وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

Guide to Describing the Academic Program and the Course

2024

Introduction:

The educational program is an organized package of courses that includes procedures and experiences organized in the form of study vocabulary. Its main purpose is to build and refine the skills of graduates, making them qualified to meet the labor market requirements. It is reviewed and evaluated annually through internal and external audit procedures and programs like the external examiner program.

The description of the academic program provides a summary of the program's main features and its courses, showing the skills that students are working on acquiring, based on the goals of the academic program. This description is important because it represents the cornerstone in obtaining program accreditation, and the teaching staff participates in writing it under the supervision of scientific committees in the scientific 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 developments in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, semester), as well as adopting a generalized description of the academic program according to the Department of Studies' book No. 3/2906 dated May 3, 2023, regarding programs that rely on the Bologna path as a basis for their work.

In this regard, we cannot but emphasize the importance of writing a description of academic programs and courses to ensure the smooth running of the educational process.

Concepts and Terms:

- **Description of the academic program:** It provides a concise summary of its vision, mission, and goals, including an accurate description of the targeted learning outcomes according to specific learning strategies.
- **Course Description:** It provides a concise summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating whether they have made the most of the available learning opportunities. It is derived from the program description.
- **Program Vision:** An ambitious picture of the future of the academic program to be a developed, inspiring, motivating, realistic, and applicable program.
- **Program Message:** It briefly explains the goals and activities necessary to achieve them, and defines the program's development paths and directions.
- **Program Goals:** These phrases describe what the academic program intends to achieve within a specified period and are measurable and observable.
- **Curriculum Structure:** All courses/subjects included in the academic program according to the adopted learning system (semester, annual, Bologna path), whether they are required (ministry, university, college, and scientific department) with the number of study units.
- **Learning Outcomes:** A compatible set of knowledge, skills, and values that the student acquired after completing the academic program, and the learning outcomes for each course must be determined in a way that achieves the program's goals.
    - **Teaching and Learning Strategies:** These are the strategies used by the faculty member to develop student teaching and learning, and they are plans that are followed to reach learning goals. That is, it describes all classroom and extracurricular activities to achieve the learning outcomes of the program.

Academic Program Description Template

- **University Name:** Northern Technical University
- **College/Institute:** College of Agricultural Technology / Mosul
- **Scientific Department:** Department of plant Production Techniques
- **Name of the academic or professional program:** Bachelor of Technical plant Production
- **Final Certificate Name:** Bachelor of Technical plant Production
- **Educational System:** Courses
- **Description Preparation Date:** January 8, 2024
- **File Completion Date:** January 8, 2024

Signature : 

Head of Depart : Assit. Prof. Dr. Fahad khalaf yassen
Date : 8/01/2024

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Approval of the Dean

Prof. Dr. Shihab Ahmed Yossuf

1. Program vision

The Agricultural Technical College / Mosul strives to prepare graduates in the field of plant production to work in government institutions and to apply their specialization in practical and applied fields.

2. Program mission

The mission is to prepare agricultural engineering technical staff with bachelor's degrees, responsible for developing agriculture. They will be equipped with scientific and technical skills that enable them to implement agricultural plans and programs, with the ability for continuous innovation through the use of modern technologies to ensure ongoing success and development in the agricultural sector.

3. Program Objectives:

The program aims to graduate a workforce capable of working in key areas of plant production science and technology, as follows:

- **Genetic engineering programs for improving plant production.**
- **Field crop and horticultural production projects.**
- **Beekeeping projects.**
- **Management of agricultural fields and projects.**
- **Working in grain grading laboratories.**

- **Using greenhouses for vegetable production.**
- **Working in nurseries and propagating ornamental plants.**

4. Program Accreditation:

None.

5. Other External Influences

There is a close relationship with the job market that receives our graduates. The labor market and its needs are monitored and compared with the academic curricula, and communication is maintained with official institutions, focusing on the agriculture practices applied in those institutions. The academic curricula are updated accordingly.

6. **Program structure:**

Program Structure	Number of Courses	Study Unit	Percentage	Notes *
University requirements	**11**	**22**	**14.37**	**Basic and optional**
Collage requirements	**14**	**28**	**18.31**	**Basic and optional**
Department requirements	**47**	**103**	**67.32**	**Basic and optional**
summer training		**0**		
Other				

7. Program description

Level/Year	Course or Module Code	Course or Module Title	Credit rating	
			Theory	Practical
First	…..	Plant Production Techniques	24 h/week	30 h/week
Second	…..	Plant Production Techniques	27 h/week	41 h/week
Third	…..	Plant Production Techniques	20 h/week	34 h/week
Fourth	……	Plant Production Techniques	25 h/week	33 h/week

Study Level (First)						
Compulsory Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
University Requirements	Human Rights and Democracy	2	0	2		NTU 100
	English Language (1)	2	0	2		NTU 101
	Computer (1)	2	0	2		NTU 102
	Arabic Language (1)	1	1	2		NTU 103
	Elective			2		NTU
	Mathematics	1	0	1		TAMO101

College Requirements	Engineering Drawing	0	3	1		TAMO102
	Plane surveying	1	3	2		TAMO103
	General Chemistry	1	3	2		TAMO104
	Elective	2	0	2		FINE
Department Requirements	General Botany	1	3	2		PLP 101
	Principles of Soil Sciences	2	3	3		PLP 102
	Principles of Horticulture	2	3	3		PLP 103
	Plant anatomy	1	3	2		PLP 104
	Pollution and Environment	1	2	2		PLP 105
	Elective			3		PLP
	Elective			3		PLP
	Elective			2		PLP
Total units of the academic level		21	24	36		

Study Level (First)						
Elective Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
University Requirements	Sport	1	1	2		NTU104
College Requirements	Economies Natural Resources	2	0	2		TAMO151
	Agricultural Extension	2	0	2		TAMO152
Department Requirements	Laboratory Techniques	0	3	1		PLP 151

	Cytology	**1**	**3**	**2**		**PLP 152**
	Microbiology	**1**	**3**	**2**		**PLP 153**
	General Insects	**1**	**3**	**2**		**PLP 154**
	Cilviculture	**1**	**2**	**2**		**PLP 155**
	Seeds Storage	**1**	**2**	**2**		**PLP 156**
	Sustainable Agriculture	**1**	**0**	**1**		**PLP 157**
	Desert Plants	**1**	**2**	**2**		**PLP 158**
Total units of the academic level		**12**	**19**	**20**		
Required Units				**10**		

Study Level (Second))						
Compulsory Courses						
Type of Requirement	**Course Name** **In English**	**Number of theoretical hours**	**Number of practical hours**	**Number of Units**	**Smoother, if any**	**Code**
University Requirements	**English language (2)**	**2**	**0**	**2**		**NTU200**
	Computer (2)	**1**	**1**	**2**		**NTU204**
	Arabic language (2)	**2**	**0**	**2**		
	The crimes of Baath regime in Iraq	**2**	**0**	**2**		
	Professional ethics	**2**	**0**	**2**		
College Requirements	**Organic Chemistry**	**2**	**3**	**3**	**TAMO104**	**TAMO201**

	Agriculture Statistics	**1**	**2**	**2**		**TAMO202**
	Elective			**2**		**FINE**
Department Requirements	Cereal and Legume Winter Crops	**1**	**3**	**2**		**PLP 201**
	Deciduous Fruit Trees	**2**	**2**	**2**	**PLP 103**	**PLP 202**
	Production of Winter Vegetables	**1**	**3**	**2**	**PLP 103**	**PLP 203**
	Plant Physiology	**1**	**3**	**2**	**PLP 101**	**PLP 204**
	Fertility and Fertilization	**2**	**3**	**3**	**PLP 102**	**PLP 205**
	Nurseries and Plant Propagation	**1**	**3**	**2**	**PLP 103**	**PLP 206**
	Evergreen Fruit Trees	**1**	**3**	**2**	**PLP 202**	**PLP 207**
	Production of Summer Vegetables	**1**	**3**	**2**	**PLP 203**	**PLP 208**
	Cereal and Legume Summer Crops	**1**	**3**	**2**	**PLP 201**	**PLP 209**
	Tractors and Agricultural Equipment	**1**	**3**	**2**		**PLP 210**
	Summer Training (1)					**PLP 211**
	Elective			**2**		**PLP**
	Elective			**2**		**PLP**
	Elective			**2**		**PLP**
Total units of the academic level		**24**	**35**	**44**		

Study Level (Second)
Elective Courses

Type of Requirement	Course Name	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
	In English					
College Requirements	Agro nanotechnology	1	2	2		TAMMOTO51
	Food Industry	1	3	2		FINE252
Department Requirements	Plant Taxonomy	1	2	2	PLP 101	PLP 251
	Date Palm Propagation	1	3	2	PLP 103	PLP 252
	Forestry	1	2	2		PLP 253
	Irrigation Techniques	1	2	2		PLP 254
	Soil and Plant Analysis	1	3	2	PLP 102	PLP 255
	Analytical Chemistry	1	3	2		PLP 256
	Water Harvesting	1	2	2		PLP 257
	Breeding and Pruning of Fruit Trees	1	2	2	PLP 103	PLP 258
Total units of the academic level		10	24	20		
Required Units				8		

Study Level (third)						
Compulsory Courses						
Type of Requirement	Course Name	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
	In English					
College Requirements	Computer Applications (3)	1	2	2		TAMO301
	Biochemistry	2	3	3	TAMO104	TAMO302
	Elective			2		FINE
Department Requirements	Principles of Genetics	2	3	3		PLP 301

	Plant Nutrition	1	3	2		PLP 302
	Protected Agriculture Techniques	2	3	3	PLP 103	PLP 303
	Decoration Plants	2	2	3		PLP 304
	Plant Growth Regulators	1	3	2		PLP 305
	Molecular Genetics	1	2	2	PLP 301	PLP 306
	Industrial Crops	1	2	2		PLP 307
	Post-Harvest physiology	1	2	2		PLP 308
	Useful Insects	1	3	2	PLP 154	PLP 309
	Summer Training (2)				PLP 211	PLP 310
	Elective			3		PLP
	Elective			2		PLP
	Elective			2		PLP
Total units of the academic level		17	28	36		

Study Level (third)						
Elective Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
College Requirements	Recycling of Agricultural Wastes	1	2	2		TAMO51
	Organic Agriculture	1	2	2		TAMOA52
Department Requirements	Plant Pathology	1	3	2		PLP 351
	Forage Crops	1	2	2		PLP 352
	Grape Production	1	3	2		PLP 353

	Pasture Management	1	2	2		PLP 354
	Horticultural Crop Industry	1	2	2		PLP 355
	Seeds Production	1	3	2		PLP 356
	Harvesting Equipments	1	2	2		PLP 357
	Seeds Storage	1	2	2		PLP 358
	Economical Entomology	1	2	2		PLP 359
	Wood Chemistry	1	2	2		PLP 360
	Wood Industry	1	2	2		PLP 361
	Modern planting techniques	1	2	2		PLP 362
	Automateed analysis methods	0	3	1		PLP 363
Total units of the academic level		14	34	29		
Required Units				8		

Study Level (Fourth)						
Compulsory Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
	Scientific research methodology	2	0	2		NTU400
College Requirements	Experimental Design	1	3	2	TAMO202	TAMO401
	Computer Applications (4)	1	3	2		TAMO402
	Elective	2	0	2		FINE
Department Requirements	Plant Breeding(1)	2	2	3		PLP 401
	Medical Plants	1	2	2		PLP 402
	Crop Quality	2	2	3	PLP 201	PLP 403
	Weeds Control	1	2	2		PLP 404
	Plant Breeding(2)	2	2	3	PLP 401	PLP 405

	Plant Tissue Culture	2	2	3	PLP 101	PLP 406
	landscape Design	2	3	3	PLP 304	PLP 407
	Seminar and Project (1)	1	3	2		PLP 408
	Seminar and Project (2)	1	3	2	PLP 408	PLP 409
	Elective			2		PLP
	Elective			2		PLP
	Elective			2		PLP
Total units of the academic level		18	27	37		

Academic Level (Fourth) Elective Courses						
Type of Requirement	Course Name In English	Number of theoretical hours	Number of practical hours	Number of Units	Smoother, if any	Code
College Requirements	Safety	2	0	2		TAMO451
	Agricultural marketing	2	0	2		TAMO452
Department Requirements	Bio Fertilizers	1	2	2		PLP451
	Seed Technology	1	2	2	PLP356	PLP452
	Biological Control	1	2	2		PLP453
	Biotechnologies	1	2	2		PLP454
	Farm Management	1	2	2		PLP455
	Natural Products	1	2	2		PLP456
	Storage Pests and Control	1	3	2	PLP154	PLP457
	Conservation Agriculture	1	2	2		PLP458
	Post-Harvest Techniques	1	2	2		PLP459
Total units of the academic level		13	19	22		

Required Units			**8**		

8. **Expected learning outcomes of the program**	
Knowledge	
A-Knowledge and Cognitive Objectives	A1 – Prepare and qualify technical staff in the field of plant life technologies in areas such as plant improvement, propagation, production of field and horticultural crops, and plant protection from pests and diseases. A2 – Develop a cadre capable of working in specialized areas of plant life technologies as follows: – Genetic engineering programs for improving genetic resources. – Projects for the production of field and horticultural crops and managing their fields. – Beekeeping projects. – Work in laboratories for testing, certifying, and purifying grains. A3 – Design and manage field nurseries, shade houses, and various greenhouses.

	A4 – Participate in the preparation and design of agricultural fields and utilize various appropriate applications for them.
Skills	
B – Skill Objectives	B1 – Ability to design and conduct experiments. B2 – Ability to carry out agricultural work in the fields and laboratories. B3 – Ability to manage agricultural fields and projects using the latest modern technical methods. B4 – Ability to use modern technological applications and tools to accomplish essential tasks.
Value	
C – Emotional and Value Objectives	C1 – Brainstorming. C2 – Ability to analyze. C3 – Ability to solve problems. C4 – Ability to deduce.

9. Teaching and Learning Strategies
The program relies on a set of modern methods aimed at achieving a deep understanding of scientific concepts and developing practical skills among students. Among these strategies are: 1. Traditional theoretical education 2. Practical and applied education 3. Cooperative learning

4. Technology-based learning

10. Assessment Methods

- Oral exams
- Daily tests
- Practical exams
- Midterm exams
- Final exams
- Practical projects

11-The teaching staff

Faculty members

Academic rank	specialization		Special requirements/skills (if any)		preparation of the teaching staff	
	general	Specialized			lecturer	staff
prof	Chemistry	biochemistry			staff	
Ass.prof	Biology	microbiology			staff	
Ass.prof	Biology	Botany			staff	
Ass.prof	Biology	Mycology			staff	
Ass.prof	Biology	Mycology			staff	
Ass.prof	crops	crops			staff	
Lecturer 2	Horticulture and landscaping	Horticulture and landscaping			staff	
lecturer	Chemistry	Analytical			staff	
lecturer	crops	crops			staff	
Ass .lecturer 3	crops	crops			staff	
Ass. Lecturer	Plant protection	Plant protection			staff	
Ass. lecturer	Agricultural economy	Agricultural economy			staff	

12-Professional development

Orienting new faculty members

The new members of the department are developed by introducing teaching methods courses, and they are given a teaching suitability test, as well as holding a training course, seminars and workshops to train them on the approved work contexts.

Professional development

1- Scientific trips or scientific visits.

2. Educational meetings.

3 . Assigning him to give lectures.

4 . Attending seminars. recreational trips

5 . Leisure trips

6. Sports activity

7. Attend scientific debates

13-Acceptance criterion

- The student's admission criterion is determined according to the central admission plan within the plan of the Ministry and the student's preparatory branch, his grade point average and his desire. After that, the student is interviewed in a special interview at the institute

14- The most important sources of information about the program

-External sources (the Internet)

- Scientific research and its latest developments

-Methodological books

15-Program development plan

One of the future plans is the development of the laboratories of the Department of Pharmacy Technologies, as well as the development of the curriculum by deletion, addition and replacement

12-Professional development

Orienting new faculty members

- Provide a structured orientation program that outlines the academic and administrative systems within the institution.
- Familiarize them with the policies of the department or college, such as teaching, research, and evaluation requirements.
- Assign a mentor from among the more experienced faculty members to offer guidance and support on both personal and professional levels.

Professional development

Professional Development for Faculty Members The professional development of new faculty members is considered essential to ensure the quality of education and enhance their teaching and academic research skills. They are developed through several strategies and programs:

1. Mentoring and orientation programs.
2. Training workshops.
3. Training courses in scientific research.
4. Continuous learning.
5. Training on the use of educational technologies.
6. Teaching evaluation and feedback.
7. Encouragement of innovation in education.

13.Acceptance criterion

The minimum GPA for graduates of secondary education/science and agricultural branches.

14. The most important sources of information about the program

Key Information Sources About the Program Sources of information about the program can be diverse and come from various official and unofficial channels:

1. The college or university website.
2. The academic student guide.
3. The academic advisor.
4. Scientific books and references.
5. Faculty members.
6. Scientific conferences and workshops.

15. Program development plan

Program Development Plan Work on improving the quality of education and academic research, ensuring that market needs and technological advancements are met. Some key steps for program development include:

1. Analyzing and evaluating current curricula.
2. Updating curricula.
3. Enhancing scientific research.
4. Developing faculty capabilities.
5. Incorporating technology in education.
6. Strengthening collaboration with industry.
7. Continuous evaluation and quality assurance.
8. Promoting a sustainability orientation.
9. Marketing and attracting students.
10. Funding the program.

Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Knowledge and understanding				Subject-specific skil				Thinking Skills			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First	NTU 100	Human Rights and Democracy	O			√		√	√			√			
	NTU 101	English language (1)	O			√		√	√	√			√		

	2NTU 10	**Computer Principles(1)**	**O**	√										√	
	NTU 103	**Arabic Language (1)**	**O**	√								√			
	NTU	**Elective**	**O**	√								√			
	TAMO101	**Mathematics**	**O**			√		√	√				√		
	TAMO 102	**Engineering Drawing**	**O**	√								√			
	TAMO 103	**Plane surveying**	**C**		√							√			
	TAMO 104	**General Chemistry**	**C**	√										√	
	TAMO	**Elective**	**C**		√					√			√		

	PLP 101	**General Botany**	**C**	√								√			
	PLP 102	**Principles of Soil Sciences**	**C**	√									√		
	PLP 103	**Principles of Horticultur e**	**C**			√		√	√	√		√			
	PLP 104	**Plant anatomy**	**C**											√	
	PLP 105	**Pollution and Environme n**	**C**	√									√		
	PLP	**Elective**	**C**			√		√	√	√		√			
	PLP	**Elective**	**C**	√									√		

	PLP	**Elective**	**C**	√									√		
Second	**NTU 200**	**English language (2)**	**O**	√				√				√			
	NTU 201	**Computer Principles(2)**	**O**	√					√				√		
	NTU 202	**Arabic Language (2)**	**O**	√				√				√			
	NTU 203	**The crimes of Baath regime in Iraq**	**O**	√				√				√			
	NTU 204	**Professiona l ethics**	**O**	√				√				√			
	TAMO20 1	**Organic Chemistry**	**C**	√				√					√		

	TAMO202	**Agriculture Statistics**	**C**		√			√				√			
	FINE	**Elective**	**C**	√						√			√		
	PLP 201	**Cereal and Legume Winter Crops**	**C**		√					√		√			
	PLP 202	**Deciduous Fruit Trees**	**C**		√			√				√			
	PLP 203	**Production of Winter Vegetables**	**C**	√				√					√		
	PLP 204	**Plant Physiology**	**C**		√			√						√	
	PLP 205	**Fertility and**	**C**		√					√			√		

		Fertilizatio n													
	PLP 206	**Nurseries and Plant Propagatio n**	**C**	√					√				√		
	PLP 207	**Evergreen Fruit Trees**	**C**		√				√			√			
	PLP 208	**Production of Summer Vegetables**	**C**			√				√			√		
	PLP 209	**Cereal and Legume Summer Crops**	**O**	√					√				√		
	PLP 210	**Tractors and Agricultura**	**O**		√				√			√			

		1 Equipment													
	PLP 211	**Summer Training (1)**	**C**			√				√			√		
	PLP	**Plant Diseases**	**C**		√					√				√	
	PLP	**Protected Agriculture**	**C**	√				√				√			
	PLP	**Biochemistry**	**C**		√					√				√	
	TAMO301	**Computer Applications (3)**	**O**	√					√			√			
	TAMO302	**Biochemistry**	**C**		√					√			√		
	FINE	**Elective**	**C**	√				√				√			

	PLP 301	**Principles of Genetics**	**C**	√				√				√			
	PLP 302	**Plant Nutrition**	**C**			√			√				√		
	PLP 303	**Protected Agriculture Techniques**	**C**	√				√				√			
	PLP 304	**Decoration Plants**	**C**			√			√				√		
	PLP 305	**Plant Growth Regulators**	**C**	√				√				√			
	PLP 306	**Molecular Genetics**	**O**			√			√				√		
	PLP 307	**Industrial Crops**	**O**		√			√				√			

	PLP 308	**Post–Harvest physiology**	**C**												
	PLP 309	**Useful Insects**	**C**	√						√			√		
	PLP 310	**Summer Training (2)**	**C**	√				√					√		
	PLP	**Elective**	**C**		√			√						√	
	PLP	**Elective**	**C**	√					√				√		
	PLP	**Elective**	**C**		√			√							
	NTU400	**Scientific research methodology**	**O**		√			√						√	
	TAMO401	**Experimental Design**	**C**	√					√				√		

	TAMO402	**Computer Applications (4)**	**O**		√			√				√			
	FINE	**Elective**	**C**	√						√				√	
	PLP 401	**Plant Breeding(1)**	**C**			√			√			√			
	PLP 402	**Medical Plants**	**C**	√				√					√		
	PLP 403	**Crop Quality**	**C**		√			√							
	PLP 404	**Weeds Control**	**C**		√				√					√	
	PLP 405	**Plant Breeding(2)**	**C**			√				√			√		

	PLP 406	**Plant Tissue Culture**	**C**		√			√				√			
	PLP 407	**landscape Design**	**C**	√					√				√		
	PLP 408	**Seminar and Project (1)**	**C**		√			√					√		
	PLP 409	**Seminar and Project (2)**	**C**	√					√					√	
	PLP	**Elective**	**C**	√					√				√		
	PLP	**Elective**	**C**	√					√				√		
	PLP	**Elective**	**C**	√					√				√		

Course Description Form

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Agriculture Statistics**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**TAMO 202**				
ECTS Credits	**2**				
SWL (hr/sem)	**3**				
Module Level		**Second**	**Semester of Delivery**		**Second**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Bashar Mohsin Mohammed**		**e-mail**	**Bashar_mohsin.m@ntu.edu.iq**	
Module Leader's Acad. Title		**assistant teacher**	**Module Leader's Qualification**		**MS.C**
Module Tutor	Bashar Mohsin Mohammed able		**e-mail**	Bashar_mohsin.m@ntu.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Economic theory**	**Semester**	**Second**
Co-requisites module	**Design and analysis of experiments**	**Semester**	**Second**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Understand and understand the subject of economic statistics and solve existing economic problems.** 2. **Dealing with economic problems and developing solutions to them.** 3. **Understanding statistical methods and techniques in measuring statistical indicators in economic units.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Keeping pace with the development of statistical sciences and their connection with economic sciences.** 2. **Communicate with everything new and useful in statistical work.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** 1. **The ability to comprehend economic sciences and apply them practically.[3]** 2. **Dealing with crises and economic problems.[3]** 3. **Building statistical and economic (quantitative) foundations for students in the Statistics Department[3]**

	Part B - practical part 1. **Explaining the scientific material to students in detail.[3]** 2. **Participation of students in solving mathematical problems[3]** 3. **Discussion and dialogue about vocabulary related to the topic[3]**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	40	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	0
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**45**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	The concept, importance, objectives and benefits of the agricultural census
Week 2	Methods of the agricultural census - types of samples - problems and obstacles of the agricultural census - sources of errors in the agricultural census
Week 3	Steps to implement the agricultural census
Week 4	Earth statistics
Week 5	Economic evaluation of land – land productivity indexes
Week 6	Agricultural production statistics - benefits of agricultural statistics
Week 7	Monetary estimation of agricultural production
Week 8	Agricultural production classifications
Week 9	Examples and exercises
Week 10	Examples and exercises on agricultural production indices
Week 11	Definition and objectives of time series study

Week 12	**Factors affecting the time series**
Week 13	**Quest exam**
Week 14	**Distribution of hours and concluding discussions of the course**
Week 15	**Factors affecting the time series**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**المدخل الى الاحصاء ، د. خاشع الراوي ، كلية الزراعة والغابات ، جامعة الموصل ، 1980**	Yes
Recommended Texts	**التحليل الاحصائي للبيانات، د.اماني موسى محمد ، معهد الدراسات والبحوث الاحصائية ، جامعة القاهرة ، 2007**	No
Websites		

Grading Scheme
مخطط الدرجات

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Anaytical Chemistry**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 256**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**Second**	**Semester of Delivery**		**Second**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Hala awf abadalrahman**		**e-mail**	**Hala chilmeran 20@gmail .com**	
Module Leader's Acad. Title		**Lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**general chemibtry**	**Semester**	**Two**
Co-requisites module	**Organig Chemistry**	**Semester**	**Two**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**The student is introduced to the types of solutions, their concentrations, and the products of their dissolution processes, which serve them in agricultural operations. He is able to prepare acids and bases and calculate the stress, oxidation, and reduction forces for each of them.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. Expresses the role of analytical chemistry in science.** **2. compare qualitative and quantitative analyses.** **3. expresses the qualitative analysis methods.** **4. Describe the behavior of Brønsted-Lowry acids and bases** **5. Apply an understanding of pH and pOH to characterize aqueous solutions and determine ion concentrations** **6. Perform equilibrium calculations for Brønsted-Lowry acid-base systems** **7. Understand hydrolysis in salt solutions** **8. Apply equilibrium concepts to acids and bases** **9. Explain acid-base buffers**
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Analytical chemistry General introduction - its types, a historical overview , The Nature of Analytical Chemistry , The Role of Analytical Chemistry ,Quantitative Analytical Methods , Typical Quantitative Analysis, compare qualitative and quantitative analyses.(5 hrs). Solutions and their classification according to the volume, quantity, and composition of solute particles, the behavior of Brønsted-Lowry acids and bases ,Apply an understanding of pH and pOH to characterize aqueous solutions and determine ion concentrations , equilibrium calculations for Brønsted-Lowry acid-base systems (15 hrs) Explain the electrolyte, acid, base, and conjugate acid/base , the properties and formation of solutions and colloids (8 hrs). Calculations Used in Analytical Chemistry , Some Important Units of Measurement , Unified Atomic Mass Units and the Mole, Solutions and Their Concentrations ,Chemical Stoichiometry, and their chemical calculations (12 hrs) Hydrolysis in salt solutions , equilibrium concepts to acids and bases , acid-base buffers ,interpret aqueous solution chemistry (10 hrs) Part B - Equilibrium in Analytica chemical systems Fundamentals Reversible Reactions and Chemical Equilibria, Manipulating Equilibrium Constants, Solving Equilibrium Problems , Activity Effects (10 hrs) Aqueous Solutions and Chemical ,The Chemical Composition of Aqueous Solutions, Stepwise and Overall Formation Constants , Constant Expressions for Aqueous Solutions ,Relative Strengths of Conjugate Acid/Base Pairs Equilibrium Constants for Chemical Reactions , Equilibrium calculations, (10 hrs) The Henderson-Hasselbalch Equation , Acid Rain and the Buffer Capacity of Lakes (10

	hrs) . Hydrolysis of salts, and their chemical calculations (10 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- **Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their Analytical chemistry thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Atomic structure
Week 2	Electronic distribution of atoms in the periodic table
Week 3	Electronic theory of valence
Week 4	Chemical bonds
Week 5	Acids base and salts
Week 6	Reduction and oxidation reactions
Week 7	Balancing in acidic and basic media
Week 8	Standard electrode voltage
Week 9	Nuclear chemistry
Week 10	The predominant nonmetallic elements
Week 11	Atomic structure

Week 12	Ideal gases
Week 13	Halogens, their properties and preparation, general properties of group six elements
Week 14	General characteristics of the elements in the fifth group
Week 15	General properties of the elements in group four

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Skoog D. ,Fundamentals of Analytical Chemistry,Nitnth ed., 2016	Yes
Recommended Texts	Gary D.Chritian,Analytical Chemistry,fifth editionjohn Willy & sons,inc, 1986. 2) Modern of Analytical Chemistry, Daived 2000	No
Websites	https://praxilabs.com/arabic/blog/6-most-important-chemistry-laws/	

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Beneficial Insects**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP154**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**Third level**	**Semester of Delivery**		**one**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Module Leader's Acad. Title		**Lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- **Introducing the student to the importance of bees and honey production and the important cycle in the pollination process and increasing crop productivity and the student becomes able to manage and breed beehives and address their problems.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **The use of special techniques for detecting insects** 2. **Identify the specialties available for the diagnosis and examination of insects**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** **An overview of microbiology screening and diagnosis centers in Iraq [3 hrs]** **. Factors affecting entomology [3 hrs]**

	Part B - practical part **Insect morphology study [9 hrs].** **. Devices and tools used in microbiology examination [9 hrs].** **. Sample extraction [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Biochemistry**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**TAMO 201**				
ECTS Credits	**3**				
SWL (hr/sem)	**5**				
Module Level		**Third**	**Semester of Delivery**		**Third**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Hala awf abdalrahman		**e-mail**	**Hala chilmeran 20@gmail .com**	
Module Leader's Acad. Title		**Lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل75 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	65	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	10	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Defnition of the biochemistry , historical brief scope of the biochemistry . correlation
Week 2	Importance of the cell in the study of the biochemistry , Brief deception to the physical
Week 3	Water and reaction degree (PH)
Week 4	Chemistry of the carbohydrates
Week 5	Amino acids
Week 6	Peptides
Week 7	Lipids (fatty materials) and fatty acids
Week 8	Nudeo acids
Week 9	Enzymes , vitamins , coenzymes
Week 10	Bioenergetic (out lines)
Week 11	Bioenergetic (out lines)

Week 12	Metabolism of carbohydrates (brief)
Week 13	Metabolism of carbohydrates (brief)
Week 14	Metabolism of carbohydrates (brief)
Week 15	Metabolism of carbohydrates (brief)

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Cereal and Legume Summer Crops			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 209**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level	**First**		**Semester of Delivery**	**First**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader	Dr. Wadhah Thabit Abeed		**e-mail**	Wadah8324@ntu.edu.iq	
Module Leader's Acad. Title	**Lecture**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	**01/06/2021**		**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Cereal and Legume Winter Crops	**Semester**	**Second**
Co-requisites module	**Plant Physiology**	**Semester**	**Second**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the most important summer crops, their production techniques, how to serve them,** 2. **identifying the most suitable conditions for growing each crop and their economic importance, and being able to program agricultural cycles that help improve plant growth.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **The student must have knowledge of summer crops grown in Iraq** 2. **Learn about the methods of growing summer field crops, serving the crop, and your environmental requirements** 3. **Learn about the characteristics and benefits of each crop**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** 1. **The importance of summer field crops, [3 hrs]** 2. **Division of summer field crops [3 hrs]** 3. **Methods of growing field crops, Swoing dates, and seeding rates for each crop [3 hrs]** 4. **Industrial summer field crops, their uses, and properties of oil and fiber [3 hrs]**

	Part B - practical part 1. **Diagnosis of summer field crops, soil service operations and agricultural machinery, [9 hrs].** 2. **Service operations for a crop, and botanical description of crops [9 hrs].** 3. **Crop growth stages and manufacturing processes [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Definition of crop science - crop division, economic importance.
Week 2	Environmental factors and their impact on crop productivity - climate and soil factors.
Week 3	Fertilization and fertilizers.
Week 4	Rice production - economic importance, suitable environmental conditions, problems of rice production.
Week 5	Yellow corn production - economic importance, suitable environmental conditions, cultivation method.
Week 6	Sorghum production - economic importance, suitable environmental conditions, effect of HCN acid.
Week 7	Cotton production - economic importance, suitable environmental conditions, transformational processes.
Week 8	Production of jute and jute crops, economic importance, suitable environmental conditions
Week 9	Sunflower crop production, economic importance, suitable environmental conditions, oil quality, production problems.
Week 10	Sesame production - economic importance, suitable environmental conditions, production areas, production problems, and modern technologies in its production.
Week 11	Field Peanut crop production - economic importance, suitable environmental conditions, maturity and harvest.
Week 12	Soybean production - economic importance, suitable environmental conditions, areas of cultivation and improvement of production.
Week 13	Mung crop production - economic importance, suitable environmental conditions, areas of cultivation and improvement of production.
Week 14	Tobacco crop production - economic importance and suitable environmental conditions, areas of cultivation and improvement of production, areas of production, characteristics of good tobacco.
Week 15	Methods of storing and marketing crops.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**Identification of summer field crop seeds, diagnosis methods, preparing field land for planting field crops**
Week 2	**Diagnosing seeds of summer field crops, methods of diagnosis, preparing field land for planting with field crops**
Week 3	**Fertilization, mathematical exercises to calculate the amount of fertilizer added per unit area, following the field**
Week 4	**Rice production - botanical description, rice groups and varieties, service operations**
Week 5	**Yellow corn production, seed cultivation**
Week 6	**Planting field crops and completing field operations**
Week 7	**White corn production - soil and crop service operations, preparing reports**
Week 8	**Cotton production - soil and crop service operations, machines used in harvesting and sorting cotton**
Week 9	**Production of jute and jute crops - crop service operations, picking and fiber separation steps**
Week 10	**Sunflower crop production - soil and crop service processes, maturity and harvest**
Week 11	**Sesame production - soil and crop service processes, maturity and harvest, manufacturing processes**
Week 12	**Field** Peanut **crop production - soil and crop service operations, receiving and discussing reports**
Week 13	**Soybeans - soil and crop service operations**
Week 14	**Tobacco production - picking and drying leaves, discussing student reports**
Week 15	**Scientific visit**
Week 16	**Exam**

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer principles(1)**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**NTU 101**				
ECTS Credits	**2**				
SWL (hr/sem)	**2**				
Module Level		**First**	**Semester of Delivery**		**First**
Administering Department		**Plant Production PLP**	**College**	**Technical Agricultural College**	
Module Leader	**Mustafa Natheer Mustafa Al Obaidy**		**e-mail**	**mustafa.n.m1989@ntu.edu.iq**	
Module Leader's Acad. Title		**Asst. Lctturer**	**Module Leader's Qualification**		**master**
Module Tutor	**Mustafa Natheer Mustafa Al Obaidy**		**e-mail**	**mustafa.n.m1989@ntu.edu.iq**	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Computer principles(2)**	**Semester**	**Second**
Co-requisites module	**Computer principles(3)**	**Semester**	**Third**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Understand the basics of computing: Provide students with a basic understanding of computing concepts, including its history, development, and types of computing systems.** 2. **Learn to use operating systems and basic software: Provide students with basic skills to use operating systems effectively and learn to use office software such as word processors, spreadsheets, and presentation software.** 3. **Developing basic programming skills: Teaching students the basics of programming through programming languages such as Python or Java, enabling them to write simple programs and understand different programming concepts.** 4. **Learn about the basics of software engineering: clarify software engineering concepts such as analysis, design, and testing, and how to apply them in software development.** 5. **Enhancing practical skills and creative thinking: Encouraging students to solve computer problems in creative ways and use the acquired programming skills to produce effective solutions.** 6. **Promoting interaction and teamwork: Encouraging students to collaborate on group programming projects and in solving complex programming problems.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Understand basic concepts in computer science such as data, software, hardware, and networks.** 2. **Ability to analyze problems and understand basic algorithms used in programming and software development.** 3. **Learn basic programming languages such as C, Python, or Java and understand the basics of writing and executing code.** 4. **Ability to use software development tools such as text editors and integrated development environments (IDEs).** 5. **Understand the concepts of information security and privacy in the context of technology use.** 6. **The ability to understand and analyze computer systems, networks, and communication concepts between devices.** 7. **Learn about artificial intelligence concepts and their basic applications.** 8. **Learn about the basics of operating systems and how to manage computer resources and processes.**

Indicative Contents المحتويات الإرشادية	1. **Introduction to computer science and its history.** 2. **Basic concepts such as data, processing and storage.** 3. **Numerical systems and conversion between them (decimal, binary, octal, and hexadecimal).** 4. **Computer structure and its main units (central processor, memory, input/output).** 5. **Basic programming and algorithms.** 6. **Programming languages and software development methods.** 7. **Data structures and advanced concepts in programming.** 8. **Information security and privacy in computing.** 9. **Fundamentals of computer networks and communications.** 10. **Introduction to operating systems and resource management.** 11. **Basic artificial intelligence and machine learning concepts.** 12. **Ethics and social responsibility in the use of technology.**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل 30ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	25	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	0
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**30**		

Module Evaluation

تقييم المادة الدراسية

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

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

المنهاج الاسبوعي النظري والتطبيقي

Week	Material Covered
Week 1	Definition of calculator - calculator generations - hardware and software components
Week 2	MS-Dos operating system, system concept, system signal, disks, directories and their levels, files, internal and external commands
Week 3	Internal and external operating system commands.
Week 4	Windows operating system, system concept, advantages, basic requirements, system operation, desktop components
Week 5	The concept of icons, the method of dealing with the mouse, the importance and components of the Task Bar, the Start menu, and exiting the system
Week 6	Formatting disks, copying files and folders, taking advantage of Cut and Paste operations, dealing with the Recycle Bin, how to delete files and recover them.
Week 7	Take advantage of Control Panel programs,
Week 8	Change the desktop background, control the Screen Saver, Add and remove programs to the start menu.
Week 9	Taking advantage of the Run command to execute programs directly.
Week 10	Use entertainment programs, Window media player, and take advantage of additional programs. Accessories
Week 11	Use entertainment programs, Window media player, take advantage of additional programs, and use the calculator.

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

Learning and Teaching Resources
مصادر التعلم والتدريس

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

Grading Scheme
مخطط الدرجات

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Conservation agriculture**			**Module Delivery**	
Module Type	**Option**			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**PLP154**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**One**	**Semester of Delivery**		**one**
Administering Department		**Plant Production**	**College**	**Technical Agricultural College**	
Module Leader	Alaa khaleed Ibraheem		**e-mail**	E-mail alaa.khaleed 088@ntu.edu.iq	
Module Leader's Acad. Title		**Asst.lectue**	**Module Leader's Qualification**		**Master**
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**1. Introducing the student to the most importantConservation agriculture, their production techniques, how to serve them,** **2. identifying the most suitable conditions for growing each plant and their economic importance,** **3. and being able to program agricultural cycles that help improve plant growth.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. The student must have knowledge of Conservation agriculture in Iraq** **2. Learn about the methods of used, Conservation agriculture and your environmental requirements** **3. Learn about the characteristics and benefits of each tillage**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** 1- Precision Farming Technology ,Advantages of keeping the soil surface covered with debris, ZERO tillage (3 hrs). 2- Scientific foundations for adopting Conservation agricultureure in the irrigated sector, No tillage. The quiet revolution(3 hrs).

	Part B - practical part 1- **Barley cultivation experiments that support conservation agriculture.** [9 hrs]. **2- cotton cultivation experiments that support conservation agriculture. [9 hrs].** 3- Application of corn cultivation using irrigated conservation agriculture, [9 hrs].

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Precision Farming Technology
Week 2	Advantages of keeping the soil surface covered with debris
Week 3	The concept of purposeful agricultural cycle
Week 4	Scientific foundations for adopting Conservation agricultureure in the irrigated sector
Week 5	Opportunities to adopt Conservation agriculture agriculture
Week 6	Risks of adopting agricultZero tillage ure
Week 7	Conservation agriculture of sustainability of agricultural resource productivity (Zero tillage atural resources agricultural
Week 8	The pillars of agriculture without tillage and their returns
Week 9	Cover Crops
Week 10	. Agriculture in the Arab world: an overview
Week 11	Conservation agriculturezat muhadadatuha wafurasuha wamakhatir tabniha fi alealam
Week 12	Permanent Raised Beds
Week 13	Agricultural Smart Systems
Week 14	Controlled Traffic Farming System
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**ZERO tillage**
Week 2	**No tillage. The quiet revolution**
Week 3	**Obstacles to adopting no-tillage**
Week 4	**The future of tillage**
Week 5	**Procedures that must be taken to implement the conservation agriculture system**
Week 6	**Barley cultivation experiments that support conservation agriculture.**
Week 7	**cotton cultivation experiments that support conservation agriculture**
Week 8	**Irrigated agriculture experiments**
Week 9	**Application of corn cultivation using irrigated conservation agriculture**
Week 10	**Difficulties facing working in conservation agriculture**
Week 11	**Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	كتاب الزراعة الحافظة بدون حراث ما لها وماعليها ا.د. اياد عبد الواحد محمد الهيتي / كلية الزراعة جامعة الانبار/ 2019	Yes
Recommended Texts	التطبيقات العملية للزراعة الحافظة في الشرق الاسط /باسمة برهوم وستيفن لوس / جامعة غرب استراليا / جامعة جنوب استراليا .	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings

	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	**FX –** Fail	راسب)قيد المعالجة(	(45-49)	More work required but credit awarded

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Decoration Plants**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 304**				
ECTS Credits	**3**				
SWL (hr/sem)	**4**				
Module Level		**Third**	**Semester of Delivery**		**Third**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Khawla Mahmood Yahya AL-Nooh**		**e-mail**	kawllamhmood@ntu.edu.iq	
Module Leader's Acad. Title		**Lecturer**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	**Khawla Mahmood Yahya AL-Nooh**		**e-mail**	kawllamhmood@ntu.edu.iq	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Ornamental and Decoration Plants**	**Semester**	**Second**
Co-requisites module	**landscape Design**	**Semester**	**Second**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the most important basic information about different Ornamental and Decoration Plants, their reproduction, propagation, and breeding** 2. **Teaching and training the student to know Ornamental and decoration plants classification .** 3. **Teaching and training the student to how to care Ornamental and decoration plants and breeding its.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **The student has knowledge about the importance of Ornamental and decoration plants** 2. **Learn about the importance of Identifying cut flowers** 3. **Learn about the techniques available for caring for indoor decorative plants** 4. **Identify the groups included in the different types of ornamental plants** **5. Identifying the nature of plants and their types and the extent to which they are affected by the environment of this region.** **6-Learn about Medical and Aromatic Herbs**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** 1. **The science of cultivation and production of ornamental plants, The importance of ornamental plants, Totals included in the different types of ornamental plants [6 hrs]** 2. **ornamental trees and The basic characteristics that determine the value of ornamental trees Street trees and Windbreak trees [6 hrs]** 3. **Environmental requirements for trees [6 hrs]** 4. **Shrubs Ornamental shrubs, their importance, types and places of planting [6 hrs]** 5. **Fences and climbers, their types and their coordination value [6 hrs]**

	Part B - practical part 1. **Identify ornamental and cultivated plants in the garden,. [6 hrs].** 2. **Identify the types of ornamental bulbs[6 hrs].** 3. **Planting seeds of summer annuals [6 hrs].** 4. **Cut flowers: their types, seasons of production, and marketing methods [6 hrs].** 5. **Shade plants and indoor landscaping plants [6 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week 1	**Ornamental plants (floriculture)**
Week 2	**Classified Ornamental plants according to its used .**
Week 3	**Ornamental trees (The basic characteristics that determine the value of ornamental trees)**
Week 4	**Environmental supplies for decorative trees**
Week 5	**Ornamental shrubs, their types and the purpose of growing them**
Week 6	**Hedge and climber plants**
Week 7	Flowering bulbs
Week 8	Annual and Biennial plants
Week 9	Perennial plants
Week 10	Green house and shade plant
Week 11	Medical and Aromatic Herbs

Week 12	Aquatic and sim- aquatic plants
Week 13	Cacti and succulent plant
Week 14	**Cut flower**
Week 15	**Green landscapes and Green sports fields**
Week 16	**Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**Plant classification**
Week 2	**Methods of propagation of ornamental plants**
Week 3	**Multiplication by seeds (types and methods of cultivation)**
Week 4	**ield application for multiplication of summer annual seeds**
Week 5	**Vegetative propagation (types, propagation by cuttings)**
Week 6	**Field application for propagation by vegetative cuttings**
Week 7	**Visit the nurseries to learn about ornamental plants**
Week 8	**Practical exam**
Week 9	**Symptoms of mineral deficiency in ornamental plants and methods of treating them**
Week 10	**Insect and disease pests that affect ornamental plants and methods of treating them**
Week 11	**Ways to care for indoor landscaping plants**
Week 12	**Show scientific films**
Week 13	**Seed structure and Germination**
Week 14	**Vegetative reproduction**
Week 15	**Plant hormons**
Week 16	**Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Plant Propagation (American Horticulur Society)** **ALAN TOOGOOD**	Yes
Recommended Texts	**The House Plant Expert** **Dr.D.G. Hessayon 2021**	No
Websites		

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Ecological Pollution			Module Delivery	
Module Type	Option			☒ Theory ☐ Lecture Lab ☐ Tutorial × Practical ☐ Seminar	
Module Code	PLP 105				
ECTS Credits	2				
SWL (hr/sem)	3				
Module Level	First		Semester of Delivery	First	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader	Amer Moqbel Abdul Hameed		e-mail	amer.m@ntu.edu.iq	
Module Leader's Acad. Title	assistant teacher		Module Leader's Qualification		
Module Tutor	Amer Moqbel Abdul Hameed		e-mail	E-mail amer.m@ntu.edu.iq	
Peer Reviewer Name	Amer Moqbel Abdul Hameed		e-mail	E-mail amer.m@ntu.edu.iq	
Scientific Committee Approval Date	01/06/2021		Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Pollution and Environment	Semester	Second
Co-requisites module	Recycling of Agricultural Wastes	Semester	Second

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the most important basic information about the concept of environmental pollution.** 2. **Identify the sources of environmental pollution.** 3. **Teaching and training students on how to deal with pollutants.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. The student will be familiar with the meaning of the term pollution** **2 . The student's knowledge of the various sources of pollution.** **3 . The student's knowledge of the Earth's physical and biological components** **4 .The student's knowledge of energy sources** **5 .Know the types of pollutants** **6. Identify the types of food contaminants.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** **. Definition of pollution, the importance of studying pollution, types of waste.[3 hrs]** **.The Earth's environment, its components, the role of elements and energy, and the factors affecting it.[3 hrs]** **. Energy sources and types.[3 hrs]** **. Nutrient cycling, air pollution, sources of air pollution.[3 hrs]** **.Types of pollutants, sources of radioactive contamination.[3 hrs]** **. Food pollution, its types, preventive measures against solid pollutants. [3 hrs]**

	Part B - practical part . **Types of pollutants, their sources, methods and units of measurement. [9 hrs].** . **Measurement of solids in water. [9 hrs].** . **Methods of water treatment and disposal of pollutants. [9 hrs].** . **The effects of pollution on vegetatio. [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل45 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	40	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**45**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to the science of environmental pollution, its definition, its importance and its relationship to other sciences.
Week 2	Earth's environment, its physical and biological components, the cycle of elements and energy, environmental balance.
Week 3	Ecosystems and biodiversity, renewable and non-renewable natural environments and resources.
Week 4	The growth of population, the development of technologies, the expansion of cities, the increase in human, agricultural, industrial and urban activity, the decline of vegetation and the increase of pollutants.
Week 5	Pollution and pollutants, definition of pollution and pollutants, classification based on their nature, state, media of spread and sources.
Week 6	Air pollution, air pollutants, their types, sources, and effects on environmental and human health.
Week 7	Water pollution, air pollutants, their types, sources, and effects on environmental and human health.
Week 8	Soil pollution, its pollutants, types, sources, pollution practices, and the effects on plant, living and human health.
Week 9	Solid pollutants from municipal, agricultural, and industrial waste, their effects on the environment and humans.
Week 10	Food pollution, sources and transfer of pollutants through the food chain network, from plants - animals - humans, the amplification of pollution and its harm to animal and human health.
Week 11	The use of chemical fertilizers and pesticides, their types, harms, transportation and effects on the environment and humans.

Week 12	Using supportive farming methods in agricultural production and biological resistance to reduce the effects of pollution in current production methods.
Week 13	The role of pollution in the disappearance of the earth's temperature, the expansion of ozone holes, the impact on climate and environment, rising temperatures, melting snow, sinking and waterlogging of the earth, and land degradation.
Week 14	The effects of pollution on the extinction of plant and animal species and its effects on the genetic stock and the development of biodiversity.
Week 15	Manifestations of pollution in Iraq and its effects on the share of plants, animals and humans.
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	Material Covered
Week 1	Introduction to the types of pollution and pollutants, their sources, methods and units of measurement, and the media of their spread
Week 2	A field tour to present and investigate the manifestations of pollution and its effects on the health of the components of the environment and humans.
Week 3	A discussion session on the effects of pollution and assigning students to research projects on various pollution topics.
Week 4	Studying the effects of air pollutants, methods of measuring them, and disposal techniques.
Week 5	Measurement of salinity, pH, and biological oxygen requirement in water of varying contamination.
Week 6	Measuring solids in water and the effect of their pollutants on aquatic organisms, the spread of jungles, and the agricultural environment.
Week 7	Studying methods for treating water and eliminating solid pollutants and pathogens.
Week 8	Study and measure solid pollutants from municipal and industrial waste and land and environmental pollution.
Week 9	Studying methods for treating and disposing of industrial and agricultural municipal solid waste.
Week 10	Study the effects of pollution on vegetation.
Week 11	Studying the effects of pollution on organisms and biodiversity.
Week 12	Studying the effects of local pollution on plants and beneficial organisms inside and outside agricultural soil.
Week 13	Studying the effects of agricultural pollutants on aquatic media.
Week 14	Studying the effects of pesticides on organisms across food chains, the use of alternatives and biological resistance.
Week 15	Discussing and evaluating students' research on environmental pollution.
Week 16	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Ecological Pollution,** **تلوث بيئي ،** **البيئة ومشكلات التلوث** **أ.د. محمد حسان عوض** **ا. د. حسن أحمد شحاتة** **2017**	Yes
Recommended Texts	**Plant anatomy**	Yes
Websites	https://books-library.net/free-1179887737-download	

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Economics of Natural Resources**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**TAMO 151**				
ECTS Credits	**2**				
SWL (hr/sem)	**2**				
Module Level		**First**	**Semester of Delivery**		**First**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Bashar Mohsin Mohammed**		**e-mail**	**Bashar_mohsin.m@ntu.edu.iq**	
Module Leader's Acad. Title		**assistant lectur**	**Module Leader's Qualification**		**MS.C**
Module Tutor	Bashar Mohsin Mohammed able		**e-mail**	Bashar_mohsin.m@ntu.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Studying the concept of economics, agricultural economics, branches of agricultural economics, and the relationship of agricultural economics to other sciences.** 2. **Paying attention to the economic and agricultural problem in terms of its causes and solutions.** 3. **Studying the economics of agricultural production and studying production functions and their economic derivatives** 4. **Study of production costs, cost functions and their economic derivatives** 5. **Study of markets, revenues and profits** 6. **Study of agricultural marketing, price policy and farm management**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Teach the student about the applications of economics in agriculture in an economic manner and compared to the technical aspect.** 2. **The student's knowledge of economic laws and economic principles used in agriculture.** 3. **Optimal employment of agricultural production elements.** 4. **How to achieve optimal levels of production.** 5. **How to produce agricultural products in light of market prices**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** 1. **Introducing the student to economics in general and agricultural economics in particular [2]** 2. **The student's ability to identify and know the deviation in the optimal use of resources and production from the actual use[2]** 3. **Teaching the student how to achieve economic efficiency on the farm[2]**

	Part B - practical part 1. **The skill of thinking according to the student's ability, and the goal of this skill is for the student to believe in what is tangible. [2]** 2. **Understanding when, what and how one should think and working to improve the ability to think sensibly. [2]** 3. **Observation and perception[2]** 4. **Analysis and interpretation[2]** 5. **Preparation and calendar[2]** 6. **Critical thinking strategy in learning[2]**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل20 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	25	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	0
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**30**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Principles in agricultural economics
Week 2	Economic problems
Week 3	Demand for agricultural crops
Week 4	Agricultural supply
Week 5	Economics of agricultural production
Week 6	Agricultural production functions
Week 7	Agricultural production functions
Week 8	Agricultural production costs
Week 9	Agricultural production costs
Week 10	Revenues and profits for projects Agricultural Production
Week 11	Agricultural marketing

Week 12	**Price policy**
Week 13	**Price policy**
Week 14	**Farm management**
Week 15	**Farm management**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**الداهري، عبد الوهاب مطر . . 1987الأقتصاد الزراعي . وزارة التعليم العالي والبحث العلمي . جامعة بغداد . الطبعة الثانية . بغداد**	Yes
Recommended Texts	**النجفي ، سالم توفيق . .1992ألاقتصاد الزراعي . دار الحكمة للطباعة والنشر الموصل**	Yes
Websites		

Grading Scheme
مخطط الدرجات

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Drawing**			**Module Delivery**	
Module Type	**Option**			☐ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**TAMO 102**				
ECTS Credits	**1**				
SWL (hr/sem)	**3**				
Module Level		**First**	**Semester of Delivery**		**First**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Mahmood Shaker Mahmood**		**e-mail**	**Msh41551@ntu.edu.iq**	
Module Leader's Acad. Title		**Asst.lecturer**	**Module Leader's Qualification**		**Master**
Module Tutor	**Mahmood Shaker Mahmood**		**e-mail**	**Msh41551@ntu.edu.iq**	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Basics of engineering drawing**	**Semester**	**one**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**Teaching students how to recognize and use engineering drawing tools and some operations in engineering drawing, projections, three-dimensional shapes, sections, and some simple shapes in sections of irrigation channels and agricultural facilities.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. Using modern techniques in designing fields, agricultural buildings, and gardens** **2. The possibility of managing agricultural and livestock activity in dry farming areas in a way that achieves the best possible efficiency through the ideal distribution of irrigation systems.** **3. Developing means, equipment, and machines in line with the labor market.**
Indicative Contents المحتويات الإرشادية	**part One:** **Get a general idea about the engineering drawing material, the AutoCAD program, drawing tools and their shortcuts, and how to draw straight lines, circles, and two-dimensional rectangles (15hours).** **Part two:** **Drawing arcs and polygons, learning methods of deletion and addition to drawing, as well as learning to draw triangular projections (15hours).** **Part three:** **Finding the third plan of the other falls and drawing models of the three falls, in addition to doing applied exercises for drawing trowels and irrigation channels (15 hours).**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 45 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	40	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**45**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week 1	**A general idea about the subject of engineering drawing - its importance - learning about the use of engineering drawing tools - drawing the frame of the painting and the title**
Week 2	**Types of fonts - Arabic geometric letters - illustrative examples**
Week 3	**Establishing a perpendicular on a straight line from a point on it and outside it - bisecting a straight line - bisecting a known angle - drawing a straight line parallel to another - dividing a straight line**
Week 4	**Drawing a circle that passes through the vertices of the outside and inside angles of a triangle - finding the center of a circle or arc. Drawing a tangent to a circle from a known point on its circumference and outside of it.**
Week 5	**Draw an arc with a known radius that touches two circles from the outside and inside and from the outside and inside**
Week 6	**Cam cross section drawing - a perspective drawing of a circle at a 30 or 40 degree angle**
Week 7	**The Three Projects (Practical Exercises)**
Week 8	**Finding the third location from the other locations**
Week 9	**Drawing models of the three projections**
Week 10	**Drawing models of the three projections**
Week 11	**Practical exercises for drawing figures**
Week 12	**Drawing sectors and applied exercises on them**
Week 13	**Drawing sewers and irrigation channels of all kinds**
Week 14	**Drawing sections of dams and reservoirs**
Week 15	**How to ink drawings and how to use ink pens**
Week 16	**Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**A general idea about the subject of engineering drawing - its importance - learning about the use of engineering drawing tools - drawing the frame of the painting and the title**
Week 2	**Types of fonts - Arabic geometric letters - illustrative examples**
Week 3	**Establishing a perpendicular on a straight line from a point on it and outside it - bisecting a straight line - bisecting a known angle - drawing a straight line parallel to another - dividing a straight line**
Week 4	**Drawing a circle that passes through the vertices of the outside and inside angles of a triangle - finding the center of a circle or arc. Drawing a tangent to a circle from a known point on its circumference and outside of it.**
Week 5	**Draw an arc with a known radius that touches two circles from the outside and inside and from the outside and inside**
Week 6	**Cam cross section drawing - a perspective drawing of a circle at a 30 or 40 degree angle**
Week 7	**The Three Projects (Practical Exercises)**
Week 8	**Finding the third location from the other locations**
Week 9	**Drawing models of the three projections**
Week 10	**Drawing models of the three projections**
Week 11	**Practical exercises for drawing figures**
Week 12	**Drawing sectors and applied exercises on them**
Week 13	**Drawing sewers and irrigation channels of all kinds**
Week 14	**Drawing sections of dams and reservoirs**
Week 15	**How to ink drawings and how to use ink pens**
Week 16	**Exam**

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

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**English Language**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**NTU 101**				
ECTS Credits	**2**				
SWL (hr/sem)	**2**				
Module Level	**First**		**Semester of Delivery**	**First**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader	**Bashar Mohsin Mohammed**		**e-mail**	**Bashar_mohsin.m@ntu.edu.iq**	
Module Leader's Acad. Title	**assistant lectur**		**Module Leader's Qualification**	**MS.C**	
Module Tutor	Bashar Mohsin Mohammed able		**e-mail**	Bashar_mohsin.m@ntu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	**01/06/2021**		**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Conversation in English**	**Semester**	**Second**
Co-requisites module	**The rules of the English language**	**Semester**	**Second**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Enabling students to obtain knowledge and introduction to the rules of the English language** 2. **Enabling students to obtain knowledge of the origins of speech and sentences and what they consist of and their types** 3. **Enabling students to obtain knowledge of the correct pronunciation of English vocabulary**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Students acquire general knowledge of the English language** 2. **Gaining students the ability to speak properly and in accordance with the principles of the language** 3. **Acquire and require the ability to correctly pronounce letters and vocabulary** 4. **Students acquire the skill of writing sentences correctly and with the fewest possible errors**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** 1. **Relying on accumulated information on the topic [2]** 2. **Relying on the ability to focus on information[2]** 3. **Clarifying the idea and defining the goal of the lesson[2]** 4. **The ability to collect information about the topic by asking questions[2]**

	Part B - practical part 1. **The skill of thinking according to the student's ability, and the goal of this skill is for the student to believe in what is tangible. [2]** 2. **Understanding when, what and how one should think and working to improve the ability to think sensibly. [2]** 3. **Observation and perception[2]** 4. **Analysis and interpretation[2]** 5. **Preparation and calendar[2]** 6. **Critical thinking strategy in learning[2]**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	25	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	0
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**30**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Hello!
Week 2	Your world
Week 3	All about you
Week 4	Family and friends
Week 5	The way I live
Week 6	Every day
Week 7	My favourites
Week 8	Where I live
Week 9	Time past
Week 10	We had a great time
Week 11	I can do that

Week 12	**Please and thank you**
Week 13	**Here and now**
Week 14	**Its time to go**
Week 15	**Review of the article**
Week 16	**final exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

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

Grading Scheme
مخطط الدرجات

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**General Botany**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 101**				
ECTS Credits	**3**				
SWL (hr/sem)	**4**				
Module Level		**First**	**Semester of Delivery**		**First**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Dr. Wadhah Thabit Abeed		**e-mail**	Wadah8324@ntu.edu.iq	
Module Leader's Acad. Title		**Lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the most important basic information about different plants, their reproduction, propagation, and breeding** 2. **Teaching and training the student to know its plant classification .** 3. **Teaching and training the student to take plants tissue.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **The use of techniques to confront desertification and moisture tension** 2. **The possibility of managing agricultural and livestock activity in dry agriculture areas in order to achieve the best possible efficiency** 3. **Developing means, equipment and machinery in line with the nature of dry areas.** 4. **The student has knowledge about dry areas and their nature** 5. **Identify the available techniques to cope with drought** 6. **Identifying the nature of plants and their types and the extent to which they are affected by the environment of this region.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** **Kingdom monerans,protests Structure of Euglena, fission and action, The Fungi, Growth of mushroom. [3 hrs]** **The plant kingdom, Vascular plants, Cell structure . [3 hrs]** **Cell division, The flowering plants, Root system, the region of cell division. [3 hrs]** **Structure of stem, buds, Leaf Structure, Flowers(describe, pollination and fertilization). [3 hrs]** **Fruits and seeds, Energy transfer in green leaves, stomata), Seed Germination. [3 hrs]**

	Part B - practical part **Plant classification, Using alight microscope to stading cell Cell division. [9 hrs].** **Chemical compound of plant, Plant body study, Gymnosperm plants. [9 hrs].** **Angiosperm plants , Experment about diffusion and osmosis, Absorption and tran sport of water. [9 hrs].** **Transport Across cell memberans, Anotomy of roots, stems, leaves and flowers, Show scientific films . [9 hrs].** **Seed structure and Germination, Vegetative reproduction, Plant hormons. [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Kingdom monerans,protests
Week 2	Structure of Euglena, fission and action
Week 3	The Fungi, Growth of mushroom
Week 4	The plant kingdom
Week 5	Vascular plants
Week 6	Cell structure
Week 7	Cell division
Week 8	The flowering plants
Week 9	Root system, the region of cell division
Week 10	Structure of stem, buds
Week 11	Leaf Structure

Week 12	**Flowers(describe, pollination and fertilization)**
Week 13	**Fruits and seeds**
Week 14	**Energy transfer in green leaves, stomata)**
Week 15	**Seed Germination**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**Plant classification**
Week 2	**Using alight microscope to stading cell**
Week 3	**Cell division**
Week 4	**Chemical compound of plant**
Week 5	**Plant body study**
Week 6	**Gymnosperm plants**
Week 7	**Angiosperm plants**
Week 8	**Experment about diffusion and osmosis**
Week 9	**Absorption and tran sport of water**
Week 10	**Transport Across cell memberans**
Week 11	**Anotomy of roots, stems, leaves and flowers**
Week 12	**Show scientific films**
Week 13	**Seed structure and Germination**
Week 14	**Vegetative reproduction**
Week 15	**Plant hormons**
Week 16	**Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**General Botany,2014** **علم النبات،2014، د.عبدالعزيز الصباغ،د.عماد القاضي**	Yes
Recommended Texts	**General Botany,2020**	No
Websites	https://www.everand.com/book/282617930/General-Botany	

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**General Chemistry**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**TAMO104**				
ECTS Credits	**3**				
SWL (hr/sem)	**5**				
Module Level		**First**	**Semester of Delivery**		**First**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Hala awf abdalrahman		**e-mail**	**Hala chilmeran 20@gmail .com**	
Module Leader's Acad. Title		**Lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Anatical Chemistry**	**Semester**	**Second**
Co-requisites module	**biochemistry**	**Semester**	**Third**

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل75 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	70	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Periodic classification of elements
Week 2	Atomic structure
Week 3	Electronic distribution of atoms in the periodic table
Week 4	Electronic theory of valence
Week 5	Chemical bonds
Week 6	Acids base and salts
Week 7	Reduction and oxidation reactions
Week 8	Balancing in acidic and basic media
Week 9	Standard electrode voltage
Week 10	Nuclear chemistry
Week 11	The predominant nonmetallic elements

Week 12	**Ideal gases**
Week 13	**Halogens, their properties and preparation, general properties of group six elements**
Week 14	**General characteristics of the elements in the fifth group**
Week 15	**General properties of the elements in group four**

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	General Insects			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP154**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**First**	**Semester of Delivery**		**First**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Module Leader's Acad. Title		**lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**Introducing the student to the economic importance of insects and knowing the plant host for each type of them and able to classify them and how to combat them.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **The use of special techniques for detecting insects** 2. **Identify the specialties available for the diagnosis and examination of insects**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** **An overview of microbiology screening and diagnosis centers in Iraq [3 hrs]** **. Factors affecting entomology [3 hrs]**

	Part B - practical part **Insect morphology study [9 hrs].** **.** Devices and tools used in microbiology examination **[9 hrs].** **. Sample extraction [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	The economic importance of insects and ways to combat them
Week 2	Insects with multiple damage - order similar-winged - aphids, whiteflies
Week 3	Wheat and barley insects - sauna, corn insects - corn stalk bore
Week 4	Bean insects - from beans - from black beans, jet insects and alfalfa - weevil
Week 5	Diabetic beet insects, sunflower insects
Week 6	Cotton insects, safflower insects
Week 7	Onion and garlic insects – onion fly – lettuce insects – aphids
Week 8	Insects of the Solanaceae family – Potato tuber moth – Insects of the cucurbitacea family – Donkey beetle
Week 9	Pomegranate insects - Pomegranate fruit worm - fig insects - fig fruit worm
Week 10	Grape insects - gloves - citrus insects - citrus leafworm
Week 11	Olive insects – olive leaf fly – buckthorn insects – fruit worm
Week 12	Stem excavators - types - control
Week 13	Apple bugs – apple fruit worm
Week 14	Palm insects – Dubas palm – Donkey
Week 15	nsects of ornamental plants- cutworms
Week 16	exame

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Harvesting Equipments**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PLP 357**				
ECTS Credits	**3**				
SWL (hr/sem)	**4**				
Module Level		**Third**	**Semester of Delivery**		**Third**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Mahmood Shaker Mahmood**		**e-mail**	**Msh41551@ntu.edu.iq**	
Module Leader's Acad. Title		**Asst.lecture**	**Module Leader's Qualification**		**Master**
Module Tutor	**Mahmood Shaker Mahmood**		**e-mail**	**Msh41551@ntu.edu.iq**	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Tractors and Agricultural Equipment**	**Semester**	**Second**

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	10	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Microbiology			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PLP153**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**First level**	**Semester of Delivery**		**one**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Module Leader's Acad. Title		**Lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**Introducing the student to microbiology and its development, the types of bacteria and fungi that infect plants the most important diseases they cause the environmental factors that affect the severity of the injury and he is able to characterize biology from the external appearance of the plant and how to be immune from them**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1.Use special techniques to detect bacteria fungi and algae** **2. Identify the available specialties for the diagnosis and examination of microbiology**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** **An overview of microbiology screening and diagnosis centers in Iraq [3 hrs]** **. Factors affecting microbiology [3 hrs]**

	Part B - practical part **Study of microbiology morphology [9 hrs].** **.** Devices and tools used in microbiology examination **[9 hrs].** **. Sample extraction [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Definition of microbiology, its position in the world of living organisms, prokaryotic and eukaryotic organisms, development of microbiology
Week 2	Characteristics of microorganisms,naming of microorganisms,classification of microorganisms
Week 3	Bacteria, phenotypic traits, bacterial testing, bacteria dyeing methods, bacterial anatomy, bacterial development
Week 4	Fungus, mold, reproduction, types, development, relationship to other organisms
Week 5	Yeasts, types of yeasts, their reproduction, agricultural characteristics
Week 6	Algae, Morphological characteristics of algae, Reproduction, Algae isolation and purification, Economic importance
Week 7	primary, taxonomy, adenoids, flagella, cilia, sporidia
Week 8	Viruses, their characteristics, construction, classification, replication, methods of growing viruses
Week 9	Ecclesiastia, general properties, its divisions and importance, reproductive and development media, diseases caused by it
Week 10	Metabolism in microorganisms
Week 11	Microbiology genetics, physicochemical agents, antibiotics and therapeutic agents
Week 12	Microbiology control
Week 13	The relationship of microbiology to diseases, pathogens, injury, factors affecting the severity of injury
Week 14	Applied Microbiology,Soil Microbiology,Water and Food Biology.
Week 15	Immunity
Week 16	exame

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**General instructions,hardware recognition,microscope and how to use it**
Week 2	**Chemicals, solutions, dyes and their preparation**
Week 3	**Agricultural media, division, how to sterilize, disinfectants and detergents**
Week 4	**Study of bacterial shape, movement, Cram dye, special dyes**
Week 5	**Isolation and development of bacteria and how to count them**
Week 6	**Mold and yeasts, Flosse, Mycocell, Massilium, Types of spores**
Week 7	**Development of fungi in soil, organic matter, water, food**
Week 8	**Fungus development, study of their forms and phenotypic characteristics**
Week 9	**Algae isolation and purification**
Week 10	**Classification of primary schools and how to isolate them, the environment in which they are located**
Week 11	**Study the forms of viruses, how to extract and purify them**
Week 12	**Types of antibiotics, concentrations used and inhibition rates**
Week 13	**Study of the Effect of Temperature and Hydrogen Ion Concentration on Bacterial Growth**
Week 14	**Contrast and cooperation between living organisms**
Week 15	**Study of certain physiological factors that affect the growth of fungi**
Week 16	**Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Microbiology كتاب الاحياء المجهرية التشخيصي /د.عبد النبي جويد المعموري	Yes
Recommended Texts	معجم مصطلحات الاحياء المجهرية 2020	No
Websites	https://www.google.iq/books/edition/%D8%A7%D9%84%D9%83%D8%AA%D8%A7%D8%A8_%D8%A7%D9%84%D8%B9%D9%85%D9%84%D9%8A_%D9%84%D9%84%D8%A3%D8%AD%D9%8A%D8%A7%D8%A1/j_qjDgAAQBAJ?hl=ar&gbpv=1&dq=%D9%83%D8%AA%D8%A7%D8%A8%20%D8%A7%D9%84%D8%A7%D8%AD%D9%8A%D8%A7%D8%A1%20%D8%A7%D9%84%D9%85%D8%AC%D9%87%D8%B1%D9%8A%D8%A9&pg=PA1&printsec=frontcover	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plane surveying**			**Module Delivery**	
Module Type	Option			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**TAMO 103**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**First**	**Semester of Delivery**		**First**
Administering Department		**Plants Production PLP**	**College**	**Technical Agricultural College**	
Module Leader	**Farooq Dawas Mahmood**		**e-mail**	**Mti.lec174.farooq@ntu.edu.iq**	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	**Farooq Dawas Mahmood**		**e-mail**	**Mti.lec174.farooq@ntu.edu.iq**	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**1/6/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the principles of surveying, the tools and equipment used, and some operations. and the activities used in flat space, in addition to the principles of measuring angles and directions.** 2. **Training the student to perform some operations, such as measuring distances, errors and obstacles therein, and using a flat board to draw and project maps and measure areas, roads, and machines used in them.** 3. **Teaching the student to use the compass in measuring angles and directions and the principles of space distribution in agricultural projects.**
Module Learning Outcomes محرجات التعلم للمادة الدراسية	**1. Know the space, its divisions, types, and uses.** **2. Learn how to make measurements and set up and drop columns.** **3. The student must have knowledge of errors, their types, and ways to overcome them.** **4. Learn about cartography and drawing scales** **5. Identifying the obstacles and obstacles in measuring distances and recording them in the field notebook.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** **Cartography - types of maps - map scales - ways to reduce and enlarge maps. [3 hours]** **Measuring areas using the field method - dividing the plot into triangles - erecting columns at equal intervals. [3 hours]** **Measurements on the map - dividing the plot into triangles - using squares. [3 hours]** **Prismatic compass - magnetic and true north - angles of all kinds. [3 hours]** **Calculate interior angles and directions of polygons using a compass. [3 hours]**

	Part B - practical part **Field exercises in measuring distances with different tools and using a field notebook. [9 hours].** **Correcting errors in measuring distances from the previous week. [9 hours].** **Learn about the flat plate and its tools and raise beams using the beam method + front cross. [9 hours].** **Exercises in measuring areas by dividing into triangles. [9 hours].** **Identifying the prismatic compass - its parts - its uses - taking readings from it. [9 hours].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غيرالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Definition of surveying - its sections - types - uses - field notebook
Week 2	Measuring distances - their cases - erecting and dropping columns
Week 3	Types of errors and ways to overcome them in measuring distances
Week 4	Obstacles and obstacles in measuring distances
Week 5	Cartography - types of maps - map scales - ways to reduce and enlarge maps
Week 6	Surveying with a flat plate - its tools - its advantages - its disadvantages - its conditions for use
Week 7	Methods of using a plane plate - the beam method - the forward intersection method
Week 8	Methods of using a flat plate - rotation method - inverse intersection method
Week 9	Measuring areas using the field method - dividing the plot into triangles - erecting columns at equal intervals
Week 10	Smyson's rule - setting up columns at unequal intervals
Week 11	Measurements on the map - dividing the plot into triangles - using squares
Week 12	Using a planometer
Week 13	Prismatic compass - magnetic and true north - angles of all kinds
Week1 4	Reading the angles between sides using a compass
Week 15	Calculating interior angles and directions of polygons using a compass

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	Field exercise using the field notebook on the college grounds
Week 2	Field exercises in measuring distances with different tools and using a field notebook
Week 3	Correcting errors in measuring distances from the previous week
Week 4	Drawing a polygon around one of the buildings to overcome the obstacles drawn
Week 5	From the previous information, draw a map of a specific location in the institute, while training students on some symbols and terminology in cartography.
Week 6	Identifying the flat plate and its tools and raising beams using the beam method + front cross
Week 7	Rotation and reverse intersection method
Week 8	Exercises in measuring areas by dividing into triangles
Week 9	Exercises in measuring areas by setting up columns at equal intervals + two centimeters
Week 10	Exercises in measuring areas by erecting columns at unequal intervals
Week 11	Exercises on maps to measure areas by dividing them into triangles + squares
Week 12	Using a planometer to measure areas on maps
Week 13	Identifying the prismatic compass - its parts - its uses - taking readings from it
Week 14	Draw a polygon around one of the buildings and take its angles
Week 15	Conduct calculations from the previous week and draw a map of the building
Week 16	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Pinciples of Plane & Topgraphic Surveying Riadh Salih AL-khfaf	Yes
Recommended Texts		
Websites		

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Plant anatomy			Module Delivery	
Module Type	core			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	PLP 104				
ECTS Credits	2				
SWL (hr/sem)	4				
Module Level	First		Semester of Delivery	First	
Administering Department	Plant Production PLP		College	Technical Agricultural College	
Module Leader	Amer Moqbel Abdul Hameed		e-mail	amer.m@ntu.edu.iq	
Module Leader's Acad. Title	assistant teacher		Module Leader's Qualification		
Module Tutor	Amer Moqbel Abdul Hameed		e-mail	E-mail amer.m@ntu.edu.iq	
Peer Reviewer Name	Amer Moqbel Abdul Hameed		e-mail	E-mail amer.m@ntu.edu.iq	
Scientific Committee Approval Date	01/06/2021		Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Plant Taxonomy	Semester	Second
Co-requisites module	General Botany	Semester	Second

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

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Division of meristematic tissue
Week 2	Division of permanent tissues
Week 3	Skin (functions, types of skin cells)
Week 4	Layers of epiderm (cork, cork cambium, secondary cortex)
Week 5	Parenchymal tissue, sclerenchymal tissue
Week 6	Wood textur
Week 7	Bark texture
Week 8	Secretory cells and tissues
Week 9	Internal structure of the root
Week 10	Internal structure of the leg
Week 11	Internal structure of the sheet

Week 12	**Secondary thickening**
Week 13	**Secondary xylem and phloem**
Week 14	**Prederm**
Week 15	**The internal structure of the plant and its relationship to the environment**
Week 16	**Exam**

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Plant anatomy,** **تشريح النبات ، اساسيات علم تشريح النبات الدكتور بدري عويد الغاني** **الدكتور قيصر مجيب صالح** **الطبعة الثالثة 1988**	Yes
Recommended Texts	**Plant anatomy**	Yes

Websites	https://www.agro-lib.site/2019/10/blog-post_592.html

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant Breedng (1)**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 401**				
ECTS Credits	**3**				
SWL (hr/sem)	**5**				
Module Level		**Forth**	**Semester of Delivery**		**Forth**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Haitham abdulSattar Saeed ALMamary**		**e-mail**	**Haytem.a.abdullah@ntu.edu.iq**	
Module Leader's Acad. Title		**Lctturer**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Haitham abdulSattar Saeed ALMamary		**e-mail**	E-mail**Haytem.a.abdullah@ntu.edu.iq**	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Plant Breedng (2)**	**Semester**	**Forth**
Co-requisites module		**Semester**	

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

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل75 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	65	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	10	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction, development of plant breeding and improvement
Week 2	The objective of plant breeding and improvement, improving production, improving quality, breeding for disease resistance, breeding for special traits.
Week 3	Plant cell, its components, nucleus, chromosomes
Week 4	Types of cell division: normal division, meiosis, and double fertilization.
Week 5	Pollination in plants, self-pollination and its importance, cross-pollination and its importance.
Week 6	Mendel's laws in plant breeding and genetics, the first law (the law of isolation), the second law (the law of free distribution).
Week 7	Genetic variations, their importance, origin, and development.
Week 8	Qualitative traits and their relationship to genetic factors, quantitative traits and their relationship to genetic factors.
Week 9	The relationship between the inheritance of traits and environmental conditions, the interaction between genetics and the environment in plant breeding.
Week 10	Methods of plant breeding and improvement, method of introduction from similar environments, acclimatization, and evaluation.
Week 11	Selection methods: individual selection, quantitative selection, group selection.

Week 12	Hybridization methods: single hybridization, pair hybridization, and multiple hybridization.
Week 13	Creating genetic mutations, physical mutagens, and chemical mutagens.
Week 14	Genetics and development of varieties resistant to plant diseases.
Week 15	The development of cytoplasmic sterility, its importance, and its use in plant breeding.
Week 16	Preparatory week before the final Exam

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?

Required Texts	**Plant Breeding** **الدكتور ارشد ذنون حمودي النعيمي**	Yes
Recommended Texts	**Plant Breeding (1)**	No
Websites	arshadthanoon@yahoo.com	

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant Breedng (2)**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 405**				
ECTS Credits	**3**				
SWL (hr/sem)	**5**				
Module Level		**One**	**Semester of Delivery**		**one**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Haitham abdulSattar Saeed ALMamary**		**e-mail**	**Haytem.a.abdullah@ntu.edu.iq**	
Module Leader's Acad. Title		**Lctturer**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Haitham abdulSattar Saeed ALMamary		**e-mail**	E-mail**Haytem.a.abdullah@ntu.edu.iq**	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Plant Breeding (1)**	**Semester**	**Forth**
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the most important basic information about different plants, their reproduction, propagation, and breeding** 2. **Hybridization, theories of interpretation of hybridization, measuring hybrid strength, methods of hybridization** 3. **Production of hybrids in cross-pollinated crops, Single hybrids, even hybrids, synthetic varieties, and prediction of yield.** 4. **Teaching and training the student to know its plant classification .** 5. **Teaching and training the student to take plants tissue.** 6. **Introducing and training students on good breeding techniques and the production of new hybrids and breeds .**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. Introduction, development of plant breeding and improvement** **2 Types of cell division: normal division, meiosis, and double fertilization.** **3.Mendel's laws in plant breeding and genetics, the first law (the law of isolation), the second law (the law of free distribution).** **5. Qualitative traits and their relationship to genetic factors, quantitative traits and their relationship to genetic factors.** **6. Selection methods: individual selection, quantitative selection, group selection.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** **Introduction, development of plant breeding and improvement. [3 hrs]** **Genetic variations, their importance, origin, and development.. [3 hrs]** **Cell division, The flowering plants, Root system, the region of cell division. [3 hrs]** **Hybridization methods: single hybridization, pair hybridization, and multiple hybridization.. [3 hrs]**

	Part B - practical part **Recording observations of the vegetative characteristics of hybrids grown in the college field. [9 hrs].** **Estimating hybrid vigor for the studied traits from field experiments. [9 hrs].** **Experimental field applications for growing hybrids of yellow corn, eggplant, cucumber, and cotton. [9 hrs].** **Pollination system in wheat, how to perform fertilization operations, how to pollinate, obtain hybridization. [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل75 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	65	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	10	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Genetic redundancy and its importance in plant breeding and improvement according to the theory of (Hardy and Einberg's law)
Week 2	Characteristics studied in plant breeding and improvement programs.
Week 3	Hybridization, theories of interpretation of hybridization, measuring hybrid strength, methods of hybridization
Week 4	Production of hybrids in cross-pollinated crops, Single hybrids, even hybrids, synthetic varieties, and prediction of yield.
Week 5	Synthetic varieties, their characteristics, factors affecting the yield of the synthetic variety.
Week 6	Breeding vegetatively propagated plants, characteristics of clones, the importance of clones, methods of raising them, and their advantages.
Week 7	Calculating the heritability ratio, components of genetic variation, additional genetic variation, dominant and supra-dominant genetic variation.
Week 8	Calculate General Combining ability (GCA), Special Combining ability (SCA)
Week 9	Breeding for resistance to diseases and insects, a technique for transferring resistance traits from wild species and varieties to cultivated and susceptible varieties.
Week 10	Chromosomal variation, its importance and role in plant breeding, complete chromosome replication, incomplete chromosome replication.
Week 11	The use of genetic engineering technology, gene transfer technology, its importance and role in plant breeding, and chromosomal replication.

Week 12	The technology of using nuclear radiation to produce hybrids and radioactive varieties.
Week 13	Technology using genetic mutations, final products and isolation generations, determinants of breeding using mutation technology.
Week 14	Offspring raising technology in plant breeding, importance, comparison with other breeding methods.
Week 15	Plant population breeding, indoor breeding, outdoor breeding, genetic information bank.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	Material Covered
Week 1	Applications of Hardy-Weinberg's law.
Week 2	Recording observations of the vegetative characteristics of hybrids grown in the college field.
Week 3	Estimating hybrid vigor for the studied traits from field experiments.
Week 4	Experimental field applications for growing hybrids of yellow corn, eggplant, cucumber, and cotton.
Week 5	A comparison between Single hybrids, even hybrids, and synthetic varieties.
Week 6	Field comparison between plants with sexual reproduction and clonal reproduction for the same plant.
Week 7	Applications for calculating heritability, genetic variance, additional genetic variance, Dominat and Over-dominant variance.
Week 8	Calculating general Combining ability and specific Combining ability.
Week 9	Using a technique to transfer a trait resistant to a disease or insect in the field and laboratory
Week 10	Using the technique of variation in the number of chromosomes.
Week 11	A field visit to the experimental fields to follow up on the breeding operations carried out by hybridization and selection.
Week 12	Field comparison between selected traits and plant community.
Week 13	Implementing the method of pro gene test for cotton and potatoes.
Week 14	Applying the cultivation of varieties exposed to nuclear radiation and comparing them with normal varieties.
Week 15	Technique of separating, isolating and packing ears, stalks, selected fruits and nuts.
Week 16	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?

Required Texts	**Plant Breeding** **الدكتور ارشد ذنون حمودي النعيمي**	Yes
Recommended Texts	**Plant Breeding (2)**	No
Websites	arshadthanoon@yahoo.com	

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Plant Disease			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP351**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**Third level**	**Semester of Delivery**		**one**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Module Leader's Acad. Title		**Lecture**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	Dr.Alaa younis zanoun		**e-mail**	Alaa.alsafawy89@ntu.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Plant Physiology**	**Semester**	**Second**
Co-requisites module	**Microbiology**	**Semester**	**First**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- **Introducing the student to the most important diseases that affect plants and in the various stages of their growth, and what are the factors affecting the increase in the severity of disease infection, and to be able to diagnose the type and severity of the infection.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1.Use special techniques to detect bacteria fungi and algae** **2. Identify the available specialties for the diagnosis and examination of microbiology**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** **An overview of microbiology screening and diagnosis centers in Iraq [3 hrs]** **. Factors affecting microbiology [3 hrs]**

	Part B - practical part **Study of microbiology morphology [9 hrs].** **.** Devices and tools used in microbiology examination **[9 hrs].** **. Sample extraction [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Importance –Identification –Koch's postolates – disease symptoms
Week 2	Host –pathogen relationship – disease Incitants-Levels of parasitism
Week 3	Effect of the pathogens on their hosts-Toxins –Enzymes –phytohormons
Week 4	Epidemiology of Plant diseases. Pathogens- source of Inoculums-dispersal and deposition of Inoculum.
Week 5	Survival of Inoculums –Inoculums potential –Environmental factors to Plant disease
Week 6	Plant diseases caused by fungi .-characterization Reproduction of fungi-Asexual and sexual reproduction. diseases caused byOomycetes
Week 7	Downy Mildew, Diagnosis Genesis of Downy Mildew fungi.
Week 8	Plant diseases caused by Zygomycetes.
Week 9	Plant diseases caused byAscomycetes
Week 10	Diseases caused by Basidomycetes.,Smut diseases
Week 11	Rust diseases.
Week 12	Bacteria as Plant pathogens-Bacterial Soft Rot of vegetables . Fire Blight of Pome fruits
Week 13	Viruses causal agents of plant diseases
Week 14	Nematode as plant pathogens ,life cycle ,Nature of parasitism, Mechanism of Nematode Effects.
Week 15	Resistant and control of plant pathogen
Week 16	exame

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**Identification of apparatus in the laboratory of plant disease. How used the microscopes ,incubator,and oven**
Week 2	**Kinds of culture media**
Week 3	**Isolation and Identification of plant pathogenic fungi 0**
Week 4	**Koch's postulates to plant pathogenic fungi**
Week 5	**Symptom diseases that caused by plant pathogen.**
Week 6	**Diseases caused by Oomycetes.**
Week 7	**Downy Mildew disease ,Downy Mildew disease on cucurbits and grape**
Week 8	**Plant diseases caused by Zygomycetes. Soft Rot disease**
Week 9	**Plant diseases caused by Ascomycetes.leaf curl of beach. Powdery Mildew of cucurbits and pepper.**
Week 10	**Smut diseases. . Loose Smut of cereals, coverd Smut of bunt wheat .common Smut of Maize**
Week 11	**Rust diseases. Stem Rust on wheat**
Week 12	**Plant diseases caused by Bacteria**
Week 13	**Diseases caused by viruses, Tomato Yellow , leaf curl , Tobacco Mosi viruse**
Week 14	**Diseases caused by Nematodes Root Knot Disease .Ear-cockle disease of wheat .**
Week 15	
Week 16	**Exam**

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant Growth Regulater**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ ☐ **Practical** ☐ **Seminar**	
Module Code	**PLP 305**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level	**third**		**Semester of Delivery**	**third**	
Administering Department	**Plant Production PLP**		**College**	**Technical Agricultural College**	
Module Leader	**Waad S. Faizy**		**e-mail**	**Waadwaad1970@ntu.edu.iq**	
Module Leader's Acad. Title	**Lectural**		**Module Leader's Qualification**	**Mcs**	
Module Tutor	**Waad S. Faizy**		**e-mail**	**Waadwaad1970@ntu.edu.iq**	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	**01/06/2021**		**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Plant tissue culture**	**Semester**	**second**
Co-requisites module	Plant Physiology	**Semester**	**second**

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

	Part B - practical part 1. Preparing standard solutions of growth regulators. [9 hours]. 2. Methods of using plant growth regulators and how to use them. [9 hours]. 3. Practical applications of plant growth regulators. [9 hours]. 4. Conducting field experiments on the uses of plant growth regulators, showing scientific films. [9 hours]. 5. Plant growth regulators have been used in tissue culture. [9 hours].

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction, importance, types of growth regulators.
Week 2	Auxins, discovery, distribution and transport of auxins in plants.
Week 3	Creating a source of auxin, exploiting a source of auxins.
Week 4	Mechanism of action of auxin.
Week 5	Gibberellin, discovery, importance, biological examination of gibberellin, site of gibberellin formation, and transport of gibberellins.
Week 6	Physiological effects of gibberellin, its mechanics.
Week 7	Cytokinins, discovery, importance, manufactured cytokinins, distribution, transmission, biological examination of cytokinins.
Week 8	Physiological effects, mechanical currency.
Week 9	Ethylene, its discovery, areas of its presence, ethylene movement - ethylene formation
Week 10	Physiological effects of ethylene - mechanism of action.
Week 11	Abscisic acid ABA: its discovery, role, biological examination, movement, and biological processes related to abscisic acid.

Week 12	**Physiological effects of abscisic acid - mechanism of action.**
Week 13	**Inhibitors, their types, extraction, purification and biological screening of inhibitors, physiological effects of inhibitors - their mechanism of action.**
Week 14	**Other growth regulators, vitamins.**
Week 15	**The role of growth regulators in combating weeds, plant breeding, and others.**

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Plant Physiology			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PLP 104**				
ECTS Credits	**3**				
SWL (hr/sem)	**4**				
Module Level	**second**		**Semester of Delivery**	**second**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader	**Waad S. Faizy**		**e-mail**	**Waadwaad1970@ntu.edu.iq**	
Module Leader's Acad. Title	**lectural**		**Module Leader's Qualification**	**Mcs**	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	**01/06/2021**		**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Plant anatomy**	**Semester**	**second**
Co-requisites module	**General Botany**	**Semester**	**second**

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

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	The plant cell, its components, functions, and characteristics.
Week 2	Types of solutions, their concentrations, solute and solvent, acids, Alkalines, and salts.
Week 3	Diffusion and osmotic
Week 4	Water potential, imbibition and permeability
Week 5	The importance of water - physical properties - ways of absorbing water
Week 6	Nutrient absorption
Week 7	The rise of plant succulents
Week 8	Transpiration - Estimating the coefficient and rate of transpiration - The mechanism of opening and closing stomata
Week 9	Transport by phloem - components of phloem tissue - the most important transported materials - theories of transport
Week 10	The process of photosynthesis, the source of the oxygen molecule - light reactions
Week 11	Dark reactions phase (methods of CO2 fixation) C3 plants and C4 plants and factors affecting the photosynthesis process.

Week 12	**The process of respiration - importance - the first stage of respiration and the formation of pyruvic acid**
Week 13	**The Krebs cycle, the electron transport chain, and calculating the resulting energy**
Week 14	**Energy transfer in green leaves, stomata)**
Week 15	**Growth regulators - types - importance and applications**
Week 16	**Show scientific films**

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Principle of genetics**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 301**				
ECTS Credits	**3**				
SWL (hr/sem)	**5**				
Module Level		**Third**	**Semester of Delivery**		**Third**
Administering Department		**Plant Production PLP**	**College**	**Technical Agricultural College**	
Module Leader	**Noura huseen saleh aljarjary**		**e-mail**	**Noura_aljarjary@ntu.edu.iq**	
Module Leader's Acad. Title		**Asst.lecturer**	**Module Leader's Qualification**		**MSC**
Module Tutor	**Noura huseen saleh aljarjary**		**e-mail**	**Noura_aljarjary@ntu.edu.iq**	
Peer Reviewer Name		Not available	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Plant Breeding**	**Semester**	**Secand**
Co-requisites module	**Field crops**	**Semester**	**Secand**

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

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل75 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	65	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	10	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Genetic define, history and develoment, relationship between genetic and other scince, important of genetic plan
Week 2	Chromosome theory. Mendelar genetic
Week 3	Test cross, modified mendelian
Week 4	Ratio and gene intraction.
Week 5	Probability and use in genetic problems.
Week 6	Linkage and crossing over and chromosome mapping.
Week 7	Variation in chromosome number.
Week 8	Variation in chromosome number
Week 9	Multiple allels, Blood groups.
Week 10	Chromosome abirration variation of size chromosomes mutation of chromosome.
Week 11	Quantitive genetic, effect of leathal genes hertibilty.

Week 12	**Cytoplasmic genetic.**
Week 13	**Genetic engineering.**
Week 14	**Engineering practic in the plants technology reproductive alternative**
Week 15	**Moleculare basis for plant improement**
Week 16	**Exam**

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Production of Winter Vegetables			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** **Lab** ☐ **Tutorial** × **Practical** ☐ **Seminar**	
Module Code	**PLP 203**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**Second**	**Semester of Delivery**		**Second**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Amer Moqbel Abdul Hameed**		**e-mail**	**amer.m@ntu.edu.iq**	
Module Leader's Acad. Title		**assistant teacher**	**Module Leader's Qualification**		
Module Tutor	**Amer Moqbel Abdul Hameed**		**e-mail**	E-mail **amer.m@ntu.edu.iq**	
Peer Reviewer Name		**Amer Moqbel Abdul Hameed**	**e-mail**	E-mail **amer.m@ntu.edu.iq**	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Protected Agriculture**	**Semester**	**Third**
Co-requisites module	**Modern planting techniques**	**Semester**	**Second**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the most important winter vegetables, methods of producing and serving them, and methods of classifying them.** 2. **Identify the plant families of vegetables.** 3. **Knowing the methods of its propagation and being able to describe the appropriate environment for each crop.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Identifying the facilities necessary for growing vegetables, the agricultural operations that must be carried out, and the importance of mulching.** 2. **Knowledge of the classification of vegetable crops, types of reproduction in vegetable crops.** 3. **Seedlings and the factors affecting them, causes of seedling failure, acclimatization of seedlings and their types.** 4. **Types of pollination, flowers in vegetable crops, seed dormancy, its types.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** 1. **Branches of horticulture. [3 hrs]** 2. **The original habitats of vegetable crops. [3 hrs]** 3. **The benefits and importance of knowing the original habitats of vegetable crops. [3 hrs]** 4. **Problems of vegetable crop production in Iraq. [3 hrs]** 5. **How to develop agriculture and produce vegetable crops. [3 hrs]** 6. **The importance of vegetative division of vegetable crops [3hrs]**

	Part B - practical part **. Factors that must be taken into consideration when establishing a vegetable field: selecting and preparing permanent land for growing vegetables. [9 hrs]** **. Examination of vegetable seeds, factors affecting the germination of vegetable seeds. [9 hrs]** **. Treatment of vegetable seeds, methods of vegetative propagation. [9 hrs]** **. Methods of planting vegetable seeds. [9 hrs]** **. Identify the family and scientific name of each vegetable crop.[9 hrs]**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Brief history of gardening kinds of vegetable gardening ,origins of veg . plants , economic importance .
Week 2	Nutrient value of veg . plants , toxic compounds in veg . products .
Week 3	Classification of veg . plants
Week 4	Climatic requerments of veg plants .
Week 5	Soil requirments of veg. plants .
Week 6	Propagation of veg. plants .
Week 7	Irrigation of veg plants .
Week 8	Fertilization of veg plants .
Week 9	Production of cruciferae plants (cabbage cauliflower , Radish , turnip , garden , cress) .
Week 10	Production of Alliaceae plants (onion , Gartic ,leek)
Week 11	Production of leguminosae plants (paes ,Broadbean).
Week 12	Production of umbilliferae (celery , parsley , carrot).
Week 13	Production of chenopodiaceae plants (spinach , chard , table , beet).
Week 14	Other plants of different families ; indive , chechoria , Rutabage , Broccoli , mustard .
Week 15	Insecticide control .
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**Botanical Classification of vegetable plant.**
Week 2	**Sexual reproduction of vegetable plant.**
Week 3	**Vegetative reproduction of vegetable plant.**
Week 4	**Types of irrigation system.**
Week 5	**Soil preparation and seedling production of Califlower , Cabbage,Onion,Lettuse plant**
Week 6	**Plant description , botanical classification and variety of Cruciferae family**
Week 7	**Plant description , botanical classification and variety of Alliaceae family.**
Week 8	**Plant description , botanical classification and variety of Umbilliferae family**
Week 9	**Plant description , botanical classification and variety of Leguminosae family**
Week 10	**Plant description , botanical classification and variety of Chenopodiaceae family.**
Week 11	**Plant description , botanical classification and variety of other plant (indive , Chechoria , Rutabage , Broccoli , Mustard).**
Week 12	**Training on cultural practice in the provite field.**
Week 13	**Types of fertilizer and its application methods**
Week 14	**Pesticide control of vegetable plants .**
Week 15	**Storage of vegetable products.**
Week 16	**Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	انتاج خضر، أ. د. حسين جواد محرم البياتي 2020 **جامعة الموصل**	Yes
Recommended Texts		NO
Websites		

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Professional ethics**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**NTU 201**				
ECTS Credits	**2**				
SWL (hr/sem)	**2**				
Module Level		**Second**	**Semester of Delivery**		**Second**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Amer Moqbel Abdul Hameed**		**e-mail**	**amer.m@ntu.edu.iq**	
Module Leader's Acad. Title		**assistant teacher**	**Module Leader's Qualification**		
Module Tutor	**Amer Moqbel Abdul Hameed**		**e-mail**	E-mail **amer.m@ntu.edu.iq**	
Peer Reviewer Name			**e-mail**	E-mail **amer.m@ntu.edu.iq**	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Human Rights and Democracy**	**Semester**	**second**
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Explaining the concepts of professional ethics linguistically and terminologically** 2. **Its importance to the individual and society** 3. **What are the sources of professional ethics?**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **The student learns the linguistic and terminological concept of professional ethics.** 2. **The student's knowledge of the linguistic and terminological concept of ethics.** 3. **Challenges and their impact on professional ethics.** 4. **Knowledge of the general components of professional ethics.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A - theoretical part** 1. **Distinguish between professional ethics and job behavior.[2].** 2. **Characteristics that distinguish professional ethics in Islam.[2].** 3. **Pictures of praiseworthy professional ethics in Islam.[2].** 4. **General components of professional ethics.[2].** 5. **Forms of integrity in professional work.[2].** 6. **External challenges to professional ethics.[2].** 7. **Administrative corruption and its type.[2].**

	Part B - practical part

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل30 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	0	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	0
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**30**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	The concept of professional ethics in language and terminology
Week 2	The concept of ethics linguistically and terminologically
Week 3	How do we distinguish between professional ethics and job behavior?
Week 4	What are the sources from which professional ethics emerged?
Week 5	Professional ethics is characterized by several characteristics in Islam
Week 6	What are the praiseworthy professional ethics in Islam?
Week 7	General components of professional ethics
Week 8	What are the forms of integrity required in professional work?
Week 9	Types of competition
Week 10	What are the forms of unfair competition?
Week 11	Administrative corruption
Week 12	Types of administrative corruption
Week 13	What are behavioral deviations?
Week 14	What are organizational deviations?
Week 15	Treatment of administrative corruption
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	
Week 16	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Professional ethics** **أ.م.د ايمان قاسم أ.م.د يمامة كشكول م.م. ريا عبد الستار** **2020 _ 2019**	Yes
Recommended Texts		Yes
Websites		

Grading Scheme مخطط الدرجات

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Protected Agriculture Techniques**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 303**				
ECTS Credits	**3**				
SWL (hr/sem)	**5**				
Module Level		**Third**	**Semester of Delivery**		**Third**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	**Amer Moqbel Abdul Hameed**		**e-mail**	**amer.m@ntu.edu.iq**	
Module Leader's Acad. Title		**assistant teacher**	**Module Leader's Qualification**		
Module Tutor	**Amer Moqbel Abdul Hameed**		**e-mail**	E-mail **amer.m@ntu.edu.iq**	
Peer Reviewer Name		**Amer Moqbel Abdul Hameed**	**e-mail**	E-mail **amer.m@ntu.edu.iq**	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Protected Agriculture**	**Semester**	**Second**
Co-requisites module	**Modern planting techniques**	**Semester**	**Second**

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. **Introducing the student to the types and forms of protected agriculture facilities and their benefits.** 2. **How to control suitable conditions for cultivation outside of crop growth times.** 3. **The student will be able to produce plants from various plant families.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. The benefits of protected agriculture, economic evaluation of production in protected agriculture, problems and obstacles facing farmers in protected agriculture.** **2 .Points that must be taken into consideration when constructing glass and plastic houses, production economics in protected agriculture compared to open agriculture.** **3 .The most important advantages of growing plants in these facilities, how to create a greenhouse, types of greenhouse structures.** **4. Identify the types of systems used to cool the greenhouse.** **5 . Identify the types of systems used to heat the greenhouse.** **6 . Identify agricultural crops that can be grown inside greenhouses**

Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** **. A historical overview of protected agriculture, the definition of protected agriculture, its benefits, geographical distribution and the area covered. [3 hrs]** **. Geometric shapes of protected agriculture facilities, including ponds, tunnels, and houses. [3 hrs]** **. Methods of climate control inside facilities and their properties (air humidity, humidity). [3 hrs]** **. Types of materials used in covering and their properties. [3 hrs]** **. The effect of terrestrial factors on plant growth, types of agricultural media. [3 hrs]**

	Part B - practical part **. What are the types of plastic tunnels and methods of constructing them?. [9 hrs]** **. Technical specifications that must be followed for greenhouses and the method of constructing them.. [9 hrs]** **. Methods of heating greenhouses.. [9 hrs]** **. Methods of cooling greenhouses.. [9 hrs]** **. Preparing and preparing houses for agriculture (from preparing the land and sterilizing the soil). [9 hrs]**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل75 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	70	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Historical overview, definition of protected agriculture, its benefits, geographical distribution and area covered, trends in optimal exploitation, factors influencing development.
Week 2	The foundations of construction, location, direction, area, shape and size, production requirements and production economics.
Week 3	Geometric shapes of protected agriculture facilities, ponds, tunnels, and houses
Week 4	Types of materials used in covering and their properties.
Week 5	The effect of climatic factors on plant growth inside protected agricultural facilities (heat, light, gases, humidity).
Week 6	Methods of climate control inside facilities and their characteristics.
Week 7	The effect of terrestrial factors on plant growth, types of agricultural media.
Week 8	Production of vegetable seedlings in tunnels and greenhouses.
Week 9	Production of Solanaceae family plants (tomatoes, peppers, eggplant).
Week 10	Production of cucurbit family plants (pumpkin and cucumber).
Week 11	Production of some types of (okra and beans).
Week 12	Mushroom and shlik production.
Week 13	Production of cut flowers and shade plants.
Week 14	Banana and grape production.
Week 15	Soilless agriculture.
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**Ways to protect against unsuitable weather conditions (heat, light and wind)**
Week 2	**Types of plastic tunnels and methods of constructing them.**
Week 3	**Technical specifications for greenhouses and how to construct them.**
Week 4	**Methods of heating greenhouses.**
Week 5	**Methods of cooling greenhouses.**
Week 6	**Preparing and preparing houses for agriculture (preparing the land and sterilizing the soil).**
Week 7	**Land planning, determining irrigation lines, connecting irrigation lines, and basic fertilization.**
Week 8	**Training on methods of producing seedlings inside tunnels and in agricultural houses on the ground, planting seeds in a nursery, and planting in containers.**
Week 9	**Caring for seedlings in the nursery.**
Week 10	**Training on patchwork crop cultivation and tomato thread winding**
Week 11	**Training on irrigation and fertilization of plants.**
Week 12	**Raising, pruning plants and ventilation.**
Week 13	**Training on disease and insect resistance.**
Week 14	**Jungle resistance training.**
Week 15	**Scientific trip.**
Week 16	**Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**الزراعة المحمية،** **الدكتور عصام عبدالله بشير** **1990** **جامعة الموصل**	Yes
Recommended Texts	**Protected agriculture** **الدكتور محمود عبد العزيز إبراهيم خليل** **2017**	Yes
Websites	https://www.amazon.eg/-/en/ref=nav_logo	

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Seed Technology**			**Module Delivery**	
Module Type	**Option**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP452**				
ECTS Credits	**2**				
SWL (hr/sem)	**3**				
Module Level		**forth**	**Semester of Delivery**		**forth**
Administering Department		**Plant Production** PLP	**College**	**Technical Agricultural College**	
Module Leader	Dr. Wadhah Thabit Abeed		**e-mail**	Wadah8324@ntu.edu.iq	
Module Leader's Acad. Title		**Lectur**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor			**e-mail**		
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**		**1.0**

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**Introducing the student to the importance of seeds and means of improving the physical and genetic characteristics related to the production, processing, certification of seeds, and marketing of seeds, and learning about international instructions for examining and trading seeds.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Using techniques to teste and estimate the physical and chemical properties of seeds** 2. **Determine the specializations available for diagnosis and examination of germs** 3. **Identify the important parameters of seeds intended for planting or intended for storage** 4. **Post-harvest grain management**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** 1. **An overview of screening agents in Iraq and ISTA activity [3 hrs]** 2. **Factors affecting seed germination [3 hrs]** 3. **The chemical composition of the seed and its relationship to its value as seeds [3 hrs]**

	Part B - practical part 1. **Study of the Morphology of the seed [9 hrs].** 2. **Devices and tools used in examining devices [9 hrs].** 3. **Sample extraction [9 hrs].** 4. **Components for testing the purity and cleanliness of seeds [9 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل45 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	40	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**45**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to seed technology, definition of technology, definitions of seed technology, grain technology.
Week 2	Aime of seed technology, introduction to seeds, definition of seed, definition of seed according to seed technology, foreign terms used in seed technology
Week 3	Definition of warehouse science, warehouse manufacturing, overview of inspection control, warehouse friendly and foundation of ISTA, what matters in ISTA controlled testing
Week 4	General information about the plant kingdom, identifying the fruit, types of fruits, the importance of the seed, specifications of good seeds prepared for planting, benefits of seeds, harms of seeds, seed formation, chemical changes that occur in the seed during its formation,
Week 5	Formation of the seed embryo, the phenomenon of multiple embryos, physiological maturity and full maturity, the yield and its components
Week 6	Chemical composition of seeds and their relationship to their value as seeds. Chemical components of the seed
Week 7	Seed diagnosis, seed composition, seed germination, seed germination requirements, sequence of processes that occur during germination, seed dormancy.
Week 8	Seed vitality, seed vigor, purity testing.
Week 9	Tests indicating seed quality, improved seed production, and seed treatments
Week 10	Seed revitalization, definition of seed revitalization, benefits of seed revitalization.
Week 11	Seed response to magnetic treatment process, seeds
Week 12	Seeds, the importance of seeds, multiplying seeds
Week 13	Field foundations for seed multiplication.
Week 14	Behavior of grains during storage and handling, factors causing deterioration of stored seeds.
Week 15	Manifestations of deterioration of stored seeds
Week 16	exame

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
week	**Material Covered**
Week 1	**The concept of the seed, the devices and tools used in tests**
Week 2	**Sample extraction, some concepts used**
Week 3	**Tools used to extract samples**
Week 4	**The process of extracting samples, preparing the required samples that will be sent for examination**
Week 5	**Data written on the card, shipping and sending the sample, problems with extracting the sample**
Week 6	**How to obtain a practical sample, mixing consignments of different seeds**
Week 7	**Purity testing, sample components, tools used in purity testing**
Week 8	**Experment about germenation**
Week 9	**Sample analysis, components of the seed purity test, nature of the test procedure**
Week 10	**Germination examination, reasons for the appearance of abnormal seedlings, ways to overcome dormancy**
Week 11	**Seed source for germination testing, necessary equipment in the germination laboratory, methods of growing seeds intended for germination testing**
Week 12	**Show scientific films**
Week 13	**Points to consider in the germination laboratory, special characteristics of abnormal seedlings in the germination examination**
Week 14	**Germination strength test, 1000 seed weight test, test weight, moisture content determination**
Week 15	**Seed viability tests, seed safety testing**
Week 16	**Exam**

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Tractors and Agricultural Equipment**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**PLP 210**				
ECTS Credits	**2**				
SWL (hr/sem)	**4**				
Module Level		**Second**	**Semester of Delivery**		**Second**
Administering Department		**Plant Production PLP**	**College**	**Technical Agricultural College**	
Module Leader	**Mahmood Shaker Mahmood**		**e-mail**	**Msh41551@ntu.edu.iq**	
Module Leader's Acad. Title		**Asst.lecturer**	**Module Leader's Qualification**		**Master**
Module Tutor	**Mahmood Shaker Mahmood**		**e-mail**	**Msh41551@ntu.edu.iq**	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		**01/06/2021**	**Version Number**	**1.0**	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**Basics of agricultural machinery and machinery**	**Semester**	**Second**

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

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل60 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غترالمنتظم للطالب خلال الفصل	15	**Unstructured SWL (h/w)** الحمل الدراسي غترالمنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

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

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

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Weed control**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**PLP 404**				
ECTS Credits	**2**				
SWL (hr/sem)	**3**				
Module Level	**Forth**		**Semester of Delivery**	**Forth**	
Administering Department	**Plant Production** PLP		**College**	**Technical Agricultural College**	
Module Leader	Dr. Wadhah Thabit Abeed		**e-mail**	Wadah8324@ntu.edu.iq	
Module Leader's Acad. Title	**lectural**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	**01/06/2021**		**Version Number**	**1.0**	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**Introducing and training the student to identify the types of weeds plants growing with the main crops in the field, what are their specifications and control techniques, and be able to diagnose them and prescribe the necessary treatment for them.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **The student has knowledge about weeds plants cycle.** 2. **Identify the available techniques to weeds control.** 3. **Identifying the nature of plants and their types and the extent to which they are affected by the field crops.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **<u>Part A - theoretical part</u>** . Definition of weeds, their spread and reproduction [3 hrs] . Harmful effects of weeds plants, benefits of weeds plants [3 hrs] . How can weeds plants reduce yields [3 hrs] . Methods used to control weed plants [3 hrs]

	Part B - practical part - **Methods of collecting plant samples for the purpose of drying and identifying them. [6 hrs].** - **Identify methods for drying samples and the seed diagnosis mechanism [6 hrs].** - **Identify the types of herbicides, the mechanism of action of the herbicide, and calculate the necessary amount of herbicide per unit area [6 hrs].** - **Identify the types of sprayers, methods of calibrating the sprayer, and preparing the spray solution [6 hrs].**

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل45 ساعة			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	40	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غيرالمنتظم للطالب خلال الفصل	5	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**45**		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

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

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

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

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