure, nomenclature, physical and chemical properties of organic compounds, and the mechanisms of organic reactions. The course aims to provide students with a solid foundation for understanding and designing organic reactions, which is an important foundation for the study of biochemistry, pharmacology, and medical sciences.

1- Course name

Organic Chemistry

2- Course code

TIH 103

3- : Chapter/Year

Second Level - First Semester 2025-2024

4- : Available attendance forms

Traditional attendance (in-person) Field scientific attendance - Blended learning

5- Number of units / Number of study hours (total)

hours / Units 2 30

6- Date this description was prepared

2025/6/11

7- Course supervisor name

Name: M.M. Ahmed Ibrahim Khalaf

:Emailahmedibrahim.haw@ntu.edu.iq

8- Course objectives (general objectives of the course)

Understanding the structure of organic compounds

Classification of organic compounds

Learn about basic organic reactions

Naming organic compounds according tothe IUPAC system :

Understanding the physical and chemical properties of organic compounds

Use of spectroscopic methods to identify compounds

9- Course outcomes , teaching, learning and assessment methods

A - Cognitive objectives

-1A Define the basic concepts of organic chemistry, such as structural structures, isomers, and functional groups.

-2A ,Classification of organic compounds based on their chemical structure and functions (hydrocarbons (.alcohols, aldehydes, ketones, etc.

A 3- Explain the mechanisms of organic reactions, such as substitution, addition, and elimination .

-4A Analysis of the relationships between the structure, composition, and chemical activity of organic compounds

B- Skill objectives

1. **B- Drawing structural structures** of organic compounds using structural and projective formulas(Fischer, Newman...).
2. **b- Applying the naming rules according tothe IUPAC system** On various organic compounds.
3. **b- Spectral analysis of organic compounds**(such asNMR, IR, UV-Vis) and linking structural data with physical properties.
4. **b- Planning and implementing laboratory experiments** to detect organic compounds and their reactions.

C- Affective goals

c- **Demonstrate accuracy and discipline** in conducting experiments and recording data-1.

-c 2 **Teamwork** and collaboration with colleagues on joint projects or experiments.

3b- **Commitment to laboratory work ethics** , such as chemical safety and proper handling of hazardous materials.

-c 4 **Demonstrate scientific interest and curiosity** to understand the behavior of organic compounds in everyday life and industries.

10- Course structure: Organic Chemistry (theoretical and practical vocabulary) -

road Evaluation	road education	Unit name/topic	Outputs learning Required	watches	week
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Definition of organic ,chemistry classification, and functional groups in organic compounds	Organic chemistry is defined as the science concerned with the study of carbon compounds, their properties .and reactions Distinguish between different types . of organic compounds Explains the chemical and physical .properties of functional groups Compare functional groups	2	the first
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Aromatic compounds their , discovery and the reasons for their ,names benzene compounds and their composition	Definition of aromatic compounds Explain the history of the discovery of aromatic compounds and the factors that led to the development of this branch of chemistry. Analysis of the structure of aromatic rings Explain the relationship between chemical composition and aromatic properties	2	the second
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Benzene ,derivatives nomenclatu ,re chemical substitution ,reactions substitution reaction mechanism	Definition of benzene derivatives and their different types based on the functional groups attached to the benzene ring. Explanation of the rules for naming benzene derivatives according to theIUPAC system and examples of them. Distinguish the types of substitution reactions that occur to benzene ,derivatives (such as nitration (halogenation, sulfonation.	2	the third
Midterm exams monthly	Theoretical + practical	Aryl ,halide nomenclatu	Definition of aryl halides and distinction between them and alkyl halides.	2	Fourth

exams jugs Oral tests Laboratory experiments		,re chemical and physical properties and method of preparation	IUPAC rules and common names. Explain the physical properties of ,aryl halides such as boiling point solubility, and color.		
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Phenols and nomenclatu ,re chemical and physical ,properties methods of preparation	By the end of studying this topic, the student is expected to be able to: Definition of phenols and the distinction between them and alcohols , Explain the chemical properties of phenols such as acidity, reaction with bases, oxidation, and aromatic reactions (such as nitration). Description of methods for preparing phenols from different sources such as: ✓ Aryl halide decomposition. ✓ From aryl sulfonates. ✓ From coumarin or by hydrolysis.	2	Fifth
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Carboxylic ,acids nomenclatu ,re preparation and properties	:To be able to Define carboxylic acids and explain the general structure of the carboxyl group–COOH. Naming carboxylic acids according tothe IUPAC system and common names.	2	Sixth
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Aromatic ,aldehydes fertilization , preparation and properties	Definition of aromatic aldehydes and identification of the functional group (-CHO) attached to an aromatic ring such as benzene. IUPAC nomenclature and common names (e.g., benzaldehyde) for aromatic aldehydes. Explain the physical properties of aromatic aldehydes such as boiling point, odor, and solubility.	2	Seventh
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	,Ketones nomenclatu ,re preparation, and properties	By the end of studying this topic, the student is expected to be able to: Definition of ketones and explanation of the structure of the functional group(C=O) within the carbon chain . Naming ketones according tothe IUPAC system with the ability to , distinguish between common and official ketone names.	2	The eighth
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Aromatic ,amines nomenclature and properties	Definition of aromatic amines and explanation of the structure of the amino group attached to an aromatic ring (such as aniline). Naming aromatic amines using IUPAC and common names. Explain the physical properties of ,aromatic amines, such as solubility	2	Ninth

			odor, and boiling point.		
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Aromatic ,esters nomenclatu ,re preparatio n and properties	Define aromatic esters and explain the functional group structure in these compounds, showing their attachment to an aromatic ring (such .(as ethyl benzoate IUPAC nomenclature of aromatic esters , with common names	2	tenth
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Azo compounds , nomenclatu ,re preparatio n and properties	Definition of azo compounds and explanation of the structure of the functional group (–N=N– attached (.to aromatic rings Distinguish azo compounds from other aromatic compounds based on their structural composition. Analysis of the effect of the structure of azo compounds on their color and chemical properties. practical skills	2	eleve nth The twelft h
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Aromatic cyclic compounds	Define aromatic compounds and explain their distinctive structural features (benzene ring and electron .(rotation Understanding the concept of resonanceand its role in the stability .of aromatic compounds Distinguish between aromatic and non-aromatic compounds through structure and formulas. Use Huckel's principle to analyze the aromaticity of a compound. Third: Practical skills Drawing structural formulas of aromatic compounds. Writing basic chemical reaction equations accurately.	2	thirte enth and fourte enth The fiftee nth

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

Infrastructure-12	
Available	**Classrooms and laboratories laboratory visits**
Available	**Required textbooks**
Organic Chemistry (Prof. Dr. Abdullah Hussein Kashash)	**Main References (Sources)**
https://alrashed-alsaleh.com/uploads/posts/ea285aaaaaf24b803bd90547a2deeb9c.pdf https://books.google.iq/books?id=Y7z3DQAAQBAJ&printsec=frontcover&redir_esc=y#v=onepage&q&f=false	**Recommended books and references (scientific (.journals, reports, etc**
	Electronic references, websites

Aromatic Ornamental Plants Course Description

This course examines ornamental plants with distinctive aromatic properties, focusing on identify common species, their classification, and their botanical and chemical characteristics. The course also cov the environmental conditions suitable for the growth of these plants, various propagation methods, and c methods to ensure high productivity and quality of perfumes. The course also includes an introduction .harvesting, drying, and preservation techniques for the aromatic components of plants

1. Course name
aromatic ornamental plants
2. Course code
PPT205
3. : Chapter/Year
Second Level - First Semester 2025-2024
4. : Available attendance forms
Traditional attendance (in-person) Field scientific attendance - Blended learning
5. Number of units / Number of study hours (total)
30 hours/2
6. Date this description was prepared
2025/6/11
7. Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
:EmailDrjasim_hwj@ntu.edu.iq

8. Course objectives (general objectives of the course)

- **Providing the student with basic knowledge** about the classification and types of aromatic ornamental plants and their botanical and chemical properties.
- **Enable the student to understand the environmental conditions** suitable for the growth of aromatic plants, including soil, light, and humidity.
- **Developing the student's skills in** different propagation techniques for aromatic ornamental plants (seed (and vegetative.
- ,**Introducing the student to the optimal care methods** for aromatic ornamental plants, such as irrigation fertilization, and pest management.

9. Course outcomes , teaching, learning and assessment methods

1-Cognitive objectives

Identify common types of aromatic ornamental plants and their botanical 1.1 classification.

1.2 Explain the botanical and chemical characteristics of aromatic plants used in ornamental purposes.

1.3 Understand the optimal environmental conditions for the growth of these plants.

1.4 Describe the different propagation methods (seed and vegetative) suitable for aromatic ornamental plants.

2-Skill objectives

2.1 Applying methods of cultivation and care of aromatic ornamental plants in different environments.
2.2 Implementing various propagation techniques for aromatic ornamental plants.
2.3 Carrying out harvesting and drying operations while maintaining the quality of the fragrance.
2.4 Diagnosing agricultural problems related to aromatic plants and proposing appropriate solutions.

3-Emotional goals

3.1 Demonstrate an appreciation for the importance of aromatic ornamental plants in aesthetics and industry.
3.2 Commit to sustainable and environmentally safe agricultural practices.
3.3 Assume responsibility for the care and health of aromatic plants.

10. **Course structure : Aromatic ornamental plants, theoretical vocabulary**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	theoretical	A historical overview of the uses of aromatic and medicinal plants.	Explaining the historical overview of the use of medicinal and aromatic plants in different civilizations.	1	1

,Diagnostic formative and final	theoretical	The economic importance of aromatic medicinal plants, uses of medicinal plants in medical treatment.	Explaining the economic importance of medicinal and aromatic plants at the local and global levels.	1	2
,Diagnostic formative and final	theoretical	Classification of - medicinal plants Botanical classification Chemical - - classification Therapeutic classification.	Distinguish between the different medicinal uses of plants and their role in traditional and modern treatment.	1	3
,Diagnostic formative and final	theoretical	Medicinal plants in the Arab world - the great strategic and economic importance of medicinal and aromatic plants.	Classification of medicinal plants according to botanical, chemical, and therapeutic principles.	1	4
,Diagnostic formative and final	theoretical	Geographical distribution of medicinal and aromatic plants - the most important environmental factors affecting plant distribution.	Describe the geographical distribution of medicinal plants and the environmental factors that affect their growth and reproduction.	1	5
,Diagnostic formative and final	theoretical	Agricultural operations of medicinal plants.	Identify the most important active ingredients in plants and their locations within the plant.	1	6
,Diagnostic formative and final	theoretical	Medicinal materials and their locations in plants.	Explain the scientific methods used to analyze and determine the quality and quantity of active ingredients.	1	7
,Diagnostic formative and final	theoretical	Methods of determining and diagnosing the quantity and quality of active ingredients.	Understanding the scientific basis for appropriate harvesting times to obtain maximum effectiveness from medicinal materials.	1	8
,Diagnostic formative and final	theoretical	Scientific basis and appropriate times to obtain medical supplies.	Identify plant growth regulators and their effect on medicinal and aromatic plants.	1	9
,Diagnostic formative and final	theoretical	Plant growth regulators and their effect on medicinal and aromatic plants.	Statement of the agricultural and industrial purposes of plant growth regulators.	1	10
,Diagnostic formative and final	theoretical	The purposes for which plant growth regulators are used.	Statement of the agricultural and industrial purposes of plant growth regulators.	1	11
,Diagnostic formative and final	theoretical	Methods of extracting essential oils - natural properties of essential oils.	**Identify the different methods for extracting volatile oils** from medicinal plants (such as steam distillation, pressing, solvent (extraction.	1	12

			Distinguish between each extraction method in terms of principle, effectiveness .and cost		
,Diagnostic formative and final	theoretical	Methods of preserving and storing essential oils.	**Explain the factors that affect the quality of essential oils during preservation and ,storage,** such as light, heat .and oxygen	1	13
,Diagnostic formative and final	theoretical	Study and observation of some available medicinal and aromatic plants.	Identify the common, locally available types of medicinal and aromatic plants.	1	14
,Diagnostic formative and final	theoretical	Comprehensive vocabulary review.	Comprehensive vocabulary review	1	15

Course structure : Aromatic ornamental plants, practical vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	practical	Medicinal and aromatic plants and study of their scientific names.	Identify medicinal and aromatic plants and study their scientific names.	1	1
,Diagnostic formative and final	practical	Specialized parts of the plant to extract the active ingredient.	Study of specialized parts of the plant to extract the active ingredient.	1	2
,Diagnostic formative and final	practical	Morphological characteristics and making a diagram of the leaves, stems and roots and indicating the specialized parts to extract the active ingredient.	Study the morphological characteristics and make a diagram of the shape of the leaves, stems and roots and mark the specialized parts to extract the active ingredient.	1	3
,Diagnostic formative and final	practical	Private nursery for growing available seeds.	Preparing and setting up a private nursery to plant the available seeds.	1	4
,Diagnostic formative and final	practical	Planting seeds of some available plants specialized in aromatic herbs.	Planting seeds of some available plants specialized in aromatic herbs.	1	5
,Diagnostic formative and final	practical	Carrying out the necessary service operations known as irrigation, fertilization and weeding.	Carrying out the necessary service operations known as irrigation, fertilization and weeding.	1	6
,Diagnostic formative and final	practical	Follow up the service and observe the development of the growth of the cultivated plants.	Follow up the service and observe the development of the growth of the cultivated plants.	1	7
,Diagnostic formative and final	practical	Make regular visits to a medical research center to learn about methods of extracting active ingredients from plants, if possible.	Make regular visits to a medical research center to learn about methods of extracting active ingredients from plants, if possible.	1	8
,Diagnostic formative and final	practical	Carrying out the process of harvesting and collecting samples of aromatic and medicinal plants and ,preserving them writing down their scientific names and plant families, and placing the part	Carrying out the process of harvesting and collecting samples of aromatic and medicinal plants and preserving them, writing down their scientific names and plant families, and placing the specialized part of the active ingredient with the sample independently.	1	9
,Diagnostic formative and final	practical	Each student conducts a library research on at least five aromatic plants and five medicinal plants.	Each student conducts a library research on at least five aromatic plants and five medicinal plants.	1	10

,Diagnostic formative and final	practical	Submitting and saving reports for discussion and information sharing.	Submitting and saving reports for discussion and information sharing.	1	11
,Diagnostic formative and final	practical	Discussing reports.	Discussing reports.	1	12
,Diagnostic formative and final	practical	Discussing reports.	Discussing reports.	1	13
,Diagnostic formative and final	practical	Discussing reports.	Discussing reports.	1	14
,Diagnostic formative and final	practical	Comprehensive review	Comprehensive review	1	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-Infrastructure

Available	**Classrooms and laboratories laboratory visits**
not available	**Required textbooks**
	Main References (Sources)
https://www.fayoum.edu.eg/openedu/pdf/3-%20%D8%A5%D9%86%D8%AA%D8%A7%D8%AC%20%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA%D8%A7%D8%AA%20%D8%A7%D9%84%D8%B7%D8%A8%D9%8A%D8%A9%20%D9%88%D8%A7%D9%84%D8%B9%D8%B7%D8%B1%D9%8A%D8%A9.pdf	**Recommended books and references (scientific (.journals, reports, etc**
	**..... ,Electronic references, websites**

Pharmaceutical Manufacturing Course Description

,This course focuses on the basic principles and processes of the pharmaceutical manufacturing process from raw materials to the final pharmaceutical product. It covers the various stages of production of pharmaceutical formulations (such as tablets, capsules, ointments, and emulsions), including preparation, mixing, sieving, drying, compression, packaging, and storage techniques. It also discusses aspects related to quality control, Good Manufacturing Practices(GMP) standards and field trials ,.
1. Course name
pharmaceutical manufacturing
2. Course code
PPT 206
3. : Available attendance forms
Traditional attendance (in-person) Field scientific attendance - Blended learning
4. : Semester/Year
2024Level Two - First Semester 2025-
5. units / Number of study hours (total)
45 hour/3 units
6. Date this description was prepared
2025/6/11
7. Course instructor's name
Name: M.M. Ahmed Ibrahim Khalaf :Emailahmedibrahim.haw@ntu.edu.iq
8. Course objectives (general objectives of the course) **Understanding and sequencing the basic processes of pharmaceutical manufacturing.** **Practical and safe application of mixing, sieving, drying, and pressing techniques.** **Manufacturing prototypes of solid, semi-solid and liquid pharmaceutical forms.** **.Evaluating the quality of pharmaceutical products according to quality standards**

9. Course outcomes , teaching, learning and assessment methods

1Cognitive objectives -

Explaining the stages of drug manufacturing from raw materials to the final pharmaceutical form.

,Distinguish between different pharmaceutical dosage forms (tablets, capsules (.ointments, etc.

,Explain the physical and chemical principles of pharmaceutical processes (sieving .(...mixing, extraction, drying

2- Skill objectives

-1 Use laboratory and manual equipment for manufacturing processes accurately and safely.

Implementing the steps for manufacturing pharmaceutical products such as tablets, capsules and -2 ointments.

-3 Calibration of raw materials and active ingredients in accordance with pharmaceutical requirements.

3- Affective goals

Show respect for the ethics of the pharmacy profession and pharmaceutical manufacturing.

Commitment to quality and accuracy standards at all stages of manufacturing.

Appreciating the importance of pharmaceutical manufacturing in serving society and health care.

10-**Course structure : Drug manufacturing, theoretical and practical components**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	**+ Theoretical practical**	**The concept of pharmaceutical - manufacturing - development stages importance and specifications of the formula - practical - formulation packaging - field trials.**	**Explains the concept of pharmaceutical manufacturing and its stages from research to production. Distinguish between the main components of the drug formula and their .importance**	1	1
,Diagnostic formative and final	**+ Theoretical practical**	**Meaning of particle size - Definition of - particle size Distribution and analysis.**	**Defines particle size and explains its importance in preparing pharmaceutical formulations. Applies techniques for analyzing particle size and .distribution in raw materials**	1	2
,Diagnostic formative and final	**+ Theoretical practical**	**- Volume reduction Energy required for - volume reduction**	**Explains the importance of reducing particle size in pharmaceutical manufacturing.**	1	3

		Volume reduction - methods - Cutting - Pressing Compression.	**Distinguish between different methods of volume ,reduction (mechanical .(physical**		
,Diagnostic formative and final	**+ Theoretical practical**	**First: Palm tree methods - Mechanics of palm tree methods.**	**Identify the types of sieves used to separate materials according to size. Explains the working mechanism of different palm .frond devices**	1	4
,Diagnostic formative and final	**+ Theoretical practical**	**,Second: Mixing ,definition and topic mixing devices and methods of operation.**	**Defines the mixing process and its objectives in preparing medicines. Explains how to operate different mixing devices .(rotary, aspirator, manual)**	1	5
,Diagnostic formative and final	**+ Theoretical practical**	**Third: Types of mixtures, mixing liquids, mixing powder (ground).**	**Mixing types are classified according to the physical state of the material. Apply precise mixing operations for powders and .liquids**	1	6
,Diagnostic formative and final	**+ Theoretical practical**	**Evaporation, factors ,affecting evaporation improving evaporation ,efficiency, filtration properties and affecting factors.**	**Identifies methods for improving evaporation efficiency in pharmaceutical manufacturing. Explains filtration methods and the properties of materials that affect its .speed and quality**	1	7
,Diagnostic formative and final	**+ Theoretical practical**	**Extraction, extraction theory, extraction ,methods recirculating extraction, multi- ,stage extraction continuous extraction .**	**Explains the concept of extraction and its scientific basis. Distinguish between extraction methods ,circular, multi-stage) .(continuous**	1	8
,Diagnostic formative and final	**+ Theoretical practical**	**Drying of dilute solutions, suspensions and solids.**	**It identifies methods for drying solutions, suspensions and solids. Evaluates optimum conditions for safe drying .without loss of effectiveness**	1	9
,Diagnostic formative and final	**+ Theoretical practical**	**First: Pharmaceutical - dosage form compressed pills - pill compression processes.**	**Distinguish between different pharmaceutical dosage forms. Explains the grain pressing process and the technical .stages associated with it**	1	10
,Diagnostic formative and final	**+ Theoretical practical**	**Second: Preparing - materials for grains dry and wet extraction.**	**Distinguish between methods of preparing grains (dry, wet). It practically carries out the stages of preparing the .grains before pressing**	1	11
,Diagnostic formative and final	**+ Theoretical practical**	**First: The basic contents of the tablets - diluents - disintegrating materials - gripping**	**Defines the different functions of each component of the disks. Classify materials according ,to their function (thinning**	1	12

		materials - slip-aid materials.	**disintegrating, gripping, slip- .(aiding**		
,Diagnostic formative and final	**+ Theoretical practical**	**Second: Grain packaging - grain calibration - quality control.**	**Apply the steps of calibrating tablets in terms of weight, size, and potency.** **Understands quality control standards in solid pharmaceutical .manufacturing**	1	13
,Diagnostic formative and final	**+ Theoretical practical**	**Capsules - Capsule production materials - Filling equipment - Processes and filling.**	**Explains the components of the capsule and the materials suitable for its manufacture.** **Explains how capsule filling .machines work**	1	14
,Diagnostic formative and final	**+ Theoretical practical**	**First: Emulsions and - their composition - Selection of oil face Selection of auxiliary factors - Qualitative examination for control.**	**Selects active ingredients to .form a stable emulsion**	1	15

Course Evaluation - 11

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	
12-**Pharmaceutical manufacturing infrastructure**				
Classrooms and laboratory			Classrooms and laboratory	
Required textbooks -1			Required textbooks -1	
Main references (sources) -2			Main references (sources) -2	
A- Recommended books and references (.Scientific journals, reports, etc)			A- Recommended books and references (.Scientific journals, reports, etc)	
B - Electronic references, Internet sites			B - Electronic references, Internet sites	

Nurseries and Propagation Course Description

This course aims to provide students with the basic knowledge and skills related to establishing and managing nurseries, as well as the various methods of plant propagation, whether by seeds or vegetati methods, with a focus on practical applications used in the agricultural and production sector.

1. Course name

Nurseries and propagation

2. Course code

PPT207

3. semester/year

2025-2024

4. Available attendance forms

Traditional attendance (in person) 2. Field scientific attendance 3. Blended learning

5. Number of study hours (total) / Number of units

30hours / Units 2

6. Date this description was prepared

2025/6/11

7. Course supervisor name

Name: Ahmed Abdel Halaf
:Emailahmedabd-hwj@ntu.edu.iq

8. Course objectives (general objectives of the course)

1. The student understands the role of nurseries in agriculture and plant production.
2. The student learns about the types of nurseries and their classifications (governmental, private, commercial, research).
3. Identify the environmental and administrative factors that affect the success of the nursery.
4. Study of different methods of plant propagation (sexual and asexual).
5. ,Practical training on propagation techniques such as cuttings, layering grafting, tissue culture, and seed cultivation.
6. Gain skills in preparing agricultural environments, sterilizing soil, and caring for plants.

9. Course outcomes , teaching, learning and assessment methods

A- Cognitive objectives

.A-1 Explains basic concepts and terminology related to sexual and asexual propagation of plants.

2- A. Explain the importance of the nursery stage in producing strong and suitable vegetable seedlings for planting.
3- A- Classify the types of nurseries (open, protected, air-conditioned) and compare their characteristics and purposes of use in vegetable cultivation.

B-Skill objectives

,B- Carry out the processes of preparing the agricultural environment, sterilizing the medium, irrigation -1 fertilization, and thinning.
b. Participates in the establishment of Experimental nursery and its practical management-2.
.b-3 ,Performs the operations of preparing the agricultural environment, sterilizing the medium, irrigation .fertilization, and fertilization

C- Affective goals

Commitment to environmentally sustainable agricultural practices -A1.
A2- Taking into account ethical and health issues in the use of fertilizers and pesticides.

A3- Enhancing food security through the production of healthy and safe vegetables.

10. Course Structure: Nurseries and Propagation **(Theoretical and Practical (Vocabulary**

Evaluation method	**Teaching method**	Unit name/topic	Required learning outcomes	watches	week
Diagnostic Formative- Final-	+ Theoret practical	Definition of nurseries and plant propagation	about The student should know .nurseries and their importance Shows the methods of plant reproduction ,To learn the terminology of nurseries trees, and seedlings. Types of nurseries and the purpose of their establishment .and design	2	1
Diagnostic Formative- Final-	+ Theoret practical	seed trees	.a ,To know seed trees types of trees, selection of seed trees .b The student mentions the factors taken into consideration when establishing and .selecting seedbeds .c Learn how to use the equipment used in seed extraction and how it .works	2	2
Diagnostic Formative- Final-	+ Theoret practical	Examining seeds and estimating their germination rate	about the types The student will learn of seeds and the size and shape of some .types of forest tree seeds ,Know the dormancy of seeds, its types .and the reason for its occurrence To learn how to apply the process of examining seed vitality and seed .germination	2	3
Diagnostic Formative- Final-	+ Theoret practical	**Vegetative propagation**	vegetative propagation and To know its types the methods of vegetative Mention .propagation and its importance	2	4
- Diagnostic Formative- Final-	+ Theoret practical	**Use of growth regulators**	Knows how to use growth regulators for pens Learn to apply pre-treatments to seeds before planting to break seed .dormancy	2	5
Diagnostic Formative- Final-	+ Theoret practical	**Vegetative propagation and the use of growth regulators**	Learn how to collect pens Know when to take the cuttings and plant them	2	6
- Diagnostic Formative- Final-	+ Theoret practical	Methods of collecting plant cuttings, and using	The student should know the plant .mind and its types ways to cultivate the mind Learn	2	7

		growth hormones in , rooting cuttings Seed storage and how to measure their viability	Knows methods of storing and vitality of seeds To learn to calculate the germination percentage, germination rate and germination speed		
- Diagnostic Formative- Final-	+ Theoreti practical	Fences used in the nursery	Identify the types of living and non-living fences and their specifications Carries out the process of individualizing the seedlings, taking into account the points that must be .met during individualization	2	8
Diagnostic Formative- Final-	+ Theoreti practical	Fences used in the nursery	Identify the types of living and non-living fences and their specifications Carry out the process of individualizing the seedlings, taking into account the points that must be .met during individualization	2	9
- Diagnostic Formative- Final-	+ Theoreti practical	.Irrigation systems	the irrigation systems used Mention .in nurseries Apply irrigation systems in the nursery	2	10
Diagnostic Formative- Final-	+ Theoreti practical	Plowing and fertilizing	plowing methods Knows Knows the types of fertilizers and fertilization periods A practical visit to the fields of Al-Hawija Technical Institute	2	11
Diagnostic Formative- Final-	+ Theoreti practical	Weeding, weeding and control agricultural tools	To learn how to weed the nursery soil, thinning, weed control, disease .and insect control Learn to use agricultural tools for nursery service operations. Control .infected nursery plants	2	12
- Diagnostic Formative- Final-	+ Theoreti practical	Media used in plant growth and propagation	the most important To learn agricultural media, how to sterilize the media, sterilization methods, and .the most important soil sterilizers To show the necessary methods for establishing nurseries, planning and designing the nursery land ,Field observations in the nursery writing reports on the establishment of nurseries	2	13
- Diagnostic Formative- Final-	+ Theoreti practical	Plant hormones (growth regulators)	,To know growth and development ,characteristics of growth hormones .auxins, cytokinins, and gibberellins How to treat plant cuttings and .cuttings with plant hormones It mentions the most important agricultural media, how to sterilize the media, sterilization methods, and .the most important soil sterilizers	2	14

Diagnostic Formative- Final-	+ Theoret practical	Agricultural media and soil sterilizers	the To know what a nursery is and most important types of methods .and places that produce seedlings To learn the process of acclimatization or hardening of seedlings	2	15

11-Course Evaluation

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-Infrastructure

Available	**Classrooms, laboratories a workshops**
Available	**Required textbooks**
Salman , Mohammed Abbas. 1988. Propagation of horticultural plants . Ministry of Higher Education and . Iraq. of BaghdadUniversity - Scientific Research Khalil , Mahmoud Abdel Aziz 2019. Encyclopedia of - Horticultural Plants ` Basics - Nurseries and Their Care . Propagation . Dar Al-Kitab Al - Hadith	**Main References (Sources)**
nothing	**Recommended books and ,references (scientific journals (.reports, etc**
nothing	**Electronic references, websites**

Course description: Medicinal Plants Insects

This course focuses on the study of insects that affect medicinal plants, including their types, harm effects, and their role in the medicinal plant ecosystem. The course covers the classification of harmful a beneficial insects, their biological behavior, and the feeding and reproductive mechanisms that affect health and productivity of medicinal plants.

1- Course name

Medicinal plant insects

2- Course code

PPT 208

3- : Semester/Year

Second Level - First Semester 2025-2024

4- : Available attendance forms

Traditional attendance (in-person) Field scientific attendance - Blended learning

5- Number of units / Number of study hours (total)

45 hours/3 units

6- Date this description was prepared

2025/6/11

7- Course supervisor name

Name: Ahmed Abdel Halaf
:Emailahmedabd-hwj@ntu.edu.iq

8- Course objectives (general objectives of the course)

- **Introducing the student to the types of insects that affect medicinal plants and their classification.**
- **Enabling the student to understand the life cycle of insects and their impact on the health of medicinal plants.**
- **Providing the student with the skills to diagnose and identify harmful insects.**
- **Teaching students integrated pest control methods while preserving the environment and product quality.**

9- Course outcomes , teaching, learning and assessment methods

1-Cognitive objectives

1.1 Classify insects associated with medicinal plants into main groups (harmful, beneficial).
1.2 Explain the characteristics and behaviors of insects that affect medicinal plants.
1.3 Explain the life cycle of insects, their feeding mechanisms, and their impact on the quality of active compounds.
1.4 Distinguish between the different types of insect damage to plant organs (leaves, roots, flowers, seeds).

2- Skill objectives

2.1 Use field tools to collect and monitor insects (e.g., traps, lenses, field guides).
2.2 Conduct tests to diagnose the insect species and determine the degree of infestation.
2.3 Apply safe and effective integrated pest management strategies to protect medicinal plants.

3- Affective goals

3.1 Demonstrate an appreciation for the importance of ecological balance in managing insect pests of medicinal plants.
3.2 Commit to safe and conscious practices in the use of pesticides or control methods.
3.3 Assume responsibility for monitoring the health of medicinal crops and pest control.
3.4 Cooperate positively with colleagues within field and laboratory work teams.

10- **Course structure : Insects, Medicinal Plants, Theoretical Vocabulary**

Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative	theoretical	Harm and damage of insects and their	Learn about the harms and benefits of insects.	1	1

and final		benefits.			
,Diagnostic formative and final	theoretical	The spread of insects in nature.	List the factors that contribute to the success and spread of insects in nature.	1	2
,Diagnostic formative and final	theoretical	Insect reproduction and growth.	Explains the reproduction and growth of insects.	1	3
,Diagnostic formative and final	theoretical	Types of nutrition in insects.	List the types of nutrition in insects.	1	4
,Diagnostic formative and final	theoretical	Environments in which insects live.	Environments in which insects live.	1	5
,Diagnostic formative and final	theoretical	Non-insect animal pests, order Acaridae.	,Non-insect animal pests order Acaridae.	1	6
,Diagnostic formative and final	theoretical	Non-insect animal pests, order Rodentia.	,Non-insect animal pests order Rodentia.	1	7
,Diagnostic formative and final	theoretical	Non-insect animal pests, order of birds and rodents.	,Non-insect animal pests order of birds and rodents.	1	8
,Diagnostic formative and final	theoretical	The economic importance of diseases	The economic importance of plant diseases and the losses resulting from them.	1	9
,Diagnostic formative and final	theoretical	Some definitions in plant pathology.	Some definitions in plant pathology.	1	10
,Diagnostic formative and final	theoretical	The way the cause enters.	The way in which the pathogen enters plant tissue .	1	11
,Diagnostic formative and final	theoretical	Methods of transmission and spread of plant diseases.	Methods of transmission and spread of plant diseases .	1	12
,Diagnostic formative and final	theoretical	Factors predisposing to plant diseases.	Factors predisposing to plant diseases.	1	13
,Diagnostic formative and final	theoretical	Fungi, their - characteristics ,methods of nutrition methods of reproduction and division.	- Fungi, their characteristics ,methods of nutrition methods of reproduction and division.	1	14
,Diagnostic formative and final	theoretical	Nematodes as plant pathogens - Nematode body structure - Type of damage they cause	Nematodes as plant pathogens - Nematode body structure	1	15

Course structure : Insects, Medicinal Plants, Practical Vocabulary					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	watches	week
,Diagnostic formative and final	practical	External appearance of insects	- is distinguished by	2	1
,Diagnostic formative and final	practical	- The eyes.	Distinguish between insect eyes	2	2
,Diagnostic formative and final	practical	Mouth parts and their modifications	List the mouth parts and their modifications - the thorax in insects - the leg appendages and their modifications - the wings and their modifications.	2	3
,Diagnostic formative and final	practical	The abdomen in insects - their appendages.	The abdomen in insects - their appendages.	2	4
,Diagnostic formative and final	practical	Types of larvae and pupae.	- Metamorphosis in insects types of larvae and pupae.	2	5
,Diagnostic formative and final	practical	Principles of insect classification.	Principles of insect classification, their positions in the animal kingdom, the most important animal phyla and their characteristics.	2	6
,Diagnostic formative and final	practical	Dream rank - general - characteristics - external appearance the most important factors harmful to plants.	Dream rank - general characteristics - external appearance - the most important factors harmful to plants.	2	7
,Diagnostic formative and final	practical	Rodents - external appearance - species common in Iraq.	- Rodents - external appearance species common in Iraq.	2	8
,Diagnostic formative and final	practical	birds	Birds - Species harmful to agricultural crops - Species common in Iraq.	2	9
,Diagnostic formative and final	practical	Some laboratory - instructions - equipment and tools - light microscope practical application on the equipment and its maintenance.	- Some laboratory instructions equipment and tools - light microscope - practical application on the equipment and its maintenance.	2	10
,Diagnostic formative and final	practical	Types of culture media - preparing them - - sterilizing the media how to place them in dishes.	- Types of culture media preparing them - sterilizing the media - how to place them in dishes.	2	11
,Diagnostic formative and final	practical	Isolation of pathogens from plant parts, seeds and soil.	Isolation of pathogens from plant parts, seeds and soil.	2	12
,Diagnostic formative and final	practical	Examine the isolation results and diagnose the causes.	Examine the isolation results and diagnose the causes.	2	13
,Diagnostic formative	practical	Carrying out a pest control operation for	Carrying out a pest control operation for one of the parts	2	14

and final		one of the parts spread throughout the institute diagnosing the - disease and determining the appropriate pesticide.	- spread throughout the institute diagnosing the disease and determining the appropriate pesticide.		
,Diagnostic formative and final	practical	Diseases caused by worms (root knot ,disease of vegetables slow decay of citrus fruits, and wheat (warts.	Diseases caused by worms (root knot disease of vegetables, slow decay of citrus fruits, and wheat (warts.	2	15

Course Evaluation - 11

Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
2.5	2.5	Fourth week	Report 1	1
2.5	2.5	Fifth week	Report 2	2
2	2	Week 6	Short Test (1)Quiz	3
2	2	Fourteenth week	Short Test (2)Quiz	4
1	1	The fifteenth week	Short Test (3)Quiz	5
7.5	7.5	Week 6	Midterm Exam (1)	6
7.5	7.5	The eleventh week	Midterm Exam (2)	7
50	50	Final semester exams	Final theoretical exam	8
5	5	The fifteenth week	Practical field project	9
2	2	The third and fifth week	Field evaluation	10
1	1	First week	Practical Short Test (1)Quiz	11
0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
1	1	Fourteenth week	Practical Short Test (3)Quiz	13
5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
10	10	Final semester exams	Final practical exam	15
%100	%100	100	the total	

12-**Infrastructure**	
Available	Classrooms, laboratory and field
General Insects Book	Required textbooks -1
Available	Main references (sources) -2
	A- Recommended books and references (.Scientific journals, reports, etc)
https://agriculture.uodiyala.edu.iq/wp-content/uploads/2023/09/%D9%83%D9%84-%D9%85%D8%AD%D8%A7%D8%B6%D8%B1%D8%A7%D8%AA-%D8%A7%D8%B3%D8%B3-%D9%88%D9%82%D8%A7%D9%8A%D8%A9-%D8%AF.-%D8%AD%D8%B3%D9%8A%D9%86-%D8%B9%D9%84%D9%8A-%D9%85%D8%B7%D9%86%D9%8A-%D9%82%D8%B3%D9%85-%D8%A7%D9%84%D8%AA%D8%B1%D8%A8%D8%A9-1.pdf	B - Electronic references, Internet sites

Plant Nutrition Course Description

1. Course name

Plant nutrition

2. Course code
PPT 209
3. : Semester/Year
Second Level - First Semester 2025-2024
4. : Available attendance forms
Traditional attendance (in-person) Field scientific attendance - Blended learning
5. Number of units / Number of study hours (total)
45 hours / 3
6. Date this description was prepared
2025/6/11
7. Course supervisor name
Name: M.M. Ahmed Ibrahim Khalaf :e-mailahmedibrahim.haw@ntu.edu.iq
8. Course objectives (general objectives of the course) **Providing the student with basic knowledge** about the importance of plant nutrients and their role in various vital and physiological processes. **Introducing the student to the essential nutrients**(Major and minor), their available forms in the soil, their functions, and symptoms of their deficiency or excess. **Enabling the student to understand the mechanisms of absorption and transport of elements** within the plant, and the factors affecting their availability in the agricultural medium. **Introducing the student to the different types of fertilizers** and when and how to use them in an .effective and environmentally safe manner
9. Course outcomes , teaching, learning and assessment methods 1-Cognitive objectives

1.1 Explain the role of essential nutrients in plant growth and development.
1.2 Distinguish between major and minor nutrients, identify their functions, and symptoms of deficiency or toxicity.
1.3 Explain the mechanisms of absorption and transport of nutrients within the plant.
1.4 Clarify the relationship between soil properties and nutrient availability.

2-Skill objectives

2.1 Conduct practical experiments to analyze the nutrient content of soil and plants.
2.2 Diagnose symptoms of nutrient deficiencies in plants in the field.
2.3 Select the appropriate type and quantity of fertilizer based on soil and plant analyses.
2.4 Implement effective and environmentally safe fertilization programs in various agricultural environments.

3-Emotional goals

3.1 Demonstrate appreciation for the importance of plant nutrition in improving sustainable agricultural production.
3.2 Commitment to professional ethics in dealing with nutritional recommendations and the agricultural environment.
3.3 Promote a sense of responsibility in rationalizing fertilizer use and reducing environmental impact.
3.4 Work collaboratively within teams during the implementation of experiments and applied projects .

10. Course structure: Plant Nutrition (theoretical and practical vocabulary) -

road Evaluation	road education	Unit name/topic	Outputs learning Required	watches	week
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Definition and classification of elements Essential nutrients and their importance to plants	Identify the essential nutrients that a plant needs for growth (macro and micro) Explain the functions of each nutrient in the vital processes within the plant (such as ,photosynthesis, respiration protein synthesis). Identifying the symptoms of nutrient deficiency in plants (such as ,yellowing leaves, poor growth (and deformities.	3	the first
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Mechanism of nutrient absorption	Explain the mechanism of nutrient absorption from the soil to the root (such as active (and passive absorption. The ways in which the element moves and the types of absorption Types of absorption and the difference between them	3	the second
Theoretical and practical tests. Daily . quizzes	Lecture + Dachu + presentation participation		Symptoms of nitrogen deficiency in plants The importance of nitrogen for	3	the third

field visits	Discussion Questions and) (Inquiries	Nitrogen	plants Nitrogen sources for plants Environmental impact of nitrogen deficiency **Nitrogen** in **soil** Methods for treating nitrogen deficiency The fate of urea fertilizer in Iraqi soils and its transformations		
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Phosphorus	Its importance for plants Its sources, forms, and factors affecting its readiness and .fixation in the soil Mechanism of holding soluble phosphorus in soil Its reactions in calcareous soils Methods of adding phosphorus and its fertilizers	3	Fourth
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Potassium	The importance of potassium for plants Symptoms of potassium deficiency in plants Potassium sources in soil Pictures of potassium in soil Potassium transformations in soil availability in soil Potassium fertilizers	3	Fifth
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	sulfur	Symptoms of sulfur deficiency in plants The importance of sulfur for plants Sources of sulfur for plants Pictures of sulfur in soil Sulfur transformations in soil Bacteria responsible for sulfur and their mechanisms	3	Sixth
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Calcium	The importance of calcium for plants Symptoms of calcium deficiency in plants Sources of calcium for plants Calcium images in soil Calcium transformations in soil Its importance in soil development	3	Seventh
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Magnesium	Role of the plant Its reactions in the soil Its importance ingrass tetany disease Its interaction with phosphorus in basic soils Magnesium fertilizers	3	The eighth
Theoretical and	Lecture + Dachu		Vital functions of iron	3	Ninth

practical tests. Daily . quizzes field visits	+ presentation participation Discussion Questions and) (Inquiries	Iron	The fate of iron in flooded soils Its importance in cytochromes Mineral and iron chelate fertilizers Iron oxide Deficiency symptoms		
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Zinc	Classification of plants according to their zinc needs Zinc fertilizers Its role in human life Deficiency symptoms Biofortification Vital functions	3	tenth
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	manganese	Vital functions Manganese fertilizers Ways to add manganese Its role in moist and poorly ventilated soils Plant requirements for manganese	3	eleventh
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	copper	Understanding the role of copper in plants Symptoms of copper deficiency in plants Sources of copper in soil Pictures of copper in soil Symptoms of excess copper in soil (copper toxicity) availability in soil	3	twelfth
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Boron	Understanding the role of boron in plants Symptoms of boron deficiency in plants Symptoms of excess boron in soil (boron toxicity) Boron sources in soil Boron images in soil Boron transformations in soil Boron availability level in soil Boron fertilizers Methods for treating boron deficiency in soil	3	thirteenth
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Molybdenum	Molybdenum photos in soil Its importance in plants Its readiness in the soil and the role ofpH on it Molybdenum fertilizers	3	fourteenth
Theoretical and practical tests. Daily . quizzes field visits	Lecture + Dachu + presentation participation Discussion Questions and) (Inquiries	Ion pumping and leaching	Fertilizer addition methods and reactions in the water basin Ionic pumping Plants' general nutritional needs	3	fifteenth

11-Course Evaluation

	Relative % weight	degree	Calendar appointment (week)	Evaluation methods	T
	2.5	2.5	Fourth week	Report 1	1

	2.5	2.5	Fifth week	Report 2	2
	2	2	Week 6	Short Test (1)Quiz	3
	2	2	Fourteenth week	Short Test (2)Quiz	4
	1	1	The fifteenth week	Short Test (3)Quiz	5
	7.5	7.5	Week 6	Midterm Exam (1)	6
	7.5	7.5	The eleventh week	Midterm Exam (2)	7
	50	50	Final semester exams	Final theoretical exam	8
	5	5	The fifteenth week	Practical field project	9
	2	2	The third and fifth week	Field evaluation	10
	1	1	First week	Practical Short Test (1)Quiz	11
	0.5	0.5	Fourth week	Practical Short Test (2)Quiz	12
	1	1	Fourteenth week	Practical Short Test (3)Quiz	13
	5.5	5.5	,Weeks 6, 8, 9, 10, 11, 12 and 13	Direct questions and homework	14
	10	10	Final semester exams	Final practical exam	15
	%100	%100	100	the total	

12-Infrastructure	
Available	**Classrooms and laboratories field visits**
Available	**Required textbooks**
Plant nutrition (Muzaffar Al-Mawsili), Plant nutrit .(Saadullah Al-Naimi), Soil fertility (Noureddine Shawqi Ali)	**Main References (Sources)**
Soil Fertility and Plant Nutrition (Sameer Abdel Wahab Abu (Rus	**Recommended books and references (scientific .(journals, reports, etc**
https://agriculture.uodiyala.edu.iq/wp-content/uploads/2022/12/%D9%85%D8%AD%D8%A7%D8%B6%D8%%D8%A7%D8%AA-%D8%AA%D8%BA%D8%B0%D9%8A%D8%A%D8%A7%D9%84%D9%86%D8%A8%D8%A7%D8%AA-%D8%AF.%D8%AD%D8%B3%D9%86-%D9%87%D8%A7%D8%AF%D9%8A-1.pdf **https://agriculturecollege.uoanbar.edu.iq/catalog/%D8%AA%D8%BA%D%B0%D9%8A%D8%A9%20%D9%86%D8%A8%D8%A7%D8%AA%%D9%85%D8%AF%D9%85%D8%AC%D8%A9.pdf**	**..... ,Electronic references, websites**

Graduation project course description
1. Course name
Graduation project
2. Course code
PPT210
3. : Semester/Year
Second Level - Second Semester 2025-2024
4. : Available attendance forms
in the field Scientific field presence
5. Number of total units / Number of study hours (total)
45 hours
6. Date this description was prepared
2025/6/11
7. Name of the course supervisor

Name: Asst. Prof. Dr. Qutaiba Saleh Sheikh Asst. Prof. Dr. Jassim Mohammed M.M. Ahmed Ibrahim M.M. Ahmed Abdul M.M. Mustafa Faridoun
:e-mail Qutaibah_hwj@ntu.edu.iq Drjasim_hwj@ntu.edu.iq ahmedibrahim.haw@ntu.edu.iq

8. Course objectives (general objectives of the course)

This course aims to enable students to apply the knowledge and skills acquired during their years of ,study in implementing an integrated research or applied project that addresses one of the scientific production, or industrial aspects of medicinal and aromatic plants, while enhancing their skills in scientific research, analysis, presentation, and teamwork.

9. Course outcomes , teaching, learning and assessment methods

Course content:

- Choose a project topic in one of the following areas:
  - Cultivation and production of medicinal and aromatic plants
  - Extraction of oils and active compounds
  - Drying and storage techniques
  - Study of biological effects (antibacterial, antioxidant, etc.)
  - Traditional and modern uses of medicinal plants
  - Development of herbal products (herbal tea, creams, oils, capsules)
  - Marketing and packaging of medicinal plant products
- Preparing the action plan:
  - Defining the research problem and study objectives
  - Designing a research methodology or applied study
  - Data collection and analysis (in the laboratory or in the field)
- Preparing the final project report:
  - Structured scientific writing (introduction, literature review, materials and (methods, results, discussion
  - Documentation according to scientific research methods
- Oral presentation of the project before a committee of faculty members

Expected learning outcomes:

- The ability to design and implement an applied or research project related to medicinal and aromatic plants.
- Applying scientific research methods in collecting and analyzing data.
- Acquire skills in teamwork, organization, and scientific communication.
- Developing solutions or products based on medicinal plants in a scientifically applicable manner.

Course requirements:

- The student chooses the project topic with the approval of the academic supervisor.
- Commitment to the specified time plan.
- Submit a written copy and presentation of the project.

Approval of the Chairman of the Scientific Committee

Approval of the Chairman of theCurriculum Update Committee

Department Head Approval

Dean Approval