



قسم تقنيات النباتات الطبية والنواتج الطبيعية

Republic of Iraq Ministry of Higher Education &
Scientific Research

Northern Technical University
Technical Agricultural College/ Mosul

Department of Medicinal Plant Technologies and
Natural Products



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
Module Title	Crimes of the Baath regime in Iraq		Module Delivery	
Module Type	B		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	NTU 200			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	2 nd level	Semester of Delivery		Three
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul	
Module Leader	Janan kassim khorshed		e-mail	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title	Prof.	Module Leader's Qualification	Ph.D.	
Module Tutor	Amina mahir azeez		e-mail	Amina.mahir@ntu.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date			Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

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

Learning and Teaching Strategies

Strategies	Periodic reports / periodic tests / practical case studies.
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Student Workload (SWL)			
Structured SWL (h/sem)	33	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w)	1.3
Total SWL (h/sem)	50		

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

Delivery Plan (Weekly Syllabus)	
Week	Material Covered
Week 1	Crimes of the Baath regime according to the Law of the Supreme Iraqi Criminal Court in 2005 - The concept of crimes and their categories Definition of crime linguistically and idiomatically
Week 2	Crime departments - The crimes of the Baath regime according to the documentation of the Law of the Supreme Iraqi Criminal Court in 2005
Week 3	- Types of international crimes Decisions issued by the Supreme Criminal Court
Week 4	- Psychological and social crimes and their effects. - Psychological crimes Mechanisms of psychological crimes Psychological effects of crimes
Week 5	Social crimes - Militarization of society - The Baath regime's position on religion
Week 6	- Violations of Iraqi laws Pictures of human rights violations and crimes of power
Week 7	Some decisions regarding political and military violations of the Baath regime
Week 8	Prison and detention places of the Baath regime
Week 9	Environmental crimes of the Baath regime in Iraq
Week 10	Military and radioactive contamination and mine explosions

Week 11	Destruction of cities and villages , scorched earth policy
Week 12	Drying the marshes Razing palm groves, trees and crops
Week 13	Mass grave crimes Introduction to mass graves
Week 14	Mass graves and genocide committed by the Baathist regime
Week 15	Chronological classification of genocide graves in Iraq
Week 16	The preparatory week before the final exam

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

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

(0 - 49)	F – Fail	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.			

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	English Language	Module Delivery	
Module Type	B	☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	NTU 201		
ECTS Credits	2 nd level		
SWL (hr/sem)	50		
Module Level	2			Semester of Delivery	3
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College
Module Leader	Janan kassim khorshed	e-mail	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title	Prof.	Module Leader's Qualification	Ph.D
Module Tutor		e-mail	
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

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

Learning and Teaching Strategies

Strategies	The necessity of visiting to gain experience from others.Obtaining new scientific information in the field of scientific research (videos).
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Student Workload (SWL)

Structured SWL (h/sem)	33	Structured SWL (h/w)	2
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w)	1.13
Total SWL (h/sem)	50		

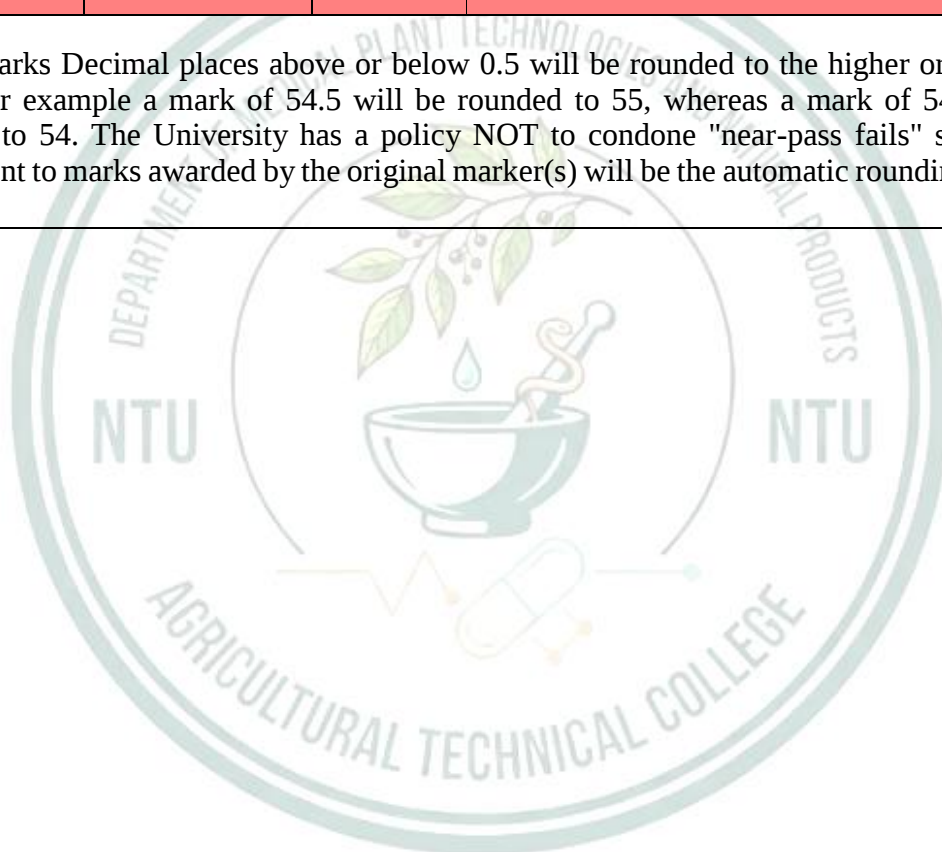
Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative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

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

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

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

(0 - 49)	F – Fail	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.			



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Biochemistry		Module Delivery
Module Type	Core	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	TAMO 200		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2 nd level	Semester of Delivery	3
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College
Module Leader	Janan kassim khorshed		e-mail janankhorshed@ntu.edu.iq
Module Leader's Acad. Title	Prof.	Module Leader's Qualification	Ph.D.
Module Tutor			e-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	The student learns about the biochemical processes that occur within a plant in order for it to obtain food, grow, and produce.
Module Learning Outcomes	1- The course mainly identifies students on how to find out their military membership and non-vehicle status 2- Membership is focused on medically relevant topics 3- Knowledge of the biological and metabolic interactions within the human body and their relationship to diseases arising from disorders Metabolites and antiviral chemical clothing 4- Scientific knowledge of scientific techniques in a new medical procedure
Indicative Contents	- Part A - Definition 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 saccharides, Physical properties of fatty material [10]. - iodine No. polenski No. , Acydy no. , Millons test , sakoguchs test Aldenide test .[10]. - Nucleo acids , metabolism of proteins , and others .[10].

Learning and Teaching Strategies

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

Structured SWL (h/sem)	78	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	72	Unstructured SWL (h/w)	4.8
Total SWL (h/sem)	150		

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

Delivery Plan (Weekly Syllabus)	
Week	Material Covered
Week 1	Definition of the biochemistry , historical brief scope of the biochemistry . correlation
Week 2	Importance of the cell in the study of the biochemistry , Brief deception to the physical
Week 3	Water and reaction degree (PH)
Week 4	Chemistry of the carbohydrates
Week 5	Amino acids
Week 6	Peptides
Week 7	Lipids (fatty materials) and fatty acids
Week 8	Nudeo acids
Week 9	Enzymes , vitamins , coenzymes
Week 10	Bioenergetic (out lines)
Week 11	Bioenergetic (out lines)
Week 12	Metabolism of carbohydrates (brief)
Week 13	Metabolism of carbohydrates (brief)
Week 14	Metabolism of carbohydrates (brief)
Week 15	Metabolism of carbohydrates (brief)

Delivery Plan (Weekly Lab. Syllabus)	
week	Material Covered
Week 1	PH , Buffer solution , indicators .
Week 2	Physical Biochemistry colloids , imbibitions , viscosity . adsorption .
Week 3	Reduction of the Benedict solutions Bar focds solution .
Week 4	Reduction of the, mono sacehordes formations of the ozazon fchilink test .
Week 5	Effect of the bases and acids on sacchorides
Week 6	Physical properties of different types of sacchorides

Week 7	Physical properties of fatty material
Week 8	Fat constant's acid number saponification 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

	Text	Available in the Library?
Required Texts	الكيمياء الحياتية د. طارق يونس احمد ولوي عبد علي الهلالي 2012	Yes
Recommended Texts	bioChemistry, 2020	No
Websites	http://ocw.mit.edu/courses/biology/7-013-introductory-biology-spring-2013/	

Grading Scheme

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

(0 - 49)	F – Fail	(0-44)	Considerable amount of work required
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Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Plant environment		Module Delivery
Module Type	C		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☐ Seminar
Module Code	Pmnp 201		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	First Year	Semester of Delivery		First Semester
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul
Module Leader	Janan kassim khorshed		e-mail
Module Leader's Acad. Title	prof	Module Leader's Qualification	Ph.D.
Module Tutor	Ghadeer Mukhles Mawlood		e-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. To introduce students to the basic concepts of plant ecology and its importance. 2. To explain the effects of environmental factors on plant growth, distribution, and adaptation 3. To develop students' understanding of the relationships between plants and their environment
Module Learning Outcomes	1. Define plant ecology and explain its importance. 2. Identify the major biotic and abiotic environmental factors affecting plants. 3. Explain the relationship between plants and their surrounding environment. 4. Distinguish between different plant communities and ecosystems. 5. Describe plant adaptations to different environmental conditions.
Indicative Contents	Indicative content includes the following. <u>Part A - theoretical part</u> 1. Introduction to plant ecology and its basic concepts. [2] 2. Environmental factors affecting plant growth and distribution. [2] 3. Plant communities and ecological relationships. [2] 4. Plant adaptation to different environmental conditions. [2]

Learning and Teaching Strategies

Strategies	The use of lectures to explain the basic concepts of plant ecology. Field visits to observe plants in their natural environment. Using laboratory activities to identify the effects of environmental factors on plant growth. Access to modern scientific references in plant ecology. Encouraging students to participate in discussions and practical activities related to plant–environment relationships
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Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	83	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	92	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.13

Total SWL (h/sem)

الحمل الدراسي الكلي للطلاب خلال الفصل

175

قسم تقنيات النباتات الطبية والنواتج الطبيعية



Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction to Plant Ecology: definition, scope, and importance.
Week 2	Ecological factors affecting plant growth: light, temperature, and water
Week 3	Soil as an ecological factor: soil properties and their effects on plants
Week 4	Biotic factors: interactions among plants and between plants and other organisms
Week 5	Plant adaptations to different environmental conditions
Week 6	Plant populations: characteristics, growth, and distribution.
Week 7	Plant communities: structure, composition, and classification
Week 8	Ecosystems: components, energy flow, and food chains
Week 9	Ecological succession and vegetation development.
Week 10	Biodiversity and its importance in maintaining ecosystem stability
week 11	Desert, aquatic, and forest ecosystems.
Week 12	Environmental pollution and its effects on plants and ecosystems
Week 13	Climate change and its impact on vegetation and plant distribution
Week 14	Conservation of plant biodiversity and sustainable management of natural resources.
Week 15	Revision of ecological concepts and applications in agriculture and environmental conservation
Week 16	final exam

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	محاضرات بيئة نبات	Yes
Recommended Texts		
Websites	قسم تقنيات النباتات الطبية والتوتاج الطبية	

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

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

قسم تقنيات النباتات الطبية والنواتج الطبيعية



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Drugs and natural products		Module Delivery
Module Type	B		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PMNP 202		
ECTS Credits	3		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	1
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul
Module Leader	Janan kassim khorshed		e-mail: janankhorshed@ntu.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	* Identifying sources of drugs and natural products. * Understanding methods for extracting and analyzing active compounds. * Studying the therapeutic uses of natural products. * Understanding quality standards for natural drugs. * Linking natural products to the development of modern medicines.
Module Learning Outcomes	* Theoretical lectures. * Classroom discussions and dialogues. * Student presentations. * Cooperative learning and teamwork. * Practical and laboratory applications. * Case studies and applied examples. * Use of educational tools and modern technologies.

Learning and Teaching Strategies

Strategies	Interactive lectures, Discussion and dialogue, Collaborative learning and teamwork.
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Student Workload (SWL)

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

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Definition, history, scope, importance, and sources.
Week 2	Taxonomical, morphological, chemical, and pharmacological classification.
Week 3	GACP, harvesting, drying, storage.
Week 4	Biosynthesis and importance.
Week 5	Classification, extraction, identification, applications.
Week 6	Types, extraction, medicinal importance.
Week 7	Classification, extraction, applications.
Week 8	Antioxidant properties and uses.
Week 9	Characteristics and applications.
Week 10	Maceration, Soxhlet, distillation, SCF.
week 11	TLC, HPLC, GC-MS, spectroscopy.
Week 12	Antimicrobial, antioxidant, anti-inflammatory.
Week 13	Authentication and WHO guidelines.
Week 14	Drug, cosmetic, food, agriculture uses.
Week 15	Student seminars and final review.
Week 16	Definition, history, scope, importance, and sources.

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	محاضرات عقاقير والنواتج الطبيعية	Yes
Recommended Texts		
Websites	قسم تقنيات النباتات الطبية والنواتج الطبية	

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

قسم تقنيات النباتات الطبية والنواتج الطبيعية



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
Module Title	Plant physiology		Module Delivery	
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☒ Seminar	
Module Code	PMNP 200			
ECTS Credits	4			
SWL (hr/sem)	60			
Module Level	2	Semester of Delivery		1
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul	
Module Leader	Janan kassim khorshed		e-mail	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor	Abdulkhaliq.A.muhammed		e-mail	Abdulkhaliq.zebari@ntu.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date			Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. Explain the fundamental physiological processes of plants, including photosynthesis, respiration, water relations, mineral nutrition, and plant growth and development. 2. Analyze the effects of environmental factors such as light, temperature, water availability, and soil nutrients on plant physiological functions and overall plant performance. 3. Apply plant physiology concepts and laboratory techniques to investigate physiological processes, interpret experimental data, and solve practical problems related to plant growth and agricultural production.
Module Learning Outcomes	1- Demonstrate a comprehensive understanding of the fundamental principles and physiological processes that govern plant growth, development, and metabolism. 2- Perform and analyze laboratory experiments related to plant physiological processes, accurately interpret results, and present scientific findings. 3- Apply knowledge of plant physiology to explain plant responses to environmental stresses and propose appropriate strategies for improving plant growth and agricultural productivity.
Indicative Contents	• Plant Water Relations and Mineral Nutrition • Water uptake and transport, transpiration, mineral absorption, and nutrient functions. • Photosynthesis and Respiration • Light and dark reactions, factors affecting photosynthesis, cellular respiration, and energy metabolism. • Plant Growth, Development, and Hormonal Regulation • Plant hormones, growth regulation, seed germination, flowering, fruit development, and responses to environmental stimuli.

Learning and Teaching Strategies

Strategies	Interactive Lectures – Delivering core concepts through discussions, presentations, and multimedia resources. Laboratory-Based Learning – Conducting practical experiments to investigate plant physiological processes and develop laboratory skills. Problem-Based and Inquiry-Based Learning – Engaging students in solving real-world plant physiology problems through case studies, data analysis, and scientific inquiry.
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Student Workload (SWL)

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

قسم تقنيات النباتات الطبية والنواتج الطبيعية



Module Evaluation

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

Weekly Syllabus(Theoretical Part)

Week	Material Covered
Week 1	Introduction to Plant Physiology
Week 2	Plant Cell Structure and Physiological Functions
Week 3	Water Relations in Plants
Week 4	Mineral Nutrition and Nutrient Uptake
Week 5	Transport of Water and Solutes in Plants
Week 6	Transpiration and Stomatal Regulation
Week 7	Photosynthesis: Light Reactions
Week 8	Photosynthesis: Carbon Fixation and Environmental Factors
Week 9	Plant Respiration and Energy Metabolism
Week 10	Plant Growth and Development
week 11	Plant Hormones and Their Physiological Roles
Week 12	Photoperiodism, Vernalization, and Flowering
Week 13	Seed Dormancy and Germination
Week 14	Plant Responses to Abiotic and Biotic Stresses
Week 15	Physiological Basis of Crop Productivity and Agricultural Applications

قسم تقنيات النباتات الطبية والنواتج الطبيعية

Weekly Syllabus(practical Part)

Week	Material Covered
Week 1	Laboratory Safety and Introduction to Plant Physiology Techniques
Week 2	Microscopic Examination of Plant Cells and Tissues
Week 3	Determination of Osmotic Potential in Plant Cells
Week 4	Measurement of Water Potential in Plant Tissues
Week 5	Demonstration of Osmosis and Plasmolysis
Week 6	Determination of Transpiration Rate
Week 7	Stomatal Density and Stomatal Index
Week 8	Measurement of Photosynthetic Pigments (Chlorophyll Extraction)
Week 9	Factors Affecting Photosynthesis
Week 10	Respiration Rate in Germinating Seeds
week 11	Mineral Deficiency Symptoms in Plants
Week 12	Effects of Plant Growth Regulators on Seed Germination and Growth
Week 13	Enzyme Activity in Plant Tissues (Catalase or Peroxidase Assay)
Week 14	Effects of Environmental Stress (Salt or Drought) on Plant Growth
Week 15	Analysis and Presentation of Experimental Results in Plant Physiology

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	محاضرات في علم فسلجة النبات	Yes
Recommended Texts	Introduction to Plant Physiology – An introductory text suitable for undergraduate students.	
Websites	American Society of Plant Biologists (ASPB) – Educational resources, teaching materials, and the latest developments in plant biology. Plant Physiology (ASPB Journal) – A leading peer-reviewed journal publishing research in plant physiology. The Arabidopsis Information Resource (TAIR) – A comprehensive database for genetics, genomics, and plant physiology research.	

Grading Scheme

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
Module Title	Oil and Aromatic crops		Module Delivery	
Module Type	C		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	PMNP 205			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	1	Semester of Delivery		1
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul	
Module Leader	Janan kassim khorshed		e-mail	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification		
Module Tutor	Omar jassim Asree		e-mail	omar.jasrai@ntu.edu.iq
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date		Version Number		

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. Introduce students to the importance of oilseed and aromatic crops and their role in agriculture, industry, and the national economy. 2. Familiarize students with the botanical characteristics, cultivation requirements, and classification of major oilseed and aromatic crops. 3. Develop students' ability to apply appropriate agricultural practices for the production, harvesting, post-harvest handling, and utilization of oilseed and aromatic crops while considering environmental sustainability.
Module Learning Outcomes	1. Define oilseed and aromatic crops and explain their agricultural, economic, medicinal, and industrial importance. 2. Identify the botanical characteristics and classification of the major oilseed and aromatic crops. 3. Demonstrate comprehensive knowledge of the environmental requirements, cultivation practices, and production techniques of these crops. 4. Explain the methods of harvesting, drying, storage, oil extraction, and quality evaluation of oilseed and aromatic crops. 5. Distinguish between different oilseed and aromatic crop species and evaluate their appropriate uses according to their chemical composition and economic value.
Indicative Contents	Part A – Theoretical Part 1. Introduction to oilseed and aromatic crops, their importance, classification, and economic value. 2. Botanical characteristics, environmental requirements, and cultivation practices of major oilseed and aromatic crops. 3. Harvesting, post-harvest handling, drying, storage, oil extraction methods, and quality assessment. 4. Identification of the major oilseed and aromatic crops, their active constituents, industrial applications, and medicinal uses.

Learning and Teaching Strategies

Strategies	Conduct field visits to farms, research stations, and medicinal plant production sites to gain practical experience. Provide practical training on the cultivation, management, harvesting, and processing of oilseed and aromatic crops. Encourage students to consult recent scientific literature and agricultural publications related to oilseed and aromatic crop production. Develop students' skills in identifying economically important species and evaluating their quality characteristics. Promote participation in seminars, workshops, and scientific discussions related to sustainable production, processing technologies, and value-added utilization of oilseed and aromatic crops.
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Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
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Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction to oilseed and aromatic crops, their definition, classification, and economic importance.
Week 2	Origin, domestication, and historical development of oilseed and aromatic crops.
Week 3	Distribution and production of oilseed and aromatic crops in the world and in Iraq.
Week 4	Botanical characteristics and taxonomic classification of major oilseed and aromatic crops.
Week 5	Environmental requirements of oilseed and aromatic crops, including climate, soil, water, and nutritional needs.
Week 6	Cultivation practices of oilseed and aromatic crops, including land preparation, planting methods, irrigation, fertilization, weed control, and crop management.
Week 7	Harvesting, post-harvest handling, drying, storage, and quality maintenance of oilseed and aromatic crops.
Week 8	Oil extraction methods, essential oil production, processing techniques, and quality evaluation.
Week 9	Industrial, medicinal, nutritional, and economic uses of oilseed and aromatic crops.
Week 10	Major oilseed crops, including sesame, sunflower, soybean, peanut, rapeseed, safflower, flax, castor, and mustard.
week 11	Major aromatic and medicinal crops, including basil, rosemary, thyme, sage, chamomile, marjoram, mint, and moringa.
Week 12	Active chemical constituents of oilseed and aromatic crops and their relationship to quality and commercial value.
Week 13	Pests, diseases, and integrated management practices for oilseed and aromatic crops.
Week 14	Sustainable production systems, conservation of natural resources, and environmentally friendly cultivation practices.
Week 15	Recent developments in the production, processing, biotechnology, value addition, and marketing of oilseed and aromatic crops.
Week 16	final exam

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	محاصيل زيتية وعطرية	Yes
Recommended Texts		
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Biological applications of volatile oils		Module Delivery
Module Type	B		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PMNP 206		
ECTS Credits	3		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	1
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul
Module Leader	Janan kassim khorshed	e-mail	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	* Identifying the sources and properties of essential oils. * Understanding methods for extracting and analyzing essential oils. * Studying the biological and pharmacological effects of essential oils. * Identifying the medical, pharmaceutical, and nutritional applications of essential oils. * Developing the ability to evaluate the safe and effective use of essential oils.
Module Learning Outcomes	* Interactive lectures. * Discussion and dialogue. * Collaborative learning and teamwork. * Student presentations. * Practical and laboratory applications. * Case studies and practical applications. Use of educational tools and modern technologies. * Self-directed learning and scientific research.

Learning and Teaching Strategies

Strategies	Interactive lectures, Discussion and dialogue, Collaborative learning and teamwork.
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Student Workload (SWL)

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

Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Definition, history, classification, properties and applications.
Week 2	Aromatic plants, botanical families, oil-producing organs.
Week 3	Steam distillation, hydrodistillation, solvent extraction, cold pressing, supercritical CO ₂ .
Week 4	Terpenes, GC-MS, HPLC.
Week 5	Mechanisms of action.
Week 6	Antibacterial, antifungal, antiviral.
Week 7	DPPH, ABTS.
Week 8	Therapeutic uses.
Week 9	Preservation and flavoring.
Week 10	Biopesticides and plant protection.
week 11	Livestock and poultry uses.
Week 12	Safety and standards.
Week 13	Nanoencapsulation.
Week 14	Current advances.
Week 15	Course review and exam preparation.
Week 16	Definition, history, classification, properties and applications.

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	محاضرات في تطبيقات بايولوجية للزيوت الطيارة	Yes
Recommended Texts		
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Computer Applications		Module Delivery
Module Type	B		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PNMP 352		
ECTS Credits	3		
SWL (hr/sem)	50		
Module Level	2	Semester of Delivery		2
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul
Module Leader	Janan kassim khorshed	e-mail	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	M.S.C Alaa R. Ali	e-mail	Alaa.raja@ntu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	none	Semester	none
Co-requisites module	none	Semester	none

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. To introduce students to the concepts and applications of spreadsheet software using Microsoft Excel. 2. To develop students' skills in creating, organizing, and managing worksheets efficiently. 3. To enable students to perform mathematical and statistical calculations using formulas and functions. 4. To familiarize students with formatting techniques for worksheets and data presentation. 5. To develop students' ability to analyze data using sorting, filtering, and basic data management tools. 6. To prepare students to produce professional reports and printable worksheets suitable for academic and workplace applications.
Module Learning Outcomes	Upon successful completion of this module, students will be able to: LO1. Explain the features and components of Microsoft Excel and its working environment. LO2. Create, edit, save, and manage Excel workbooks and worksheets effectively. LO3. Enter, organize, and format different types of data accurately. LO4. Apply formulas and built-in functions such as SUM, AVERAGE, MAX, MIN, and COUNT. LO5. Perform calculations using relative and absolute cell references. LO6. Use AutoFill and data series to improve efficiency in worksheet preparation. LO7. Sort and filter data to facilitate analysis and decision-making. LO8. Format worksheets professionally, including cells, rows, columns, fonts, alignment, and number formats. LO9. Prepare worksheets for printing using page setup, margins, orientation, scaling, and print options. LO10. Produce professional spreadsheets suitable for agricultural, scientific, and administrative applications.
Indicative Contents	Indicative content includes the following. Part A – Practical and Theoretical Contents 1. Introduction to Microsoft Excel and spreadsheet concepts. 2. Excel interface and workbook components. 3. Creating, opening, saving, and managing workbooks. 4. Data entry and editing techniques.

	5. Cell references and worksheet navigation. 6. Formatting cells, rows, columns, and worksheets. 7. Working with formulas and arithmetic operators. 8. Mathematical and statistical functions (SUM, AVERAGE, MAX, MIN, COUNT). 9. AutoFill, series, and copying formulas. 10. Managing worksheets (insert, delete, rename, move, copy, hide, and unhide). 11. Sorting and filtering data. 12. Page layout, printing, and worksheet preparation. 13. Practical applications using Microsoft Excel in agricultural and administrative fields.
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Learning and Teaching Strategies

Strategies	The module will be delivered through: 1. Interactive lectures. 2. Computer laboratory practical sessions. 3. Demonstration-based learning. 4. Individual and group practical exercises. 5. Problem-solving activities using Microsoft Excel. 6. Continuous hands-on practice. 7. Self-learning through assignments and projects.
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Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3.00
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1.69
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	Week 3,6, 10 and 13	LO1, LO2,LO3,LO4
	Assignments	2	10% (10)	Week 5&11	LO3, LO5,LO6
	Projects	1	10% (10)	Week 14	LO7,LO8,LO9,LO10
	Report	2	10% (10)	Weeks 6 and 13	LO3,LO7,LO10
Summative assessment	Midterm Exam	1.5hr	10% (10)	Week 8	LO1,LO6
	Final Exam	3hr	50% (50)	Week 16	All Learning Outcomes
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction to Computer Applications, Microsoft Excel, Spreadsheet Concepts, and Applications.
Week 2	Starting Microsoft Excel, Workbook and Worksheet Components, Excel Interface, and Navigation.
Week 3	Data Types, Data Entry, Editing, Selecting Cells, Rows, Columns, and Worksheets
Week 4	formatting Worksheets: Fonts, Alignment, Number Formats, Cell Styles, Rows and Columns Formatting
Week 5	workbook Management: Insert, Delete, Rename, Move, Copy, Hide, and Unhide Worksheets
Week 6	formulas and Cell References, Arithmetic Operators, Order of Operations, AutoSum Function
Week 7	Built-in Functions: SUM, AVERAGE, MAX, MIN, COUNT, and Practical Exercises
Week 8	Midterm Examination (Theory and Practical)
Week 9	Copying Formulas, AutoFill, Fill Series, and Relative Cell References
Week 10	Data Sorting, Filtering, Find and Replace, Go To, and Data Management Tools
week 11	Page Layout: Margins, Orientation, Paper Size, Print Area, Headers, and Footers
Week 12	Printing Worksheets, Page Setup, Scaling Options, and Print Preview
Week 13	practical Applications of Microsoft Excel in Agricultural and Administrative Data Processing
Week 14	Integrated Spreadsheet Design Project and Report Presentation
Week 15	Revision, Comprehensive Practical Exercises, and Course Review
Week 16	Final Examination.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Computer Applications (Microsoft Excel), Level Two, Technical Agricultural College, Northern Technical University.	Yes
Recommended Texts	1. Microsoft Corporation. (2024). <i>Microsoft Excel Documentation</i>. https://learn.microsoft.com/en-us/office/excel/ 2. Alexander, M., Kusleika, D., & Walkenbach, J. (2022). <i>Excel 2021 Bible</i>. Wiley 3. Lambert, J. (2022). <i>Microsoft Excel Step by Step (Office 2021 and Microsoft 365)</i>. Microsoft Press 4. Frye, C. D. (2022). <i>Microsoft Excel 365 Step by Step</i>. Microsoft Press 5. Winston, W. L. (2021). <i>Microsoft Excel Data Analysis and Business Modeling (7th ed.)</i>. Microsoft Press 6. شفيق، عبد الوهاب. (2021). <i>تطبيقات الجداول الإلكترونية باستخدام Microsoft Excel</i>. عمان، الأردن. دار صفاء للنشر والتوزيع، عمان، الأردن 7. السامرائي، سعد محمد. (2019). <i>أساسيات الحاسوب وتطبيقاته العملية</i>. دار دجلة، عمان، الأردن	
Websites	Microsoft Learn https://learn.microsoft.com Microsoft Support – Excel https://support.microsoft.com/excel Microsoft 365 Training https://support.microsoft.com/training GCFGlobal – Excel Tutorials https://edu.gcfglobal.org/en/excel/ LinkedIn Learning – Microsoft Excel Courses https://www.linkedin.com/learning/	

Grading Scheme

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
Module Title	Classification of medicinal plants		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☒ Seminar
Module Code	PMNP203		
ECTS Credits	3		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	2
Administering Department	Medicinal Plant Technologies and Natural Products	College	Technical Agricultural College of Mosul
Module Leader	Janan kassim khorshed	e-mail	janankhorshed@ntu.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	assistant professor	e-mail	drfatimah@ntu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1. Understand the fundamental concepts and importance of medicinal plant taxonomy. 2. Explain the principles and modern systems used in the classification of medicinal plants. 3. Distinguish major medicinal plant families based on their morphological and anatomical characteristics. 4. Apply the rules of botanical nomenclature in naming medicinal plants. 5. Use taxonomic keys for the identification of medicinal plant species. 6. Recognize the diagnostic characteristics of the most important medicinal plant families. 7. Relate plant taxonomy to phytochemical constituents and medicinal applications.
Module Learning Outcomes	• 1Explain the basic principles of medicinal plant taxonomy. • Apply the International Code of Botanical Nomenclature in scientific plant naming. • Identify the diagnostic characteristics of major medicinal plant families. • Use taxonomic keys to identify medicinal plant species accurately. • Classify medicinal plants according to modern taxonomic systems. • Compare medicinal plant families based on their taxonomic characteristics and medicinal importance. • Explain the relationship between plant classification, phytochemical constituents, and therapeutic uses. • Utilize scientific references for the identification and classification of medicinal plants.
Indicative Contents	Indicative content includes the following. • Introduction to medicinal plant taxonomy and its importance. • Historical development of plant taxonomy. • Principles of plant classification and modern taxonomic systems. • Botanical nomenclature and the International Code of Nomenclature (ICN). • Morphological characteristics used in plant classification. • Taxonomic keys and their applications. • Classification of medicinal angiosperms (monocotyledons and dicotyledons). Study of the major medicinal plant families and their diagnostic characteristics, characteristics, including: • Asteraceae • Lamiaceae • Apiaceae • Fabaceae • Solanaceae • Brassicaceae • Rosaceae

	• Rutaceae • Myrtaceae • Zingiberaceae • Liliaceae (or its modern taxonomic equivalents, where applicable) • Relationship between plant taxonomy, phytochemical constituents, and medicinal uses. • Practical applications of medicinal plant identification using taxonomic keys and botanical specimens.
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Learning and Teaching Strategies

Strategies	The visit is essential for gaining experience from others and learning about their diverse cultures, acquiring new information on medicinal plant taxonomy, receiving quality training, staying abreast of the latest developments in taxonomic resources, accessing modern scientific references, and participating in scientific forums that address recent advances in the field of taxonomy. 1. Interactive lectures to introduce the fundamental concepts of medicinal plant taxonomy. 2. Classroom discussions to promote critical thinking and the analysis of taxonomic characteristics. 3. Laboratory-based practical sessions for the observation, identification, and classification of medicinal plant specimens. 4. Problem-based learning through the use of taxonomic keys for plant identification. 5. Collaborative learning activities in which students work in groups to compare and classify medicinal plant families. 6. Student seminars and oral presentations on medicinal plants and their taxonomic significance. 7. Field visits, where available, to observe medicinal plants in their natural habitats. 8. Self-directed learning through textbooks, scientific journals, and online botanical databases. 9. Integration of modern educational technologies, including multimedia presentations, botanical illustrations, digital microscopy, and virtual learning resources.
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Student Workload (SWL)

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2.20
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1.13

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50
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Module Evaluation

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

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction to Medicinal Plants: Definition of medicinal plants, importance of medicinal plants, objectives and significance of plant classification
Week 2	History of Plant Taxonomy: Contributions of early and modern taxonomists, development of plant classification systems
Week 3	Principles of Plant Taxonomy: Taxonomic hierarchy (Kingdom, Division, Class, Order, Family, Genus, Species)
Week 4	Botanical Nomenclature: Binomial nomenclature, International Code of Nomenclature (ICN), rules for scientific naming of plants
Week 5	Morphological Characteristics Used in Plant Classification: Roots, stems, leaves, flowers, fruits, and seeds
Week 6	Taxonomic Keys: Types of taxonomic keys, principles and applications in medicinal plant identification
Week 7	Major Medicinal Plant Families I: Family characteristics and medicinal importance of Lamiaceae , Asteraceae , and Apiaceae
Week 8	Major Medicinal Plant Families II: Family characteristics and medicinal importance of Fabaceae , Solanaceae , and Rutaceae
Week 9	Classification of Monocotyledonous and Dicotyledonous Medicinal Plants: Diagnostic characteristics and examples
Week 10	Aromatic Medicinal Plants: Classification, botanical characteristics, and essential oil-producing plants
Week 11	Poisonous Medicinal Plants: Classification, identification, and important toxic plant families
Week 12	Chemotaxonomy: Relationship between plant classification and bioactive phytochemical constituents
Week 13	Molecular Taxonomy: DNA-based techniques and their applications in medicinal plant classification
Week 14	Practical Identification of Medicinal Plants: Identification using morphological characteristics and taxonomic keys
Week 15	Course Review: Comprehensive review, case studies, and practical exercises in medicinal plant classification
Week 16	final exam

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	محاضرات في تصنيف النباتات الطبية	Yes
Recommended Texts	Pharmacognosy and Phytotherapy (4th Edition) – Michael Heinrich et al Medicinal Plants: Biodiversity Biotechnology and Conservation – Edited by Sumita Jha & Mihir Halder	
Websites	https://powo.science.kew.org/?utm_source=chatgpt.com	

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

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

