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

Academic Program and Course Description Guide

2025-2024

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

Introduction:

The educational program is a coordinated and organized package of courses that include procedures and experiences organized into curricular modules. The primary purpose is to build and refine graduates' skills, making them qualified to meet the demands of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs, such as the External Examiner Program.

The academic program description provides a brief summary of the program's main features and courses, indicating the skills students are expected to acquire based on the program's objectives. The importance of this description is evident in that it represents the cornerstone for obtaining program accreditation. It is written by faculty members under the supervision of the academic committees in the academic departments.

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the new developments and changes in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, semester) in addition to adopting the description of the academic program circulated pursuant to the letter of the Department of Studies TM3/2906 dated 5/3/2023 with regard to programs that adopt the Bologna process as the basis for their work.

In this context, we cannot but emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth running of the educational process**.**

Concepts and Terminology:

Academic Program Description: The academic program description provides a concise summary of the program's vision, mission, and objectives, including a detailed description of the intended learning outcomes based on specific learning strategies.

Course Description: Provides a concise summary of the course's key features and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious vision for the future of the academic program, one that is progressive, inspiring, motivating, realistic, and applicable.
Program Mission: Briefly outlines the goals and activities required to achieve them, and identifies the program's development paths and directions.
Program Objectives: Statements that describe what the academic program intends to achieve within a specific timeframe and are measurable and observable.
Curriculum Structure: All courses/subjects included in the academic program, according to the approved learning system (courses), whether required by a ministry, university, college, or academic department, along with the number of credit hours.

Learning Outcomes: A consistent set of knowledge, skills, and values acquired by the student upon successful completion of the academic program. Learning outcomes for each course must be defined in a manner that achieves the program's objectives.
Teaching and learning strategies: These are the strategies used by faculty members to develop student teaching and learning. They are plans followed to achieve learning objectives, describing all classroom and extracurricular activities to achieve the program's learning outcomes.

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**

Academic Program Description Form

Northern Technical University

Technical Institute

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: 2024/9/3

File Completion Date: 2024/9/3

Signature:

Head of Department

Name:Dr.Qotaiba Saleh Sheikh

Date: 2024/9/3

Signature:

Scientific Associate

Name:Dr. Mohammed Jiyad Luji

Date: 2024/9/3

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

M.M. Ahmed Abd Khalaf

Date: 2024/9/3

Signature:

Approval of the Dean

Prof. Dr. Omer Khalil Ahmed

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- Program description First level/first semester + second semester								
Requirement type	Name The decision		Number of theoretical hours	Number of practical hours	Number of units	The pavement , if any	The symbol	Course type
	In Arabic	In the language English						
University requirements	حقوق الانسان	Human Rights and Democracy	2	-	2		NTU100	compulsory
	والديمقراطية	English language	2	-	2		NTU101	compulsory
	اللغة الانكليزية1	1Computer Application	1	1	2		NTU102	compulsory
	مبادئ	1Arabic language	2	-	2		NTU103	compulsory
	الحاسوب1	Sport	1	1	2		NTU104	compulsory
	لغة عربية1	French language	2	-	2		NTU107	optional
Institute requirements	رياضة	Statistic &Experiment Design	2	1	3		TIH101	compulsory
	لغة فرنسية	Renewable Energy Systems	1	1	2		TIH102	optional
	احصاء	Soil Science	1	1	2		TIH103	compulsory
Department requirements	وتخطيط تجارب	Horticulture Principles	1	2	3		PPT101	compulsory
	نظم طاقة متجددة	Agronomy Principles	1	2	3		PPT102	compulsory
	اساسيات تربة	Plant Protection	1	1	2		PPT103	compulsory
	اساسيات بستنة	Nursery & Forestry	1	1	2		PPT104	optional
	اساسيات	Plant Environment	1	1	2		PPT105	optional
	محاصيل	Fruit Production	1	2	3		PPT106	compulsory
	وقاية نبات	Plant Physiology	1	1	2		PPT107	compulsory
	مشاتل	Vegetation Production	2	2	4		PPT108	compulsory
	وغابات	General Insects	1	1	2		PPT109	optional
	بيئة نبات	Agri.Machine&Equipment	1	2	3		PPT110	compulsory
	انتاج فاكهة	Tissue culture	1	1	2		PPT111	optional
The total			26	21	47			

7- Program description Level 2/First Semester + Second Semester								
Requirement type	Name The decision		Number of theoretical hours	Number of practical hours	Number of units	The pavement , if any	The symbol	Course type
	In Arabic	In the language English						
University requirements	اللغة الانكليزية	English language	2	-	2		NTU200	compulsory
	مبادئ الحاسوب	Computer Application	1	1	2		NTU201	compulsory
	اللغة العربية	Arabic Language2	2	-	2		NTU202	compulsory
	جرائم نظام حزب البعث في العراق	The Crimes of Baath Regime in Iraq	2	-	2		NTU203	compulsory
	اخلاقيات المهنة	Professional Ethics	2	-	2		NTU204	compulsory
Institute requirements	انتاج النباتات الطبية	Medicinal Plants Production	1	2	3		TIH201	compulsory
	كيمياء المركبات الثانوية	Secondary Compounds Chemistry	1	1	2		TIH202	compulsory
	إدارة المزارع	Farm management	1	1	2		TIH203	optional
Departmen requirements	حفظ وتجفيف النباتات	Drying &Reserving Plants	1	2	3		PPT201	compulsory
	امراض النباتات الطبية	Medicinal Plants Diseases	1	2	3		PPT202	compulsory
	بيئة وتصنيف النباتات الطبية	Medicinal Plants Environment & Classification	1	2	3		PPT203	compulsory
	كيمياء عضوية	Organic Chemistry	1	1	2		PPT204	compulsory
	نباتات الزينة العطرية	Aromatic & Floriculture Medicinal Plants	1	1	2		PPT205	optional
	تصنيع الأدوية	Drugs Processing	1	2	3		PPT206	compulsory
	مشاتل وإكثار	Nurseries & Propagation	1	2	3		PPT207	compulsory
	حشرات النباتات الطبية	Medicinal Plants Pesticides	1	2	3		PPT208	compulsory
	تغذية نبات	Plants Nutrition	1	2	3		PPT209	optional
	مشروع	Project	-	3	3		PPT210	compulsory
The total			21	24	45			

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

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.

Expected learning outcomes (knowledge, skills, attitude)

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 He can plan an experiment . the plant, and the mechanism of opening and closin the stomata

2- Field or laboratory experiments through the application of the laws of agricultural experiment design and analysis

3- 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

4- 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

Values Outcomes Professional Learning

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, discussions, field training, and end-of-course exam)

4. Faculty

Faculty members

Academic rank	Specialization		Special requirements/skills (if any)		Faculty preparation	
	general	private			angel	lecturer
Assistant professor	crops	Physiology			angel	
Assistant professor	gardening	Fruit nutrition			angel	
Assistant teacher	soil	soil fertility			angel	
Assistant teacher	Plant production	Plant production			angel	
Assistant teacher	gardening	fruit trees			angel	
Technical staff						
Bachelor 2	plant protection				angel	
Bachelor's	medicinal plants				angel	
Bachelor's	Plant production				angel	
Diploma 2	Plant production				angel	
Supporting staff of the institute						
Assistant professor	law				angel	
Assistant professor	Arabic language				angel	
Assistant professor	Communications and Computer Networks				angel	
Assistant teacher	Educational Psychology				angel	

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

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– 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


Northern Technical University
الجامعة التقنية الشمالية
عطاء بلا حدود
1979
1399
المعهد التقني / الحويجة
Technical Institute / Hawija


IRAQ
NTU
الجامعة التقنية الشمالية
NORTHERN TECHNICAL UNIVERSITY


Republic of Iraq
Ministry of Higher Education and Scientific Research

Program Skills Outline for Level 1														
year/Level	code The decision	name The decision	Basic or optional	Outputs learning Required from The program										
				knowledge				Skills				values		
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
The first level of the two semesters	NTU100	R ights Man and Democracy	compulsory			√								√	√
	NTU101	English language	compulsory					√	√	√					
	NTU102	principles Computer1	compulsory				√	√	√	√	√				
	TIH103	Basics soil	compulsory	√					√			√	√		
	PPT101	Basics gardening	compulsory	√		√				√					√
	PPT102	Basics crops	compulsory	√			√		√				√		
	PPT103	Protection plants	compulsory	√		√						√			
	PPT104	Nurseries and forests	optional	√	√			√	√			√			
	PPT105	Environment plants	optional	√				√							√
	TIH101	Statistics and planning experiments	compulsory	√				√	√	√					
	PPT106	Fruit production	compulsory	√		√			√			√			
	PPT107	Plant physiology	compulsory	√				√							
	PPT108	Vegetable production	compulsory	√	√			√	√						√
	PPT109	General insects	optional	√		√				√					√
	PPT110	Tractors and agricultural machinery	compulsory	√	√			√	√	√	√				
	PPT111	Tissue culture	optional	√	√			√	√	√	√				√

Program Skills Outline Level 2

year/Level	code The decision	name The decision	Basic or optional	Outputs learning Required from The program											
				knowledge				Skills				values			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second level of the two semesters	NTU201	language English2	compulsory	√						√	√				√
	NTU202	principles Computer 3	compulsory	√				√	√					√	
	NTU204	Ethics Profession	compulsory									√	√	√	√
	TIH201	production plants Medical	compulsory	√	√						√			√	
	PPT201	save And drying plants	compulsory	√				√	√						√
	PPT202	illnesses plants Medical	compulsory	√	√			√			√			√	
	PPT203	environment And classification plants Medical	compulsory	√	√						√			√	√
	PPT204	chemistry membership	compulsory	√			√	√			√	√			
	PPT205	plants Decorations Aromatic	optional	√	√				√			√			
	TIH203	Farm Management	optional	√			√	√	√	√	√				√
	PPT206	pharmaceutical manufacturing	compulsory	√	√	√	√	√	√	√	√		√	√	√
	PPT207	Nurseries and propagation	compulsory	√			√	√	√				√		
	PPT208	Medicinal plant insects	compulsory	√			√	√							√
	TIH201	Production of medicinal plants	compulsory	√	√						√				√
	TIH202	Chemistry of secondary compounds	compulsory	√	√			√	√					√	√

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
3/9/2024
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 **A1- Understand the basic concepts related to human rights and democracy.** **A3- Analyze legal texts related to public rights and freedoms.**
B - Objectives Skills Private As scheduled . **B1- Discuss human rights issues from a legal and humanitarian perspective.** **B2- Evaluate different democratic practices within the local and international context.**
C-Objectives emotional and the value **C3- Promoting human values, tolerance, and acceptance of others.** **C4- Developing a sense of responsibility toward 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)					
week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	The student should define the concept of human rights and explain their basic objectives.	,Human rights ,definition objectives.	theoretical	Monthly exams and a final exam
2	2	The student should explain the historical development of the idea of rights throughout the ages.	The roots of human rights and their development in ,human history human rights in ancient and medieval times.	theoretical	Monthly exams and a final exam
3	2	The student should explain how human rights principles appeared in ancient societies.	Human rights in the civilization of Mesopotamia.	theoretical	Monthly exams and a final exam
4	2	The student should mention examples of ancient texts and laws (such as the Code of (Hammurabi that dealt with human rights.	Human Rights ,in Divine Laws a special study of human rights in Islam.	theoretical	Monthly exams and a final exam
5	2	To explain how the heavenly religions dealt with human ,rights especially in Islam.	Human rights in the Middle Ages, rights in ,doctrines ,schools ,theories ,corporations their declarations and constitutions.	theoretical	Monthly exams and a final exam
6	2	The student should describe how philosophies and schools of thought have dealt with rights.	Human rights in contemporary and modern ,history international recognition of human rights in the League of Nations.	theoretical	Monthly exams and a final exam
7	2	To learn about	Regional	theoretical	Monthly exams

		the role of the League of Nations and the United Nations in recognizing .human rights	recognition of ,human rights European Convention on Human Rights American ,1950 Convention 1969.		and a final exam
8	2	- The student should be able to distinguish between a democratic and a non-democratic .system - To learn about the characteristics of the democratic .system	Introduction to Democracy - Definition of democracy - The difference between democratic and non-democratic systems	theoretical	Monthly exams and a final exam
9	2	- To identify the types of democracy and .their examples - To explain the difference .between them	Types of democracy - Direct democracy Representative democracy Participatory - democracy	theoretical	Monthly exams and a final exam
10	2	- The student should explain the basic principles of any democratic .system - To link principles to .human values	Basic principles of democracy Majorityrule - Rule of law Respect for - rights and freedoms	theoretical	Monthly exams and a final exam
11	2	The student should realize his role as a citizen - To express the importance of participation in public life	Active citizenship - The concept of citizenship - The duties and rights of the citizen - Participation in public life	theoretical	Monthly exams and a final exam
12	2	To link democracy and guaranteeing rights - To analyze the importance of freedom of opinion in democratic systems	Democracy and human rights - The relationship between democracy and the protection of rights - freedom of ,expression assembly and	theoretical	Monthly exams and a final exam

			organization		
13	**2**	**To explain the functions of each institution - To understand the balance between powers**	**Institutions of the democratic system - Parliament - Judiciary - Media - Civil society organizations**	**theoretical**	**Monthly exams and a final exam**
14-15	**2**	**To explain the functions of .each institution - To discuss the obstacles to building a democratic .system**	**Institutions of the democratic system Challenges facing democracy**	**theoretical**	**Monthly exams and a final exam**

11-**Course Evaluation**

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

12-**Infrastructure, human rights and democracy**

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

English Language Course Description

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

3/9/2024

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

A1- Identify basic vocabulary and terms related to daily life and their professional specialty.
A2- Distinguish between different tenses and use them in correct sentences.
A3- Distinguish between English sentences in terms of subject, verb, and object.

B - Objectives Skills Private As scheduled .

B1- Construct correct sentences.
B2- Pronounce English words and terms correctly and clearly.
B3- Write a paragraph or short letter using correct language.

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)

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	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.	theoretical	Monthly exams and a final exam

2	**2**	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 ”.	**theoretical**	**Monthly exams and a final exam**
3	**2**	Unit three: all about	Provide simple personal information (eg, age, nationality, likes/dislikes). Respond to personal questions using correct sentence structures .	**theoretical**	**Monthly exams and a final exam**
4	**2**	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 .	**theoretical**	**Monthly exams and a final exam**
5	**2**	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	**theoretical**	**Monthly exams and a final exam**
6	**2**	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.	**theoretical**	**Monthly exams and a final exam**
7	**2**	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 far .	**theoretical**	**Monthly exams and a final exam**
8	**2**	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 .	**theoretical**	**Monthly exams and a final exam**
9	**2**	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 .	**theoretical**	**Monthly exams and a final exam**
10	**2**	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 .	**theoretical**	**Monthly exams and a final exam**
11	**2**	Unit eleven: I can do thatl Can /can't Adverbs Requests	Use can/can't to express ability and permission.	**theoretical**	**Monthly exams and a final**

			Use adverbs to describe how something is done (eg, quickly, well). Make and respond to simple requests .		**exam**
12	**2**	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 ...	**theoretical**	**Monthly exams and a final exam**
13	**2**	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 .	**theoretical**	**Monthly exams and a final exam**
14-15	**2**	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 .	**theoretical**	**Monthly exams and a final exam**

11-**Course Evaluation**

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

12-**English language infrastructure**

Classrooms, laboratories and workshops	Available
Required textbooks	
Main references (sources) 2	

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

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
3/9/2024
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

A1- Distinguish between different types of software (operating systems, applications, antivirus).

A4- Explain the steps for using the basic office suite programs: Word, Excel, and PowerPoint.

B - Objectives Skills Private As scheduled .

B1- Edit documents using Microsoft Word in a professional format.

B2- Create spreadsheets and apply simple equations using Excel.

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

10-Course Structure: Computer Principles (Theoretical Vocabulary)

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	Introduction to Computer	Learn about the basic components of a computer and its importance in daily and professional life.	Theoretical practical	Diagnostic -Formative - Final
2	2	Types of software	Distinguish between application software and system software.	Theoretical practical	Diagnostic -Formative - Final
3	2	Operating systems	Explains the function of operating systems and compares their different types.	Theoretical practical	Diagnostic -Formative - Final
4	2	Word processing (Microsoft Word)	Creates and edits documents using word processing software.	Theoretical practical	Diagnostic -Formative - Final
5	2	Spreadsheets (Microsoft Excel)	Uses spreadsheets to perform simple calculations.	Theoretical practical	Diagnostic -Formative - Final
6	2	Presentations (Microsoft PowerPoint)	Designs a presentation using various software tools.	Theoretical practical	Diagnostic -Formative - Final
7	2	Internet and email	Use the Internet and email effectively and safely.	Theoretical practical	Diagnostic -Formative - Final
8	2	File handling	Learn how to organize files and folders on the computer.	Theoretical practical	Diagnostic -Formative - Final
9	2	Cybersecurity	Learn the basics of information protection and securing devices and data.	Theoretical practical	Diagnostic -Formative - Final
10	2	Basic programming	Acquires basic programming concepts using a simple language such asScratch orPython.	Theoretical practical	Diagnostic -Formative - Final
11	2	Databases	Explains database concepts and how to work with them.	Theoretical practical	Diagnostic -Formative - Final
12	2	Input and	Learn about the types of input and output	Theoretical	Diagnostic

		output devices	devices and their functions.	practical	-Formative - Final
13	**2**	Printing and Settings	Learn how to prepare a document for printing and adjust printer settings.	Theoretical practical	Diagnostic -Formative - Final
14	**2**	Applied project	Apply acquired skills in preparing a simple computer project.	Theoretical practical	Diagnostic -Formative - Final
15	**2**	Review and final exam	Review concepts and skills and prepare for the final exam.	Theoretical practical	Diagnostic -Formative - Final

11-**Course Evaluation**

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

12 -Infrastructure Computer Principles

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

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

3/9/2024

7. Course supervisor name

Name: Asst. Prof. Dr. Salam Hussein Ali
Email: salamha-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

A1- Give five examples of hamzat al-wasl and hamzat al-qata'.

A2- Distinguish between ta marbuta and ha'.

B- Objectives Skills Private As scheduled .

B1- Write an essay of ten lines.

B2- How to differentiate between the letters Dhad and Tha

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

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	,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.	Introduction to Grammatical Mistakes - The Closed Taa, The Long Taa, and The Open Taa	theoretical	My formation and conclusion
2	2	Distinguish between the extended alif (a) and the shortened alif (i) in terms	Rules for writing the extended and	theoretical	My formation

		of written usage. It applies the rules for writing the letter Alif according to its position and linguistic origin.	- shortened alif solar and lunar letters		and conclusion
3	**2**	Defines the solar and lunar letters. The definite article "al" is used correctly depending on the type of the .first letter in the word	Dad and Tha	theoretical	My formation and conclusion
4	**2**	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	Writing the hamza	theoretical	My formation and conclusion
5	**2**	He recognizes the types of hamzas ,disconnected, connected, medial) (extreme. Apply the correct spelling rules for writing the hamza in its various .positions	punctuation marks	theoretical	My formation and conclusion
6	**2**	Identify the types of punctuation marks and their uses. Use punctuation accurately in writing to improve clarity of meaning.	Noun, verb, and the difference between them	theoretical	My formation and conclusion
7	**2**	Distinguish between noun and verb in terms of meaning and structure. Classifies words in sentences according to their type: noun, verb, or .particle	Effects	theoretical	My formation and conclusion
8	**2**	Explains the types of objects and their functions in the sentence. Analyze sentences to extract different objects	Number	theoretical	My formation and conclusion
9	**2**	Distinguish between numbers in ,terms of type (singular, compound conjoined) and agreement. Uses number and countable rules .correctly in different contexts	Common language errors applications	theoretical	My formation and conclusion
10	**2**	Identify the most common linguistic errors in writing and expression. Corrects common language errors through practical activities and .models	Noon and - Tanween Meanings of Prepositions	theoretical	My formation and conclusion
11	**2**	Distinguish between the letter noon and tanween in terms of pronunciation and function. Explains the meanings of prepositions in different contexts	Formal aspects of administrative discourse	theoretical	My formation and conclusion
12	**2**	Learn the basic formal components of administrative letters. Adhere to the formal elements when writing an administrative letter .(.header, address, date, signature, etc)	Language of administrative discourse	theoretical	My formation and conclusion
13-14	**2**	Uses formal and direct language that is appropriate to the nature of administrative discourse. Avoid slang and grammatical errors	Introduction to Grammatical Mistakes - The Closed Taa, The	theoretical	My formation and conclusion

		.when writing formal letters	Long Taa, and The Open Taa		
15	**2**	Analyzes various forms of administrative correspondence (.request, complaint, report, etc). Writes administrative correspondence forms in a correct manner in terms of .form and content	Examples of administrative correspondence	theoretical	My formation and conclusion

11-Course Evaluation

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

12-Arabic language infrastructure

Classrooms, laboratories and workshops	Available
Required textbooks	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
Main references (sources)	
Recommended books and references ,Scientific journals) (.reports, etc	
,Electronic references Internet sites	

Sports course description

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
3/9/2024
7. Course supervisor name
Name: M.M. Mustafa Faridoun Faiq Email:Mustafa.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 **A1- Define the concepts of physical fitness, health, sports training, and nutrition.** **A2- Explain the importance of physical education in disease prevention and promoting a healthy lifestyle**
B - **Objectives Skills Private As scheduled .** **B1- The number of basic skills in team sports.** **B2- What are the safety rules during sports activities?**
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)

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	**2**	To introduce the student to the concept of sports and its health and social .importance	Sports: definition, importance and types	Theoretical practical	Written and skill tests
2	**2**	To explain to the student the basic principles of anatomy and muscle movement.	Mechanism of human body movement	Theoretical practical	Written and skill tests
3	**2**	The student must identify	Common sports injuries	Theoretical practical	Written and skill

		the types of ,injuries (tears ,bruises (.fractures, etc.			tests
4	**2**	To learn the names of basic ,skills (passing ,dribbling ,shooting (tackling.	Basic basketball skills	Theoretical practical	Written and skill tests
5	**2**	To explain the official international rules (number ,of players ,playing time (fouls, scoring.	International Basketball Laws	Theoretical practical	Written and skill tests
6	**2**	To learn the skills of the ,game (sending ,receiving (hitting.	Basic table tennis skills and international rules	Theoretical practical	Written and skill tests
7	**2**	To list the skills of the game ,sending) ,passing, wall (setting.	Basic skills of volleyball and its international laws	Theoretical practical	Written and skill tests
8	**2**	To learn the types of swimming ,freestyle) ,breaststroke ,backstroke (butterfly.	Swimming	Theoretical practical	Written and skill tests
9	**2**	To determine the basics of the game and the ,rules (serve (points, errors.	Basic skills of tennis and its international rules	Theoretical practical	Written and skill tests
10	**2**	To introduce the student to the basic rules of the game, the number of players and the field.	Basic handball skills	Theoretical practical	Written and skill tests
11	**2**	To learn about the types of athletics ,running) ,jumping (throwing.	International Handball Laws	Theoretical practical	Written and skill tests
12	**2**	To define skills ,passing) ,shooting ,control (covering.	Track and field games (typesinternational (game law	Theoretical practical	Written and skill tests
13	**2**	To explain the types of	Basic football skills	Theoretical practical	Written and skill

		competitions ,elimination) (...league, group .			tests
14	**2**	To implement the regulatory procedures in organizing sporting events.	Management of sports competitions and competitions	Theoretical practical	Written and skill tests
15	**2**	To understand sports laws and regulations	Sports laws and regulations	Theoretical practical	Written and skill tests

11-**Course Evaluation**

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

12 -Sports infrastructure

Classrooms and playgrounds	Available
Required textbooks	**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

Main references (sources)	
- Recommended books and references ,Scientific journals) (.reports, etc	Comprehensive Sports Library Educational Science Library - Arab International Academy
,Electronic references Internet sites	

Adescription Agricultural Experimental Statistics and Planning Course
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
3/9/2024
7. Course supervisor name
Name: Assistant ProfessorQotaibaSaleh Sheikh Email: Qotaibah_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**

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	3	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	The concept of statistics and planning agricultural experiments	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
2	3	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	:Statistical measures Centering measures	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
3	3	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	Measures of dispersion and variation	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
4	3	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.	Types of agricultural experiments	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
5	3	The learner should list the sources of error in agricultural experiments ,human, environmental) (methodological. To discuss the impact of these errors on the	Sources of errors and variations in agricultural experiments	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity

		statistical results. To suggest strategies to reduce errors and improve the accuracy of .results			inside the classroom achievement test
6	3	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.	Fundamentals of agricultural experiment design and types of designs used in agricultural experiments	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
7	3	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	The concept of statistics and planning agricultural experiments	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
8	3	Each metric should be calculated using real or hypothetical data. To compare the centering measures in terms of use .and accuracy	:Statistical measures Centering measures	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
9	3	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 theCRD experiment (ANOVA). To interpret the results and identify the differences between .treatments	Completely randomized design	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
10	3	The learner should explain the difference betweenCRD andRCBD. To design an experiment using randomized	Its conditions, planning and statistical analysis	Theoretical practical	Written test Mathematical + problems interpretation of results

		complete blocks. To analyze and interpret the results using appropriate analysis of variance. To determine when this design is best used in .agriculture			Practical activity inside the classroom achievement test
11	3	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 theRCBD experiment (ANOVA). To interpret the results and identify the differences between .treatments	Randomized Complete Block Design	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
12	3	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	Its conditions, planning and statistical analysis	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
13	3	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	Latin square design	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
14	3	= Number of processors = Number of rows Number of columns Randomness in processor distribution Control two major sources of variance The Latin square is plotted as ann × n table.	Its conditions, planning and statistical analysis	Theoretical practical	Written test Mathematical + problems interpretation of results Practical activity inside the classroom achievement test
15	3	To explain the concept and design of split panels	Split panel design conditions, planning and)	Theoretical practical	Written test Mathematical

		. 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	.(statistical analysis		+ problems interpretation of results Practical activity inside the classroom achievement test

11-**Course Evaluation**

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

12-**Infrastructure Statistics and Planning Experiments**

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

A description Soil Basics Course

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

3/9/2024

7. Course instructor's name

Name: M.M. Ahmed Ibrahim Khalaf
Email: ahmedibrahim.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)					
week	**watches**	**Required learning outcomes**	**Unit name/topic**	**Teaching method**	**Evaluation method**
1	2	Understanding soil properties Soil classification study Land and Soil Management soil analysis soil-plant interaction	Soil science and knowledge of the branches it includes, the importance of ,each branch and the goal of soil analysis	Theoretical practical	Diagnostic Formative Summative
2	2	Soil horizons and horizon symbols, soil formation factors and processes	Soil morphological characteristics	Theoretical practical	Diagnostic Formative Summative
3	2	Soil texture, soil ,structure, soil aeration porosity , density, soil ,water holding capacity moisture content, water conductivity All these characteristics and their relationship to plants	Physical properties of soil	Theoretical practical	Diagnostic Formative Summative
4	2	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	Chemical properties of soil	Theoretical practical	Diagnostic Formative Summative
5	2	Types of water in the - soil (microscopic (capillary - gravity	soil water	Theoretical practical	Diagnostic Formative Summative
6	2	Understanding the effect of soil temperature on plant growth 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	soil temperature	Theoretical practical	Diagnostic Formative Summative
7	2	Understanding organic colloids in soil Organic colloids and soil fertility	Organocolloids	Theoretical practical	Diagnostic Formative Summative

		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			
8	2	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	clay minerals	Theoretical practical	Diagnostic Formative Summative
9	2	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	cation exchange capacity The saturation rate of the bases	Theoretical practical	Diagnostic Formative Summative
10	2	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	Electrical conductivity and the percentage of adsorbed sodium	Theoretical practical	Diagnostic Formative Summative
11	2	What are the specifications of saline ?soil Identifying the Shura and Sabkha soils Types of salts present in soil, their solubility and the degree of effect on .plants	soil salinity	Theoretical practical	Diagnostic Formative Summative
12	2	?What is a nutrient Learn about the divisions of macro and micronutrients and their importance	Nutrients and their importance	Theoretical practical	Diagnostic Formative Summative
13	2	What are lime and	Calcareous	Theoretical	Diagnostic

		gypsum in soil , how to estimate them in the laboratory, and how to distinguish between ?these soils	and gypsum soils	practical	Formative Summative
14	2	Saturated dough specifications How to prepare and estimate it to measure pH, ions and salinity	Preparation of saturated dough and soil suspension	Theoretical practical	Diagnostic Formative Summative
15	2	,Russian classification modern American classification, and how it began	Soil classifications	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

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

12-**Infrastructure Soil Basics**

Classrooms, laboratory and field	Available
Required textbooks	
Main references (sources)	**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, 1984 Technical Education Authority
-Recommended books and references (.Scientific journals, reports, etc)	Soil Fertility and Fertilization, Dr. Kamel Saeed Jawad, 1988, Higher Education Press 4 ,Soil Reclamation and Improvement , Dr. Shafiq Ibrahim Abdel Aal, 1981 University of Sulaymaniyah
Electronic references, Internet sites	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

Adescription Horticulture Basics Course

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
3/9/2024
7. Course instructor's name
Name: Assistant Professor Jassim Mohammed Khalaf Email: Drjasim_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

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

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 Gardening Essentials

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

					Summative

11-Course Evaluation

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

12-Infrastructure

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

Adescription Crops Fundamentals Course

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
3/9/2024
7. Course instructor's name
Name: Assistant ProfessorQotaibaSaleh Sheikh Email: Qotaibah_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

A-Objectives 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 Crops					
week	**watches**	**Required learning outcomes**	**Unit name/topic**	**Teaching method**	**Evaluation method**
1	3	To introduce the learner to the field crop The learner should list the divisions of .field crops To distinguish between types of field crops	Identify field crops and classify field .crops	Theoretical practical	Diagnostic Formative Summative
2	3	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	Soil service - operations tillage, its ,importance when to ,perform it judging good .tillage	Theoretical practical	Diagnostic Formative Summative
3	3	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	Smoothing, its ,importance benefits of ,leveling adjustment and dividing the .field	Theoretical practical	Diagnostic Formative Summative
4	3	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	Crop cultivation ,methods factors affecting each method, crop service ,operations patching and ,weeding ,thinning ,fertilization irrigation, pest .control	Theoretical practical	Diagnostic Formative Summative
5	3	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	Sunflower .cultivation	Theoretical practical	Diagnostic Formative Summative
6	3	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	Cotton .cultivation	Theoretical practical	Diagnostic Formative Summative
7	3	To familiarize the learner with the specifications of the yellow corn crop. To determine the appropriate	Yellow corn .cultivation	Theoretical practical	Diagnostic Formative Summative

		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			
8	3	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	Rice .cultivation	Theoretical practical	Diagnostic Formative Summative
9	3	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	Sesame .cultivation	Theoretical practical	Diagnostic Formative Summative
10	3	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	Soybean .cultivation	Theoretical practical	Diagnostic Formative Summative
11	3	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	Wheat - cultivation origin - suitable environmental - conditions .planting date	Theoretical practical	Diagnostic Formative Summative
12	3	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	- Agriculture - Fertilization Harvesting - stages Transformation processes for the grain .industry Sugar beet - cultivation suitable environmental ,factors planting date ,and method sowing and fertilization	Theoretical practical	Diagnostic Formative Summative
13	3	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.	,Irrigation ,maturity ,harvesting date conversion processes and factors	Theoretical practical	Diagnostic Formative Summative

		To evaluate the importance of fava beans .in human nutrition	affecting .sucrose content Broad bean – cultivation suitable environmental factors – most important – varieties – cultivation cultivation – methods		
14	3	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	- Weeding - weeding - fertilizing - ripening - picking .harvesting Lentil and chickpea - cultivation suitable environmental - factors - planting date - hoeing - weeding	Theoretical practical	Diagnostic Formative Summative
15	3	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	- Fertilization - ripening - harvesting .harvesting Agricultural .tools	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

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

12-Infrastructure

Classrooms, laboratory and field	Available

Required textbooks	Crop basics
Main references (sources)	-
-Recommended books and references (.Scientific journals, reports, etc)	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
Electronic references, Internet sites	

Plant Protection Course Description

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

3/9/2024

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-Course Structure: Plant Protection

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	the harms and benefits To know of insects.	Harm and damage of insects and their benefits .	Theoretical practical	Diagnostic Formative Summative
2	2	To list the factors for the success of insects and their spread in nature.	The spread of insects in nature.	Theoretical practical	Diagnostic Formative Summative
3	2	To mention the reproduction and growth of insects.	Insect reproduction and growth.	Theoretical practical	Diagnostic Formative Summative
4	2	To list the types of nutrition in insects.	Types of nutrition in insects.	Theoretical practical	Diagnostic Formative Summative
5	2	To explain the environments in which insects live.	Environments in which insects live.	Theoretical practical	Diagnostic Formative Summative
6	2	Non-insect animal pests, order Acaridae.	,Non-insect animal pests order Acaridae.	Theoretical practical	Diagnostic Formative Summative
7	2	Non-insect animal pests, order Rodentia.	,Non-insect animal pests order Rodentia.	Theoretical practical	Diagnostic Formative Summative
8	2	Non-insect animal pests, order of birds and rodents.	,Non-insect animal pests order of birds and rodents.	Theoretical practical	Diagnostic Formative Summative
9	2	The economic importance of plant diseases and the losses resulting from them.	The economic importance of diseases	Theoretical practical	Diagnostic Formative Summative
10	2	Some definitions in plant pathology.	Some definitions in plant pathology.	Theoretical practical	Diagnostic Formative Summative
11	2	The way in which the pathogen enters plant tissue.	The way the cause enters.	Theoretical practical	Diagnostic Formative Summative
12	2	Methods of transmission and spread of plant diseases.	Methods of transmission and spread of plant diseases.	Theoretical practical	Diagnostic Formative Summative
13	2	Factors predisposing to plant diseases.	Factors predisposing to plant diseases.	Theoretical practical	Diagnostic Formative Summative
14	2	- Fungi, their characteristics methods of nutrition, methods of reproduction and division.	Fungi, their characteristics - methods of nutrition, methods of reproduction and division.	Theoretical practical	Diagnostic Formative Summative
15	2	- Nematodes as plant pathogens Nematode body structure	Nematodes as plant pathogens - Nematode body structure - Type of damage they cause	Theoretical practical	Diagnostic Formative Summative

11-Course Evaluation

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

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

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	**plant protection** - Field Crop Pests - Kamel Salman Jabr - Imad Ahmed Mahmoud - 1990 Ministry of Education Press
Main references (sources)	General Entomology - Dr. Mohamed Ismail Introduction to Entomology - Dr. Saad Abdel Majeed and others
-Recommended books and references (.Scientific journals, reports, etc)	
Electronic references, Internet sites	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

10-Course Description Nurseries and 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

3/9/2024

7. Course supervisor name

Name: M.M. Ahmed Abdel Khalaf
Email: ahmedabd-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.
A2- Explain the importance of the nursery stage in producing strong and suitable vegetable seedlings for . planting.
A3- Classify the types of nurseries (open, protected, air-conditioned) and compare their characteristics . and purposes of use in vegetable cultivation.

B-Skill objectives

B1- Carry out the processes of preparing the growing environment, sterilizing the medium, irrigation . fertilization, and thinning.
B2- Participates in the establishment of Experimental nursery and its practical management ..
B3- ,Performs the processes of preparing the growing environment, sterilizing the medium, irrigation fertilization, and thinning.
B4-.Participates in establishing and managing an experimental nursery in a practical manner .

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-Course Structure: Nurseries and Forests

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	The student should know about 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	Definition of nurseries and plant propagation	Theoretical practical	Diagnostic Formative Summative
2	2	To know seed trees, types of trees, selection of seed trees the The student mentions factors taken into consideration when establishing and selecting .seedbeds Learn how to use the equipment used in seed .extraction and how it works	seed trees	Theoretical practical	Diagnostic Formative Summative

3	2	about The student will learn the types 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	Examining seeds and estimating their germination rate	Theoretical practical	Diagnostic Formative Summative
4	2	vegetative To know propagation and its types the methods of Mention vegetative propagation and its .importance	**Vegetative propagation**	Theoretical practical	Diagnostic Formative Summative
5	2	Knows how to use growth regulators for pens Learn to apply pre-treatments to seeds before planting to .break seed dormancy	**Use of growth regulators**	Theoretical practical	Diagnostic Formative Summative
6	2	Learn how to collect pens Know when to take the cuttings and plant them	**Vegetative propagation and the use of growth regulators**	Theoretical practical	Diagnostic Formative Summative
7	2	The student should know .the plant mind and its types ways to cultivate the Learn mind Knows methods of storing and vitality of seeds To learn to calculate the ,germination percentage germination rate and germination speed	Methods of collecting plant cuttings, and using growth hormones in rooting , cuttings Seed storage and how to measure their viability	Theoretical practical	Diagnostic Formative Summative
8	2	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	Fences used in the nursery	Theoretical practical	Diagnostic Formative Summative
9	2	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	Fences used in the nursery	Theoretical practical	Diagnostic Formative Summative
10	2	the irrigation Mention .systems used in nurseries Apply irrigation systems in the nursery	.Irrigation systems	Theoretical practical	Diagnostic Formative Summative

11	2	plowing methods Knows Knows the types of fertilizers and fertilization periods A practical visit to the fields of Al-Hawija Technical Institute	Plowing and fertilizing	Theoretical practical	Diagnostic Formative Summative
12	2	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	Weeding, weeding and control agricultural tools	Theoretical practical	Diagnostic Formative Summative
13	2	the most To learn important 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	Media used in plant growth and propagation	Theoretical practical	Diagnostic Formative Summative
14	2	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	Plant hormones (growth regulators)	Theoretical practical	Diagnostic Formative Summative
15	2	To know what a nursery is the most important and types of methods and places that produce .seedlings To learn the process of acclimatization or hardening of seedlings	Agricultural media and soil sterilizers	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

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

5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,12 ,11 ,10 ,9	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	Available
Main references (sources)	Salman , Mohammed Abbas. 1988. Propagation of horticultural - plants . Ministry of Higher Education and Scientific Research University of Baghdad. Iraq. Khalil , Mahmoud Abdel Aziz 2019. Encyclopedia of Horticultural Plants ` Basics - Nurseries and Their Care- Propagation . Dar Al-Kitab Al - Hadith.
-Recommended books and references (.Scientific journals, reports, etc)	
Electronic references, Internet sites	

Plant Ecology Course Description

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

3/9/2024

7. Course instructor's name

Name: Assistant Professor Qotaiba Saleh Sheikh
Email: Qotaibah_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

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	Definition of ecology, its historical development and its divisions.	Definition of ecology, its historical development and its divisions.	Theoretical practical	Diagnostic Formative Summative
2	2	:Energy (radiation) visible radiation, infrared radiation, ultraviolet radiation.	Energy (radiation): visible ,radiation, infrared radiation ultraviolet radiation.	Theoretical practical	Diagnostic Formative Summative
3	2	Light quality (light intensity), photoperiod length.	Light quality (light intensity), photoperiod length.	Theoretical practical	Diagnostic Formative Summative
4	2	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.	Theoretical practical	Diagnostic Formative Summative
5	2	,Temperature (heat flow (changes in temperature.	,Temperature (heat flow (changes in temperature.	Theoretical practical	Diagnostic Formative Summative
6	2	Thermal inversion, the preferred temperature of the plant.	Thermal inversion, the preferred temperature of the plant.	Theoretical practical	Diagnostic Formative Summative
7	2	Maximum, minimum and optimum temperature.	Maximum, minimum and optimum temperature.	Theoretical practical	Diagnostic Formative Summative
8	2	Heat and its actual value for the plant.	Heat and its actual value for the plant.	Theoretical practical	Diagnostic Formative Summative
9	2	Atmospheric pressure factors affecting) ,atmospheric pressure distribution of (atmospheric pressure.	Atmospheric pressure factors affecting) ,atmospheric pressure distribution of atmospheric (pressure.	Theoretical practical	Diagnostic Formative Summative
10	2	,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.	Theoretical practical	Diagnostic Formative Summative
11	2	The effect of wind on plants.	The effect of wind on plants.	Theoretical practical	Diagnostic Formative Summative
12	2	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.	Theoretical practical	Diagnostic Formative Summative
13	2	,Air humidity evaporation, clouds, fog and frost.	,Air humidity, evaporation clouds, fog and frost.	Theoretical practical	Diagnostic Formative Summative
14	2	Dew, rain and rainfall distribution.	Dew, rain and rainfall distribution.	Theoretical practical	Diagnostic Formative Summative
15	2	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.	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

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

2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	**plant environment** ,Environmental Science for Agricultural Students, Dr. Hekmat Abbas .Dr. Raad Hashem Bakr
Main references (sources)	.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
-Recommended books and references (.Scientific journals, reports, etc)	Environment and the Quality of Our Environment, Dr. Qaisar Majeed and Taher Mohammed Saleh - University of Baghdad
Electronic references, Internet sites	

Fruit production course description

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

3/9/2024

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.

9-Outputs 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 **Fruit production**

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	3	Explains the geographical distribution of fruits in Iraq and the world - the most important problems of fruit production in Iraq .	The most important problems of fruit production .in Iraq	Theoretical practical	Diagnostic Formative Summative
2	3	To know citrus fruits ,origin, nutritional value) reproduction, most important varieties, most important citrus divisions, suitable (environment.	- Citrus fruits (native country (nutritional value	Theoretical practical	Diagnostic Formative Summative
3	3	Palm trees (native habitat - nutritional value - reproduction - most - important varieties (suitable environment	- overview (native habitat (nutritional value	Theoretical practical	Diagnostic Formative Summative
4	3	- Olives (original country - nutritional value reproduction - most - important varieties (suitable environment	- Olive (original country - nutritional value (reproduction	Theoretical practical	Diagnostic Formative Summative
5	3	Banana, jujube and - loquat (native habitat - nutritional value reproduction - most - important varieties (suitable environment.	Description of banana, jujube - and loquat (native country (nutritional value	Theoretical practical	Diagnostic Formative Summative
6	3	Geographical distribution of fruits in Iraq and the world - the most important problems of fruit production in Iraq.	Geographical distribution of fruit in Iraq	Theoretical practical	Diagnostic Formative Summative
7	3	- Grapes (original habitat - nutritional value reproduction - most important varieties - suitable (environment	- Grapes (native country nutritional value	Theoretical practical	Diagnostic Formative Summative
8	3	:Apples and pears origin, nutritional ,value, reproduction most important varieties, and suitable .environment	Apples and pears are native to	Theoretical practical	Diagnostic Formative Summative
9	3	- Quince (native habitat - nutritional value reproduction - most - important varieties .(suitable environment	Quince (native home)	Theoretical practical	Diagnostic Formative Summative
10	3	- Figs (native habitat - nutritional value reproduction - most - important varieties (suitable environment	- Figs (native country nutritional value	Theoretical practical	Diagnostic Formative Summative

11	3	Peaches, apricots and pears (origin - nutritional - value - reproduction - most important varieties (suitable environment	Peaches, apricots, and pears (native)	Theoretical practical	Diagnostic Formative Summative
12	3	Pomegranate and persimmon (original habitat - nutritional value reproduction - most - - important varieties (suitable environment.	Pomegranate and persimmon native country - nutritional) value	Theoretical practical	Diagnostic Formative Summative
13	3	Pistachios, walnuts and pecans: origin, nutritional value, reproduction, most ,important varieties suitable environment.	Pistachios, walnuts, and pecans are native to the world - nutritional value	Theoretical practical	Diagnostic Formative Summative
14	3	Modern trends in fruit production	Modern trends in fruit production	Theoretical practical	Diagnostic Formative Summative
15	3	The importance of hormones and their .areas of use	The importance of hormones .and their areas of use	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	**Fruit production** ,Evergreen Fruit (bound), Harb Rashid - Mansour Naseh Al-Rawi .Dar Al-Takni
Main references (sources)	- Deciduous Fruit, Alaa Abdel Razzaq - Maged Abdel Wahab Ahmed Abu Saad, 1990 Ministry of Higher Education Press
-Recommended books and references (.Scientific journals, reports, etc)	Environment and the Quality of Our Environment, Dr. Qaisar Majeed and Taher Mohammed Saleh - University of Baghdad
Electronic references, Internet sites	https://uomosul.edu.iq/agriculture/wp-content/uploads/sites/11/2023/09/organized_organized.pdf

Plant physiology course description

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

2024/9/3

7. Course supervisor name

Name: Asst. Prof. Dr. .Qotaiba Saleh Sheikh
e-mail: Qotaibah_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

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	Understanding the systematic structure of physiology and its agricultural applications	- Definition of physiology and its relationship to other sciences - Understanding the levels of physiological organization (cellular, tissue, plant, macro)	Theoretical practical	Diagnostic Formative Summative
2	2	Explanation of the mechanism of xylem transport and root pressure	- Explain the biological properties of water - Clarify the absorption pathways (active/passive)	Theoretical practical	Diagnostic Formative Summative
3	2	Linking transpiration to water use efficiency	Explain the types of transpiration - explain the role of stomata and environmental conditions	Theoretical practical	Diagnostic Formative Summative
4	2	Analysis of ion movement and its effects on plant growth	- Understanding ionic absorption (transport (mechanisms - Differentiating between phloem and xylem transport	Theoretical practical	Diagnostic Formative Summative
5	2	Characterization of electrochemical mechanisms in plastids	- Explaining light reactions: Photosystems I & II - Explaining the electron path	Theoretical practical	Diagnostic Formative Summative
6	2	Measuring the relationship between light intensity andNAR	- Explain the Calvin cycle and the limiting factors of .photosynthesis	Theoretical practical	Diagnostic Formative Summative
7	2	Understanding the relationship between breathing and physiological growth	- Glycolysis ,Krebs and , ETC explained- Comparison between aerobic and anaerobic respiration	Theoretical practical	Diagnostic Formative Summative
8	2	Recall and analyze physiological concepts	- Mid-term assessment - Reinforcing key concepts	Theoretical practical	Diagnostic Formative Summative
9	2	Analysis of the differences between growth types	- Explaining the stages of growth - Studying meristematic and hormonal activity	Theoretical practical	Diagnostic Formative Summative
10	2	Applying the effect of hormones on rooting and branching	- Explain the effect of auxins, cytokinins, and .gibberellins	Theoretical practical	Diagnostic Formative Summative
11	2	- Understand the role of ,ethyleneABA and salicylic acid	Conclusion of the relationship between these hormones and stress and maturation	Theoretical practical	Diagnostic Formative Summative
12	2	- Analysis of the effect of drought and salinity on vital functions	Linking physiological processes to the environment	Theoretical practical	Diagnostic Formative Summative
13	2	- Physiological responses to high and low temperatures	Description of anatomical and physiological adaptations	Theoretical practical	Diagnostic Formative Summative
14	2	- Application of physiology in irrigation and fertilization - Use of physiological indicators of productivity	Design a production system based on physiological indicators	Theoretical practical	Diagnostic Formative Summative

15	2	- Comprehensive assessment of all concepts - Preparation for the final exam	Integrate all concepts and .link them to the application	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-**Infrastructure**

Classrooms, laboratory and field	Available
Required textbooks	Available
Main references (sources)	**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.
-Recommended books and references (.Scientific journals, reports, etc)	
Electronic references, Internet sites	

Adescription Vegetable production schedule
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

3/9/2024

7- Course supervisor name

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

8- Course objectives (general objectives of the course)

1. Enabling the student to gain knowledge and understanding of the areas where winter Introducing students to the importance of vegetable production science, methods of cultivation, and the most suitable families in the conditions of different regions :
2. 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- :Course Structure Vegetable Production

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	4	The student should know the .concept of crops Vegetables and the scientific classification of crops To study the importance of studying scientific division To distinguish between successive cultivation in Open fields and greenhouses	Scientific classification of vegetable crops	Theoretical practical	Diagnostic Formative Summative

2	4	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	Morphological description of vegetable crops	Theoretical practical	Diagnostic Formative Summative
3	4	1. To know the importance of agricultural cycles, their types and benefits 2. To learn the basics of agricultural cycle design To distinguish between vegetable plant seeds	Agricultural cycles	Theoretical practical	Diagnostic Formative Summative
4	4	1. To mention the characteristics of the Cucurbitaceae family and its .most important genera 2. The botanical description of is the Cucurbitaceae family .known Learn the economic importance and timing of planting cucumber, melon and .squash crops	familyCucurbitaceae	Theoretical practical	Diagnostic Formative Summative
5	4	1. Learn about the economic importance and the original habitat. Learn when to plant .squash and zucchini crops Knows the environmental conditions suitable for the growth of squash and zucchini crops	*Citrullus vulgaris* crop zucchini And *Cucurbita pepo* L.	Theoretical practical	Diagnostic Formative Summative
6	4	Characteristics of the legume family and its most important genera Botanical description of the legume family Broad bean, cowpea, pea, bean and chard crops	Leguminosae family	Theoretical practical	Diagnostic Formative Summative
7	4	Know the characteristics of the Crusader family and its most important genera the botanical Learn description of the .cruciferous family Know the economic and nutritional importance of garlic and when to plant it	Cruciferae family) Radish*Rahanus Sativus)*	Theoretical practical	Diagnostic Formative Summative

8	4	Mention the characteristics of the tent family and its .most important genera The botanical description is of the Apiaceae family . known Learn about the most important crops of the .Apiaceae family	Umbelliferae	Theoretical practical	Diagnostic Formative Summative
9	4	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	Carrot, celery and parsley crops	Theoretical practical	Diagnostic Formative Summative
10	4	Mention the characteristics of the Ramara family and .its most important genera The botanical description of the family Ramaragidae .is known ,Learn how to grow beets .chard, and spinach	Chenopodiaceae family	Theoretical practical	Diagnostic Formative Summative
11	4	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	Compositae family	Theoretical practical	Diagnostic Formative Summative
12	4	To know the economic importance of lettuce crop To learn the processes of serving the lettuce crop	And the lettuce crop narcissistic family Amaryllidacea	Theoretical practical	Diagnostic Formative Summative
13	4	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	Onion crop and its economic and nutritional importance	Theoretical practical	Diagnostic Formative Summative
14	4	To know the economic and nutritional importance of garlic and when to plant it To know the economic and nutritional importance of leek crop	Garlic crop*Allium sativum* L.	Theoretical practical	Diagnostic Formative Summative

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

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-**Infrastructure**

Classrooms, laboratory and field	Available
Required textbooks	Available
Main references (sources)	• 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
-Recommended books and references (.Scientific journals, reports, etc)	Anonymous.1977. Growing your own vegetables. US D.Ainformation Bull Agric
Electronic references, Internet sites	https://www.youtube.com/channel/UCeVhKlGOPCUbVIA6JyYVc7A

General Entomology Course Description

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

3/9/2024

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

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	A historical overview of the development of agricultural pest control and international bodies involved in pest control.	A historical overview of the development of agricultural pest control and international bodies involved in pest control.	Theoretical practical	Diagnostic Formative Summative
2	2	Methods of pest control (natural (and applied.	Methods of pest control (natural and applied).	Theoretical practical	Diagnostic Formative Summative
3	2	Mechanical control, biological control.	,Mechanical control biological control.	Theoretical practical	Diagnostic Formative

					Summative
4	2	Chemical control, modern trends in pest control.	Chemical control, modern trends in pest control.	Theoretical practical	Diagnostic Formative Summative
5	2	Pests of protected agriculture.	Pests of protected agriculture.	Theoretical practical	Diagnostic Formative Summative
6	2	Cotton pests, wheat pests.	Cotton pests, wheat pests.	Theoretical practical	Diagnostic Formative Summative
7	2	Corn pests, cruciferous pests.	Corn pests, cruciferous pests.	Theoretical practical	Diagnostic Formative Summative
8	2	Stored goods pests.	Stored goods pests.	Theoretical practical	Diagnostic Formative Summative
9	2	Onion and garlic pests, clover and clover pests.	,Onion and garlic pests clover and clover pests.	Theoretical practical	Diagnostic Formative Summative
10	2	Cucurbit pests, pests of the Solanaceae family.	Cucurbit pests, pests of the Solanaceae family.	Theoretical practical	Diagnostic Formative Summative
11	2	Stone fruit pests Stone	Stone fruit pests	Theoretical practical	Diagnostic Formative Summative
12	2	Apple pests, grape pests.	Apple pests, grape pests.	Theoretical practical	Diagnostic Formative Summative
13	2	Citrus pests, fig pests.	Citrus pests, fig pests.	Theoretical practical	Diagnostic Formative Summative
14	2	Pomegranate pests, olive pests.	Pomegranate pests, olive pests.	Theoretical practical	Diagnostic Formative Summative
15	2	Pests of palm trees and ornamental plants.	Pests of palm trees and ornamental plants.	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-**Infrastructure**

Classrooms, laboratory and field	Available

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

Description of the agricultural machinery and equipment course
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
3/9/2024
7) Course supervisor 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 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

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	3	The importance of agricultural mechanization the tractor is a source of - power in the field	- Types of agricultural tractors .Public Safety	Theoretical practical	Diagnostic Formative Summative
2	3	The main parts of the tug and the function of each part	The main parts of the tug and .the function of each part	Theoretical practical	Diagnostic Formative Summative
3	3	Tug systems	Fuel system - Air technology (system - Cooling system	Theoretical practical	Diagnostic Formative Summative
4	3	- Lubrication system Electrical system	Parts of each system - how each - part works - malfunctions .maintenance	Theoretical practical	Diagnostic Formative Summative
5	3	,Transmission, clutch saddle box	Parts of each system - how each – part works - malfunctions maintenance	Theoretical practical	Diagnostic Formative Summative
6	3	Ploughing, importance of plowing, qualities of good plowing	Vertical and differential - transport group, final transport the structure of the tugboat, its parts, its benefits, the .importance of each part	Theoretical practical	Diagnostic Formative Summative
7	3	Reversible plows - how they work	- Use of these plows - their parts .maintenance - plowing methods	Theoretical practical	Diagnostic Formative Summative
8	3	Chisel, rotary and subsoil plows - how they work	The nature of the work of these - plows - the use of these plows - their parts - their maintenance plowing methods	Theoretical practical	Diagnostic Formative Summative
9	3	Soil smoothing machines (combs, ploughs)	Leveling, planning and channel cutting machines - the nature of ,the machines' work, their use types, parts, and operation	Theoretical practical	Diagnostic Formative Summative
10	3	Mechanized agriculture - its importance, fertilizer	The seed drill, its parts, its operation, laboratory and field	Theoretical practical	Diagnostic Formative

		spreader	,standards for these machines .maintenance of these machines		Summative
11	3	Potato planter - types - how - it works - parts - operation calibration - maintenance	Weeding and fertilizing machines - types - nature of - work - parts - operation .calibration - maintenance	Theoretical practical	Diagnostic Formative Summative
12	3	Crop service machines, pest control machines - their types - their nature of work	Its types - nature of work - parts - operation - calibration - .maintenance	Theoretical practical	Diagnostic Formative Summative
13	3	Green fodder cutting machines and baling presses nature	- Operation - Calibration .Maintenance	Theoretical practical	Diagnostic Formative Summative
14	3	,Harvester - Classification - External Structure Function - Parts	- Operation - Calibration - .Maintenance	Theoretical practical	Diagnostic Formative Summative
15	3	,Tug maintenance ,importance of maintenance types and how to perform it	Tug maintenance, importance of maintenance, types and how to perform it	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	**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 Ministry of Planning, Baghdad ,1971
Main references (sources)	
-Recommended books and references (.Scientific journals, reports, etc)	Agricultural Tractors, Dr. Eng. Abdul Salam Mahmoud, 1986, Baghdad University Press
Electronic references, Internet sites	Agricultural Tractor Maintenance, Al-Najjar/Ali Al-Saleh, 1990, Dar Al-Hikma Press, Baghdad

Description of the course on medicinal plant production

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

3/9/2024

7) Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
Email: Drjasim_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**

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	3	Know medicinal / plants Definition of medicinal plants Historical / / overview Importance of .medicinal plants	Definition of medicinal plants	Theoretical practical	Diagnostic Formative Summative
2	3	Understand the geographical distribution of medicinal plants in Iraq and the Arab world, and the most important problems of medicinal plant production in .Iraq	Geographical distribution of medicinal plants	Theoretical practical	Diagnostic Formative Summative
3	3	Classification of drugs (medicinal (substances according to their location in .the plant	Drug classification (medical substances)	Theoretical practical	Diagnostic Formative Summative
4	3	alkaline materials	- Its properties, its spread in seeds - flowers .stem - leaves	Theoretical practical	Diagnostic Formative Summative
5	3	Explains the drugs extracted .from ferns	- Ferns - definition - areas of growth - distribution - a brief history of life .reproduction - classification - importance	Theoretical practical	Diagnostic Formative Summative
6	3	Drugs extracted lichens from	Definition of lichens - Where they are found - Uses of lichens	Theoretical practical	Diagnostic Formative Summative
7	3	Types of lichens	Lichen products - their balance in the ecosystem	Theoretical practical	Diagnostic Formative Summative
8	3	Drugs extracted .from algae	Biological and economic importance - Use of seaweed in agriculture - Marine	Theoretical practical	Diagnostic Formative

			environment - Physical and chemical properties - Light - Temperature - Water movement and their effect on algae		Summative
9	3	Freshwater algae .	,Soil algae, factors affecting their growth their negative and positive importance, and freshwater algae - algae cultivation	Theoretical practical	Diagnostic Formative Summative
10	3	Volatile oils . such as citrus	Extraction - Importance - Benefits and therapeutic properties - Relationship to humans - Treatment with volatile essential oils	Theoretical practical	Diagnostic Formative Summative
11	3	- Bitter substances . colocynth	- Its properties and distribution in plants geographical distribution - its importance and medical benefits - methods of use	Theoretical practical	Diagnostic Formative Summative
12	3	Active ingredients . walnuts -	Geographical distribution - its importance and medical benefits - its properties and spread in plants - its cultivation	Theoretical practical	Diagnostic Formative Summative
13	3	- Mucus and gums cucumber	Its properties in plants and its geographical distribution - its medicinal benefits and uses	Theoretical practical	Diagnostic Formative Summative
14	3	Notes to be taken into consideration when dealing with - medicinal plants dosages - methods . of use	Notes to be taken into consideration when - dealing with medicinal plants - Doses Methods of use	Theoretical practical	Diagnostic Formative Summative
15	3	General review	General review	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

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

Secondary Compounds Chemistry Course Description

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

3/9/2024

7) Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
Email: Drjasim_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 **Chemistry of secondary compounds**

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	Definition of organic secondary ,compounds classification of	Introduction, definition of organic secondary compounds, classification of natural products, methods of obtaining organic secondary compounds, separation and purification	Theoretical practical	Diagnostic Formative Summative

		,natural products methods of obtaining organic secondary ,compounds separation and purification			
2	2	Able to separate secondary ,compounds chromatography, column chromatography, thin layer chromatography, paper chromatography, liquid-gas chromatography	,Separation of secondary compounds ,chromatography, column chromatography thin layer chromatography, paper chromatography, liquid-gas chromatography	Theoretical practical	Diagnostic Formative Summative
3	2	Able to recognize the structural composition of secondary ,compounds both physical .and chemical	Methods for identifying the structural composition of secondary compounds, both physical and chemical	Theoretical practical	Diagnostic Formative Summative
4	2	**Understands methods of natural analysis**	,Natural analysis methods: electronic dishes infrared dishes(IR)	Theoretical practical	Diagnostic Formative Summative
5	2	**Nuclear resonance imaging (NRI)**	Nuclear Magnetic Resonance(NMR) plate Mass plates	Theoretical practical	Diagnostic Formative Summative
6	2	Identify the five types of organic secondary .compounds	Identify the five types of organic secondary compounds - glycosides - phenols-	Theoretical practical	Diagnostic Formative Summative
7	2	**Knows alkaloids**	- Alkaloids - isoprenoids (terpenes) quinones.	Theoretical practical	Diagnostic Formative Summative
8	2	**Known** as glycosides	Glycosides - Chemical and physical - properties - Types of glycosides Examples of glycosides - Their uses	Theoretical practical	Diagnostic Formative Summative
9	2	**Explains** phenols	Phenols - Chemical and Physical Properties Types of Phenols, Examples, Uses -	Theoretical practical	Diagnostic Formative Summative
10	2	**Explains the cotions**	Covalent bonds, chemical and physical properties, types, examples, uses	Theoretical practical	Diagnostic Formative Summative
11	2	**Classify** turbines, their ,classification ,existence importance, and .uses	,Turbines, their classification, existence importance, and uses	Theoretical practical	Diagnostic Formative Summative
12	2	**Explains**	,Alkaloids, their classification, existence	Theoretical	Diagnostic

		alkaloids, their ,classification ,existence importance, and .uses	importance, and uses	practical	Formative Summative
13	2	**Explains** alkaloids, their ,classification ,existence importance, and .uses	,Alkaloids, their classification, existence importance, and uses	Theoretical practical	Diagnostic Formative Summative
14	2	Review topics	Review topics	Theoretical practical	Diagnostic Formative Summative
15	2	Review topics	Review topics	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	**not available**
Main references (sources)	
-Recommended books and references (.Scientific journals, reports, etc)	**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
Electronic references, Internet sites	

Farm Management Course Description

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

3/9/2024

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

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	2	**Definition of management**	Definitions of farm management and its objectives.	Theoretical practical	Diagnostic Formative Summative
2	2	Knowing the costs of production.	Production costs.	Theoretical practical	Diagnostic Formative Summative
3	2	Explain the main economic principles and rules used in farm management.	The main economic principles and rules used in farm management.	Theoretical practical	Diagnostic Formative Summative
4	2	**Know the principle of diminishing returns**	A- The principle of diminishing returns.	Theoretical practical	Diagnostic Formative Summative
5	2	Explains the principle of farm costs and the theory of comparative costs.	B - The principle of farm costs and the theory of comparative costs.	Theoretical practical	Diagnostic Formative Summative
6	2	**Know** the principle of determining the level of production. - The principle of equal returns and the principle of opportunity costs.	C- The principle of determining the level of production. D- The principle of equal returns and the principle of opportunity costs.	Theoretical practical	Diagnostic Formative Summative
7	2	**Explain** substitution or replacement to reduce cost	Substitution or replacement to reduce costs	Theoretical practical	Diagnostic Formative

					Summative
8	2	**Knows** farm planning and budgeting.	Farm planning and budgeting.	Theoretical practical	Diagnostic Formative Summative
9	2	**Understands** farm management methods – full and partial plan.	- Farm management methods A complete and partial plan.	Theoretical practical	Diagnostic Formative Summative
10	2	Method of substitution and replacement between projects	B - The method of substitution and replacement between projects	Theoretical practical	Diagnostic Formative Summative
11	2	.Direct comparison method .Partial change method	.C- Direct comparison method D- Partial change method.	Theoretical practical	Diagnostic Formative Summative
12	2	Solves farm and depreciation accounts and methods of calculating them	Farm accounts, extinction and methods of calculating it.	Theoretical practical	Diagnostic Formative Summative
13	2	Knows how to manage production elements efficiently and manage capital.	Managing production elements with work efficiency and capital management.	Theoretical practical	Diagnostic Formative Summative
14	2	Understands the economics of farm purchase and valuation methods.	Economics of farm purchase and valuation methods.	Theoretical practical	Diagnostic Formative Summative
15	2	Calculates farm economic efficiency measures and prepares farm budget.	Economic efficiency measures for the farm and farm budgeting.	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	
Main references (sources)	
-Recommended books and references (.Scientific journals, reports, etc)	**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
Electronic references, Internet sites	

Description of the course on preserving and drying medicinal plants

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

3/9/2024

7. Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
Email: Drjasim_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 Preserving and drying plants

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	3	recognize On the importance of herbs and plants in ancient and modern medicine	Introduction: The importance of herbs and plants in ancient and modern medicine	Theoretical practical	Diagnostic Formative Summative
2	3	Identify general rules and appropriate times for .collecting medicinal plants	General rules and appropriate times for collecting medicinal plants	Theoretical practical	Diagnostic Formative Summative
3	3	To be able to dry herbs and medicinal plants	Drying herbs and medicinal plants	Theoretical practical	Diagnostic Formative Summative
4	3	Distinguish between natural drying methods	Natural drying methods	Theoretical practical	Diagnostic Formative Summative
5	3	Industrial drying methods	Industrial drying methods	Theoretical practical	Diagnostic Formative Summative
6	3	To preserve herbs and medicinal plants	Preserving herbs and medicinal plants	Theoretical practical	Diagnostic Formative Summative
7	3	Able to store herbs and medicinal plants	Storage of herbs and medicinal plants	Theoretical practical	Diagnostic Formative Summative
8	3	Methods of using herbs and medicinal plants, herbal and medicinal plant juice, herbal ,and medicinal plant syrup medicinal plant honey.	Methods of using herbs and medicinal plants, herbal and medicinal plant juice, herbal ,and medicinal plant syrup medicinal plant honey.	Theoretical practical	Diagnostic Formative Summative
9	3	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.	Theoretical practical	Diagnostic Formative Summative
10	3	Herbal tea and medicinal plants, herbal baths and medicinal plants.	Herbal tea and medicinal plants, herbal baths and medicinal plants.	Theoretical practical	Diagnostic Formative Summative
11	3	Uses of herbs and medicinal plants.	Methods of use and treatment	Theoretical practical	Diagnostic Formative Summative
12	3	Increase the number of herbs and medicinal plants.	Cloves - Ginger	Theoretical practical	Diagnostic Formative Summative
13	3	Extraction of herbs and medicinal plants.	Castor oil - black seed oil	Theoretical practical	Diagnostic Formative Summative
14	3	Uses of herbs and medicinal plants.	The part taken for use	Theoretical practical	Diagnostic Formative Summative
15	3	herbs as medicinal plants.	Where it is located and collected	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

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

2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
Required textbooks	
Main references (sources)	file:///C:/Users/Dell/Downloads/25412540001254.pdf
-Recommended books and references (.Scientific journals, reports, etc)	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%A9A%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
Electronic references, Internet sites	https://acmls.org/wp-content/uploads/2024/07/198-website.pdf file:///C:/Users/Dell/Downloads/Noor-Book.com.pdf

Description of the course of medicinal plant diseases

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

3/9/2024

7- Course supervisor name

Name: M.M. Ahmed Abdel Khalaf
Email: ahmedabd-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 Preserving and drying plants

week	watches	Required learning outcomes	Unit name/topic	Teaching method	Evaluation method
1	3	Able to classify plant diseases according to pathogen, symptoms and agent.	Classification of plant diseases	Theoretical practical	Diagnostic Formative Summative
2	3	Explanation of oomycetes, their characteristics, the most important diseases they cause, late blight on potatoes, seedling death, downy mildew on onions, cucurbits and grapes.	Oomycetes	Theoretical practical	Diagnostic Formative Summative
3	3	Classification of zygotic fungi, their classification, most important characteristics and the diseases they cause.	zygotic fungi	Theoretical practical	Diagnostic Formative Summative
4	3	Sac fungi, their most important characteristics, the diseases they cause and their resistance, powdery ,mildew diseases on cucurbits, grasses grapes and roses.	cyst fungi	Theoretical practical	Diagnostic Formative Summative
5	3	Imperfect fungi, diseases caused by them, date palm pollen blackening ,disease, apple stem black spot ascochyta spot of broad beans.	imperfect fungi	Theoretical practical	Diagnostic Formative Summative
6	3	,Basidiomycetes, their characteristics the most important diseases they cause, rust and smut fungi.	basidiomycetes	Theoretical practical	Diagnostic Formative Summative
7	3	Plant pathogenic bacteria, their characteristics, the most important diseases they cause, and sources of infection with pathogenic bacteria.	plant pathogenic bacteria	Theoretical practical	Diagnostic Formative Summative
8	3	,Viruses that cause plant diseases methods of transmission and spread of viral diseases, the most important diseases caused by viruses.	plant pathogenic viruses	Theoretical practical	Diagnostic Formative Summative

9	3	,Non-parasitic diseases, their causes symptoms, and nutrient deficiencies Npk, Cu, Mg, Br, Fe.Zn, Mn, S	Non-parasitic diseases and their causes	Theoretical practical	Diagnostic Formative Summative
10	3	Plant diseases resulting from irregular ,irrigation, high ground water level blossom end rot on leaves and tomato fruits, gummosis of stone fruit trees.	Plant diseases resulting from irregular irrigation and high groundwater levels	Theoretical practical	Diagnostic Formative Summative
11	3	:Methods of controlling plant diseases .agricultural, biological, chemical ,Bacterial pesticides, antibiotics mycotoxins produced by some fungi that infect grains, fruits, and food.	Methods of controlling plant diseases	Theoretical practical	Diagnostic Formative Summative
12	3	,Mycoplasmas as plant pathogens their characteristics, the most important diseases they cause, their symptoms, their life cycle, and methods of combating them.	Mycoplasmas as plant pathogens	Theoretical practical	Diagnostic Formative Summative
13	3	Plant viruses, their forms, the ,chemical composition of the virus ,general symptoms of viral diseases factors affecting the external manifestations of infection with viruses.	plant viruses	Theoretical practical	Diagnostic Formative Summative
14	3	,Life cycle of nematodes, parasitism changes caused by nematodes in plant tissue, resistance to nematodes, and the most important diseases they cause.	Life cycle of eelworms	Theoretical practical	Diagnostic Formative Summative
15	3	Classification of plant diseases according to the pathogen, symptoms and agent.	Classification of plant diseases according to the pathogen	Theoretical practical	Diagnostic Formative Summative

11-**Course Evaluation**

T	Evaluation methods	Calendar appointment (week)	degree	% Relative weight
1	Report 1	Fourth week	2.5	2.5
2	Report 2	Fifth week	2.5	2.5
3	Quiz Short Test (1)	Week 6	2	2
4	Quiz Short Test (2)	Fourteenth week	2	2
5	Quiz Short Test (3)	The fifteenth week	1	1
6	Midterm Exam (1)	Week 6	7.5	7.5
7	Midterm Exam (2)	The eleventh week	7.5	7.5
8	Final theoretical exam	Final semester exams	50	50
9	Practical field project	The fifteenth week	5	5
10	Field evaluation	The third and fifth week	2	2
11	Quiz Practical Short Test (1)	First week	1	1
12	Quiz Practical Short Test (2)	Fourth week	0.5	0.5
13	Quiz Practical Short Test (3)	Fourteenth week	1	1
14	Direct questions and homework	Weeks8,9,12 ,11 ,10 ,13	5.5	5.5
15	Final practical exam	Final semester exams	10	10
	the total	100	100%	100%

12-Infrastructure

Classrooms, laboratory and field	Available
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%A

	7%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
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
3/9/2024
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	3	1
,Diagnostic formative and final	Theoretical practical	,Environmental factor .air, wind	Environmental factor .explains , air, wind	3	2

,Diagnostic formative and final	Theoretical practical	,Soil factor, soil type .soil composition	Soil factor, soil type, soil .composition	3	3
,Diagnostic formative and final	Theoretical practical	Soil moisture, soil . solution, humus	,Soil moisture, soil solution humus.	3	4
,Diagnostic formative and final	Theoretical practical	,Topographic factors slope trend	Topographic factors, slope trend	3	5
,Diagnostic formative and final	Theoretical practical	Biological factors, animal influence, plant influence and interaction	Biological factors, animal influence, plant influence and interaction	3	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	3	7
,Diagnostic formative and final	Theoretical practical	Classification according to the nature of herbs	Classification according to the nature of herbs	3	8
,Diagnostic formative and final	+ Theoretical practical	Classification by ,habitat. Tropical .. …… ,subtropical .etc	.Classification by habitat ,Tropical, subtropical .etc .. ……	3	9
,Diagnostic formative and final	+ Theoretical practical	Classification by therapeutic value: anti-cancer, anti-cholesterol	Classification by therapeutic value: anti-cancer, anti-cholesterol	3	10
,Diagnostic formative and final	+ Theoretical practical	Classification by ,Ayurvedic formula, roots .flowers, ... etc	Classification by Ayurvedic .formula, roots, flowers, ... etc	3	11
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	3	12
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	3	13
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	3	14
,Diagnostic formative and final	+ Theoretical practical	Botanical classification	Botanical classification	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
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
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)
30hours / Units 2
6- Date this description was prepared
3/9/2024
7- Course supervisor name
Name: M.M. Ahmed Ibrahim Khalaf Email: ahmedibrahim.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 exams jugs Oral tests Laboratory	Theoretical + practical	Aryl ,halide nomenclatu ,re chemical and physical	Definition of aryl halides and distinction between them and alkyl halides. IUPAC rules and common names. Explain the physical properties of ,aryl halides such as boiling point solubility, and color.	2	Fourth

experiments		properties and method of preparation			
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Phenols and nomenclature ,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 nomenclature ,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 nomenclature ,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 odor, and boiling point.	2	Ninth
Midterm exams monthly	Theoretical + practical	Aromatic ,esters nomenclatu	Define aromatic esters and explain the functional group structure in these compounds, showing their	2	tenth

exams jugs Oral tests Laboratory experiments		,re preparation and properties	attachment to an aromatic ring (such .(as ethyl benzoate IUPAC nomenclature of aromatic esters , with common names		
Midterm exams monthly exams jugs Oral tests Laboratory experiments	Theoretical + practical	Azo compounds , nomenclatu ,re preparation 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	

12-Infrastructure

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

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

3/9/2024

7. Course supervisor name

Name: Assistant Professor Jassim Mohammed Khalaf
Email: Drjasim_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	Describe the geographical distribution of medicinal plants and the environmental factors that affect their growth and reproduction.	1	5

		affecting plant distribution.			
,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. **Distinguish between each extraction method in terms of principle, effectiveness .and cost**	1	12
,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

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

3/9/2024

7. Course instructor's name

Name: M.M. Ahmed Ibrahim Khalaf
Email: ahmedibrahim.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 Volume reduction - methods - Cutting - Pressing Compression.**	**Explains the importance of reducing particle size in pharmaceutical manufacturing. Distinguish between different methods of volume ,reduction (mechanical .(physical**	1	3
,Diagnostic	**+ Theoretical**	**First: Palm tree**	**Identify the types of sieves**	1	4

formative and final	practical	methods - Mechanics of palm tree methods.	used to separate materials according to size. Explains the working mechanism of different palm .frond devices		
,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 materials - slip-aid materials.	Defines the different functions of each component of the disks. Classify materials according ,to their function (thinning disintegrating, gripping, slip- .(aiding	1	12
,Diagnostic formative and final	+ Theoretical practical	Second: Grain packaging - grain calibration - quality	Apply the steps of calibrating tablets in terms of weight, size, and potency.	1	13

		control.	**Understands quality control standards in solid pharmaceutical .manufacturing**		
,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

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

3/9/2024

7. Course supervisor name

Name: Ahmed Abdel Halaf
Email: ahmedabd-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 growth hormones in , rooting cuttings Seed storage and how to measure their viability	The student should know the plant .mind and its types ways to cultivate the mind Learn Knows methods of storing and vitality of seeds To learn to calculate the germination percentage, germination rate and germination speed	2	7
- Diagnostic Formative- Final-	+ Theoret 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-	+ Theoret 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-	+ Theoret practical	.Irrigation systems	the irrigation systems used Mention .in nurseries Apply irrigation systems in the nursery	2	10
Diagnostic Formative- Final-	+ Theoret 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-	+ Theoret 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-	+ Theoret 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-	+ Theoret 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	2	14

			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 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
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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

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

3/9/2024

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 and final	theoretical	Harm and damage of insects and their benefits.	Learn about the harms and benefits of insects.	1	1
,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

3/9/2024

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	watch es	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
3/9/2024
7. Name of the course supervisor

.Name: Asst. Prof. DrQotaiba Saleh Sheikh Asst. Prof. Dr. Jassim Mohammed M.M. Ahmed Ibrahim M.M. Ahmed Abdul M.M. Mustafa Faridoun
:e-mail Qotaibah_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