University of Samarra

جامعة سامراء

كلية العلوم التطبيقية

قسم التحليلات المرضية

First Cycle – Bachelor's degree (B.Sc.) – pathological analyses

بكالوريوس تحليلات مرضية

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	Principle of pathological analysis	رمز المقرر	Path-121
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	7
SWL(hr/sem)	175	تاريخ الاعداد	2023/5/30

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	9	9
تحضير الدروس		تحضير الدروس اليومي	٣	15	45
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	5	2	10
الامتحانات اليومية		التهيئة للامتحانات اليومية	5	3	15
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		3	1	3
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					١٧٥

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Principles pathological analysis**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-121**				
ECTS Credits	7				
SWL (hr/sem)	**175**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Mohammed Hameed Mahal		**e-mail**	mohammedhameed@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To identify between tests according the samples type. 2. To understand of introduction for pathological analysis 3.To understand of complete blood count. 3. To understand of blood groups and Rh system 4.To understand of kidney function tests. 4. To understand of liver function tests.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	.1.Able to understand common aspects between different types of tests. 2.able to numerate the type of diabetes. 1. Able to describe the interactions between antibody and antigens. 2. Able to define medical conditions to relation with tests. 3. Able to identify of causes of disease with tests. 4. Able to understand of complications of diabetes. 5. Able to understand of functions of liver and kidney

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1-Liver function test ALB ,GOT,GPT,ALP,GGT,BLOOD UREA,creatinine, uric acid,electrolyte, lipid profile,c-reactive protein,cardiac function,pancreatic function,diabetes profile,thyroid function,reproductive hormones (30 hours) 2- practical laboratory test areLiver function test ALB ,GOT,GPT,ALP,GGT,BLOOD UREA,creatinine, uric acid,electrolyte, lipid profile,c-reactive protein,cardiac function,pancreatic function,diabetes profile,thyroid function,reproductive hormones (30 hours) 3-discusion (15 hours).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The primary approach that will be used to present this module is to promote students engagement in the activities while also enhancing and broadening their critical thinking abilities. This will be accomplished through lectures, interactive tutorials, and taking into account the kinds of easy experiments that include certain sampling tasks that the students will find engaging.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Liver function test ALB
Week 2	GOT ,GPT
Week 3	ALP
Week 4	GGT
Week 5	BLOOD UREA
Week 6	Serum creatinine
Week 7	Uric acide test &Serum electrolyte
Week 8	Mid term exam
Week 9	Lipid profile

Week 10	C-reactive protein
Week 11	Cardiac function test
Week 12	Pancreatic function test
Week 13	Diabetes profile
Week 14	Thyroid function test
Week 15	Reproductive hormones
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week 1	Lab :ALP,GOT GPT
Week 2	Lab:ALP
Week 3	Lab 3: GGT
Week 4	Lab 4: ESR
Week 5	Lab 5:blood urea
Week 6	Lab 6: serum creatinine
Week 7	Lab 7: Filters
Week 8	Uric acid
Week 9	Electrolyte profile
Week 10	Lipid profile
Week 11	Prothrompin time
Week 12	Cardiac function test

Week 13	Diabetes profile
Week 14	Thyroid function test
Week 15	Reproductive hormones

Learning and Teaching Resources مصادر التعلم والتدريس		
	Mosby's Manual of Diagnostic and Laboratory Tests (Pagana, Mosby's Manual of Diagnostic and Laboratory Tests) 5th Edition by Kathleen Deska Pagana PhD RN (Author), Timothy J. Pagana MD FACS (Author	**Available in the Library?**
Required Texts	Laboratory and Diagnostic Tests A MANUAL OF NINTH EDITION Frances Talaska Fischbach, RN, BSN, MSN	no
Recommended Texts		No
Websites	https://medlineplus.gov/laboratorytests.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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**Human cytology**	رمز المقرر	**Path-112**
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	7
SWL(hr/sem)	175	تاريخ الاعداد	**2023/5/30**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		1	10	10
		التهيئة للمشروع	1	10	10
تحضير الدروس		تحضير الدروس اليومي	2	14	28
العروض التقديمية*	القاء العرض التقديمي		2	7	14
		التهيئة للعرض التقديمي	3	3	9
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	3	9
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					175
*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية					

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Human cytology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-112**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Maroof Sabti Juma Al-ammash		**e-mail**	Maroof. Al-ammash@uosamarra.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	5. To develop learning skills and understanding of cell structure. 6. To understand unite of life, structure of cells, cellular components. 7. This course deals with the basic concept of cells and its functions. 8. To understand the relations between the different cells types. 9. To understand the biology of cancer 10. Explaining the cellular signals.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	6. Recognize types of cells. 7. List the various terms associated cell structures. 8. Discuss cytoskeleton. 9. Summarize all the cellular components and its functions. 10. Discuss the reaction between different cells in different tissues. 11. Describe the endoplasmic reticulum. 12. Define Golgi complex and explain its functions. 13. Identify the nuclear envelope function. 14. Discuss the important of nuclear components to keep the generations characteristics. 15. Discuss the function of Lysosome. 16. Explain the types of cellular vesicles. 17. Identify relations between different cells

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – cell Theory Define cell, comparison between animal and plant cells, cell membrane, cytoskeleton, components of cell, endoplasmic reticulum, rough e. r. and smooth e. r. centriols, lysosome, golgi complex,. [15 hrs] Part B --Relations between cells: nucleus, chromosomes types, nuclear envelope, nucleolus, cells types, cells signals, types of cell secretions. [15 hrs] Cell cycle [5 hr] Biology of Cancer, types of cancer, treatment mechanism of action [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 critical thinking skills. This will be achieved through classes, interactive lectures and by considering type of simple tests involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	15% (15)	2,6,9	LO #1, 2, 4, 5, 7,8 and 9
	Assignments	2	10% (10)	1,11	LO # 3,6 and 10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	14	LO # 11,12,13,14 and 15
Summative assessment	**Midterm Exam**	2 hr	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	
	Material Covered
Week 1	Introduction for Cytology and cell theory
Week 2	Basics of cell types and comparison between plant cell and animal cell and cell cycle
Week 3	Endoplasmic reticulum types
Week 4	Smooth e. r. and rough e. r.
Week 5	Golgi complex
Week 6	Lysosome &Vesicles types
Week 7	Mid term
Week 8	Cytoskeleton
Week 9	Centrioles
Week 10	Nucleus and Nucleolus
Week 11	Chromosomes types
Week 12	Nuclear envelope
Week 13	Relation between cells
Week 14	Cell signaling
Week 15	Final exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction for practical cytology

Week 2	Lab 2: cells types
Week 3	Lab 3: cell components
Week 4	Lab 4: staining of WBC's
Week 5	Lab 5: Cancer cell morphology
Week 6	Lab 6: comparison between cancer cell and normal cell
Week 7	Lab 7: analysis of Cancer cell
Week 8	Lab 8: Cytoskeleton
Week 9	Lab 9: Centrioles
Week 10	Lab 10: Nucleus and Nucleolus
Week 11	Lab 11: Chromosomes types
Week 12	Lab 12: Nuclear envelope
Week 13	Lab 13: Relation between cells
Week 14	Lab 14: Cell signaling

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts		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 (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.

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Occupational laboratory safety**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**Path-114**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Marwan Qahtan Jasim		**e-mail**	marwan.walady@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	11. Providing the learner with the skills of laboratory safety and security 12. Provide the student with the mechanisms of using personal protective equipment 13. Explanation of the concepts of risk and danger 14. Learn about the types of biological safety cabinets 15. Provide the learner with the mechanism of dealing with germs 16. Provide the learner with how to manage chemical risks
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	18. The learner has the skills of laboratory safety and security 19. The learner is highly familiar with the use of personal protective equipment 20. The student will be able to distinguish between the concepts of risk and risk 21. The learner will have the ability to deal with germs 22. The learner will have the ability to deal with chemicals 23. The learner will have the ability to manage risks, whether they are biological or chemical
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Definition of the concept of safety and security, expressions and agreements related to this (four hours) The concept of risk and risk and distinguishing between them and taking examples and applications thereof (four hours) Germs, their types, challenges, how to control them, how to deal with them, and what methods and means are available (six hours) Chemicals, their types, classification, mechanism for dealing with and managing

	them, and an indication of their risks (six hours) The learner will have the ability to manage risks, whether biological or chemical, and manage spread and spills (six hours). Field and practical practices on waste management, creating hypothetical problems and how to deal with them inside and outside laboratories. As well as civil defense procedures and evacuation and assembly procedures (fifteen hours)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Establishing safety and security problems and then working to find solutions to them Conducting dialogue workshops on security and safety concepts Conducting surveys to identify personal protective equipment

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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)	4, 9	LO #1, 2, 6 and 7
	Assignments	2	10% (10)	2, 11	LO # 3, 4, 9 and 10
Summative assessment	**Midterm Exam**	2 hr	30% (30)	6, 10	LO # 1-6, 7-11
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Definition of the concept of safety and security and its principles
Week 2	International agreements
Week 3	The concept of risk and danger
Week 4	Chemicals and their classifications
Week 5	Chemical risk management
Week 6	Exam 1
Week 7	Chemical spill management
Week 8	Laboratory waste management
Week 9	Germs and their classification
Week 10	Exam 2
Week 11	Biological protection methods and types of biosafety capitate
Week 12	Biological risk management
Week 13	Global systems in biological risk management
Week 14	Create problems inside the laboratory and the mechanism to solve them
Week 15	Create problems inside the laboratory and the mechanism to solve them

Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Laboratory Safety and Security Curriculum / CSP / US State Agency 2016	Yes
Recommended Texts	Chemical Safety and Security guideline Dr. Hamsa Munam, Dr. Sarah Salman & Dr. Nawar Jamal /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 (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.

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Occupational laboratory safety**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**Path-114**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Marwan Qahtan Jasim		**e-mail**	marwan.walady@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	17. Providing the learner with the skills of laboratory safety and security 18. Provide the student with the mechanisms of using personal protective equipment 19. Explanation of the concepts of risk and danger 20. Learn about the types of biological safety cabinets 21. Provide the learner with the mechanism of dealing with germs 22. Provide the learner with how to manage chemical risks
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	24. The learner has the skills of laboratory safety and security 25. The learner is highly familiar with the use of personal protective equipment 26. The student will be able to distinguish between the concepts of risk and risk 27. The learner will have the ability to deal with germs 28. The learner will have the ability to deal with chemicals 29. The learner will have the ability to manage risks, whether they are biological or chemical
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Definition of the concept of safety and security, expressions and agreements related to this (four hours) The concept of risk and risk and distinguishing between them and taking examples and applications thereof (four hours) Germs, their types, challenges, how to control them, how to deal with them, and what methods and means are available (six hours) Chemicals, their types, classification, mechanism for dealing with and managing them, and an indication of their risks (six hours)

	The learner will have the ability to manage risks, whether biological or chemical, and manage spread and spills (six hours). Field and practical practices on waste management, creating hypothetical problems and how to deal with them inside and outside laboratories. As well as civil defense procedures and evacuation and assembly procedures (fifteen hours)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Establishing safety and security problems and then working to find solutions to them Conducting dialogue workshops on security and safety concepts Conducting surveys to identify personal protective equipment

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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	**Quizzes**	2	10% (10)	4, 9	LO #1, 2, 6 and 7

assessment	**Assignments**	2	10% (10)	2, 11	LO # 3, 4, 9 and 10
Summative assessment	**Midterm Exam**	2 hr	30% (30)	6, 10	LO # 1-6, 7-11
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Definition of the concept of safety and security and its principles
Week 2	International agreements
Week 3	The concept of risk and danger
Week 4	Chemicals and their classifications
Week 5	Chemical risk management
Week 6	Exam 1
Week 7	Chemical spill management
Week 8	Laboratory waste management
Week 9	Germs and their classification
Week 10	Exam 2
Week 11	Biological protection methods and types of biosafety capitate
Week 12	Biological risk management
Week 13	Global systems in biological risk management
Week 14	Create problems inside the laboratory and the mechanism to solve them
Week 15	Create problems inside the laboratory and the mechanism to solve them
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Laboratory Safety and Security Curriculum / CSP / US State Agency 2016	Yes
Recommended Texts	Chemical Safety and Security guideline Dr. Hamsa Munam, Dr. Sarah Salman & Dr. Nawar Jamal /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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	Human anatomy	رمز المقرر	Path-122
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	7
SWL(hr/sem)	175	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	10	10
تحضير الدروس		تحضير الدروس اليومي	4	15	60
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	2	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	4	8
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	5	1	5
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	9	1	9
العبء الكلي للمادة خلال الفصل					175

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Human anatomy**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-122**				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	2		**Semester of Delivery**	2	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Ali Khudhair Obaies		**e-mail**	Ali.kh21@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	23. To develop skills and understanding of human anatomy and, structures of the human body. 24. To understand fundamental principles anatomy systems of human body. 25. This course deals with the basic concept of anatomy systems of human body. 26. This is the basic subject for complexity of the human body .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	30. List the various terms human anatomy. 31. Summarize what is meant by a human anatomy. 32. Discuss the reaction and involvement of human anatomy. 33. Describe human anatomy. 34. Define human anatomy. 35. Identify the basic of human anatomy. 36. Discuss the various systems of human anatomy . 37. Identify the human anatomy.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Human Anatomy</u> Define Anatomy , Kinds of anatomical studies, Regions of the human body , The anatomical position, Planes of the body Directions. [15 hrs] <u>Human Anatomy</u> I – Introduction to Human Skeletal System , Nervous System , Cardiovascular System Components of Human Skeleton, Bones, Cartilages, Divisions of Human Skeleton. [15 hrs]

	Human Anatomy II - Respiratory System, Organs of human respiratory system . [10 hrs] . Muscular System, Types of muscles., Digestive System, Integumentary System [15 hrs] Revision problem classes [6 hrs] Part B - Human function and Anatomy : Fundamentals Human Reproductive System, Lymphatic System . [15 hrs] Components– Components Endocrine System , Functions of urinary system. [7 hrs] Introduction to Digestive System , Parts of digestive system, Functions of digestive system. [15 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 critical 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 لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

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

Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Human Anatomy
Week 2	Kinds of anatomical studies, Regions of the human body
Week 3	Human Skeletal System, Anatomy and function .
Week 4	Review of Human Anatomy the anatomical position, Planes of the body
Week 5	Nervous System, Anatomy and function .
Week 6	Review of Components of Human Skeleton, Bones , Cartilages, Divisions of Human Skeleton
Week 7	Mid-term Exam .
Week 8	Cardiovascular System , Anatomy and function .
Week 9	Respiratory System , Anatomy and function .
Week 10	Muscular System, Anatomy and function .
Week 11	Introduction to Digestive System, Anatomy and function .
Week 12	Urinary System , Anatomy and function .
Week 13	The Integumentary System , Anatomy and function of Integumentary
Week 14	Lymphatic System , Anatomy and function of lymphatic System
Week 15	Endocrine System , Anatomy and function of endocrine System
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Human Anatomy
Week 2	Lab 2: Regions of the human body, The anatomical position, Planes of the body , Directions
Week 3	Lab 3: Components of Human Skeleton, Bones .
Week 4	Lab 4: Components of Human Nervous System.
Week 5	Lab 5: Components of Human Cardiovascular System.
Week 6	Lab 6: Components of Human Respiratory System.
Week 7	Lab 7: Components of Human Muscular System.
Week 8	Lab 8: Cardiovascular System .
Week 9	Lab 9: Respiratory System .
Week 10	Lab 10: Muscular System.
Week 11	Lab 11: Digestive System.
Week 12	Lab 12: Urinary System .
Week 13	Lab 13The Integumentary System .
Week 14	Lab 14 Lymphatic System.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	McMinn, R. M. H., Hutchings, R. T., Pegington, J., & Abrahams, P. (1988). A colour atlas of human anatomy. Year Book Medical Publishers.	Yes

Recommended Texts	Rowett, H. G. (2000). Basic anatomy and physiology. John Murray Ltd..	Yes
Websites	https://brooksidepress.org/anatomy/	

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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	pathogenic bacteriology	رمز المقرر	Path-212
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/5/30

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		2	8	16
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	2	5	10
تحضير الدروس		تحضير الدروس اليومي	0	0	0
العروض التقديمية*	القاء العرض التقديمي		1	1	1
		التهيئة للعرض التقديمي	0	0	0
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	15	30
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	2	12
امتحان نهاية الفصل	الامتحان		3	1	3
		التهيئة للامتحان	18	1	18
العبء الكلي للمادة خلال الفصل					150

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**pathogenic bacteriology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-212**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Applied Science	
Module Leader	Osama Nadhom Nijris		**e-mail**	usama.n@uosamarra.edu.iq	
Module Leader's Acad. Title	Professor		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	principles of microbiology	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1-bacterial species that cause infections to man 2- sites of body to isolate them(specimens) 3-recognize their most medically important virulence factors and their ability to infect and dissemination 4- infections (diseases) caused by each pathogen 5- tests and methods used to diagnose them pending on morphological, cultural , biochemical characteristics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. recognize different bacterial species and classify them according to their pathogenicity, whether they were normal flora member, or pathogenic or opportunistic 2.Identifying bacterial morphological characteristics 3.Identifying their virulence determinants 4.Identifying the principle basics of dividing pathogenic bacteria 5.identifying the most important bacterial species causing infections to humans and their virulence factors and their infections 6. methods of identification 7. ability to recognize among various pathogens isolated from the same source
Indicative Contents المحتويات الإرشادية	This curriculum comprise the following indicative contents -Principle of bacteriology , the importance of bacteria and their position among other microbial pathogens, structure of bacterial cell, appendages, bacterial growth ,chemical and physical factors affecting growth

	-Normal flora : sterile body sites, microbiome, microbiome of skin ,intestine, respiratory tract, urinary tract , genital tract -pathogenesis: steps of infection, virulence factors, types of viulence factors: toxins, spreading factors, evading immune sytem, -classification of bacterial species mostly common in human infections according to various criteria, gram stain, aeration, spore formation, shape, -methods of diagnosis , staining , culturing,biochemical testing , serological tests (not all species) -according to previous aspects, elaboration of each pathogen regarding morphological characterization,biochemical characterization, sites of isolation, virulence factors, approaches of diagnosis , prevention , treatment
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	In this module the strategy of teaching is to enable students to conclude how to distinguish among bacterial pathogens through theoretical as well as lab classes and learning how to use various methods of diagnosis to give primary identification of a certain pathogen.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Bacteria Compared with Other Microorganisms
Week 2	Structure of Bacterial Cells
Week 3	Growth of bacteria
Week 4	Classification of Medically Important Bacteria
Week 5	Normal Flora
Week 6	Pathogenesis
Week 7	Overview of the Major Pathogens Introduction to Anaerobic Bacteria
Week 8	Gram-Positive Cocci

Week 9	Gram-Negative Cocci
Week 10	Gram-Positive Rods
Week 11	Gram-Negative Rods Related to the Enteric Tract E. coli, Klebsiella,
Week 12	Salmonella , Shigella
Week 13	Gram-Negative Rods Related to the Respiratory Tract
Week 14	Pseudomonas aeruginosa
Week 15	Brucella
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:
Week 2	Lab 2: biochemical tests
Week 3	Lab 3: gram positive cocci
Week 4	Lab 4: gram negative cocci
Week 5	Lab 5: gram positive bacilli
Week 6	Lab 6: respiratory tract pathogens
Week 7	Lab 7: enerobacteriaceae part -1

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	-Review of Medical Microbiology and immunology thirteen edition	no
Recommended Texts	-Jawetz, Melnick, & Adelberg's Medical Microbiology Twenty-Sixth Edition Lippincott's Review of Microbiology	No
Websites	Todar's Online Textbook of Bacteriology	

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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	medical virology	رمز المقرر	Path-213
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	10	10
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	2	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	4	3	12
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	8	1	8
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	13	1	13
العبء الكلي للمادة خلال الفصل					150

*لا توجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**medical virology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**Path-213**			☒ **Lab**	
ECTS Credits	**6**			☐ **Tutorial**	
SWL (hr/sem)	**150**			☐ **Practical**	
				☒ **Seminar**	
Module Level	2		**Semester of Delivery**	3	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Faesal Ghaze Hassen		**e-mail**	Faysal.alsamarraie @uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	principles of microbiology (path 111)	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	27. To develop problem solving skills and understanding of circuit theory through the application of techniques. 28. To understand voltage, current and power from a given circuit. 29. This course deals with the basic concept of electrical circuits. 30. This is the basic subject for all electrical and electronic circuits. 31. To understand Kirchhoff's current and voltage Laws problems. 32. To perform mesh and Nodal analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	38. Recognize how electricity works in electrical circuits. 39. List the various terms associated with electrical circuits. 40. Summarize what is meant by a basic electric circuit. 41. Discuss the reaction and involvement of atoms in electric circuits. 42. Describe electrical power, charge, and current. 43. Define Ohm's law. 44. Identify the basic circuit elements and their applications. 45. Discuss the operations of sinusoid and phasors in an electric circuit. 46. Discuss the various properties of resistors, capacitors, and inductors. 47. Explain the two Kirchoff's laws used in circuit analysis. 48. Identify the capacitor and inductor phasor relationship with respect to voltage and current.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Source material may be contaminated with a virus indigenous to the species of origin. [15 hrs] Blood can harbor many viruses and the use of products derived from human plasma has caused infections by HBV,HCV,HIV, Parvovirus B19 and occasionally HAV. Murine viruses , some of which are pathogenic for man , may contaminate murine hybridomas cell lines which are intended to be used for genetic mainipulation may be contaminated by viruses. [15 hrs] To Know the basic practice of identified and isolation of most viruses [15 hrs] To know the methods of isolation, transportation and storage of specimen. [10hrs] To know methods of diagnosis of viruses, and classification, vaccination, epidemiology ,prevention and route of translation. [15 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Two different strategies for survival are assumed by viruses. One is hit and run infection whereby there is successive propagation in a series of hosts. The other is hit and stay with viral persistence in the same host. Hit and run viruses are mainly cytolytic and destroy the cells of the host in which they multiply. They are highly infective, readily transmit to susceptible new hosts, and include viruses such as influenza, rhinoviruses of the common cold, and measles. The most common resolution of viral infection is by an effective cell-mediated immune response, requiring the virus to escape to new hosts before immunological resolution or before death of the host itself. Some viruses, such as the pox agents, may be able to survive in the environment for a period in dried form, and enteroviruses and rotaviruses may remain viable in water. Rabies and yellow fever viruses have reservoirs in alternative animal hosts, such as in feral species. Influenza viruses travel rapidly and induce herd immunity, requiring the virus to mutate and change its antigenic specificity to continue to infect. It is aided also by alternate seasonal high communicability in epidemics in the Northern and Southern geographic hemispheres. In the hit and stay strategy, the virus achieves long term residence in the individual

	host, from whom there may be frequent or infrequent transmission to successive hosts. Latency, with rare vegetative proliferation, is a very favorable means for viral preservation. It is not in the best interest of any parasite to destroy its own host or the host population on which it depends for its existence. Also, it is rarely in the best interest of the host to support a virus. Optimal accommodation between host and virus is with inapparent clinical infection in what may be a commensal state, or one in which the host immune control achieves a tolerable disease state. In persistent infections, such as with hepatitis B virus, an excessive and inappropriate host immune response can turn an otherwise inapparent nonlytic infection into a severe disease, and the consequence may be fulminant or chronic–active hepatitis leading to death by cirrhosis and/or cancer of the liver.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	10% (10)	2,5, 11	LO 3, 4, 9 and 10
	Assignments	2	10% (10)	7, 13	LO 6, 11, and 12
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7

assessment	**Final Exam**	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	General Properties of Viruses
Week 2	Virus – Host Interactions
Week 3	Laboratory Diagnosis of Viral Infections and Viral Vaccines
Week 4	Filoviridae, Arenaviriae and Reoviridae
Week 5	Bacteriophage
Week 6	Poxviridae
Week 7	Midterm Eaxm
Week 8	Adenoviridae, Retroviridae
Week 9	Parvoviridae
Week 10	Papovaviridae , Astroviridae
Week 11	Herpesviridae
Week 12	Picornaviridae, Oncogenic (tumour) Viruses
Week 13	Rhabdoviridae, Hepatitis Viruses
Week 14	Orthomyxoviridae , Paramyxoviridae, Coronaviridae
Week 15	Slow Virus Infections and Prions Role immunity of human viruses Vaccines using treatment of virus
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Medical virology laboratory essential requirement of medical
Week 2	Lab 2: Diagnosis of viral diseases
Week 3	Lab 3: Samples collection
Week 4	Lab 4: Culture media preparation and sterilization
Week 5	Lab 5: Virological test
Week 6	Lab 6: Methods for rapid diagnosis of viral genome
Week 7	Lab 7: Viral serology
Week 8	Lab8: diagnosis of Viral Diseases of the Upper Respiratory System
Week 9	Lab9: diagnosis of Neurologic viral diseases
Week 10	Lab10: diagnosis of Gastrointestinal viral diseases
Week 11	Lab11: diagnosis of Hemorrhagic viral diseases
Week 12	Lab12: diagnosis of Hepatic viral diseases
Week 13	Lab13: diagnosis of Viral Diseases of the eye
Week 14	Lab 14: diagnosis of Viral Diseases of the Skin

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Medical Microbiology , Stephen N J Korsman, Gert Van Zyl, Wolfgang Preiser.2022	Yes
Recommended Texts	Virology ,Martinez J. Hewlett, David Camerini, David C.	No

	Bloom.2021 Human Virology Juan Ernesto Ludert, Flor H. Pujol, Juan Arbiza · 2022	
Websites	https://virologyresearchservices.com/http://www.virology.net	

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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	principles of physiology	رمز المقرر	Path-214
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	9	9
تحضير الدروس		تحضير الدروس اليومي		15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	3	3	9
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	3	9
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					150
*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية					

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Principles of physiology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-214**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Zina Lafta Hassan		**e-mail**	zeena.iafta@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- A comprehensive review of the functional activities of the various body systems. 2- Introducing the student to the latest developments in knowledge in the field of physiology. 3 - Enabling students to use scientific thinking methods. 4 - Refining the student's scientific and practical personality so that he can serve the community in teaching and research. 5 - Students acquire the skill of self-learning through writing research papers. 6- Enriching the cognitive status by asking questions and discussing them in class. 7 - Expanding the students' perceptions, enhancing their self-confidence, and strengthening their scientific and professional personalities. 8- To provide students with the required practical skills. 9- Training students to prepare reports, analyze results, and design posters. 10 - Encouraging students to use modern scientific sources and cite them in their graduation research and prepare them for research for postgraduate studies.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1 - Preparing graduate students who have the ability to research and learn. 2- The ability to use laboratory tools and equipment and to teach students how to properly deal with different equipment. 3 - Develop students' ability to conduct laboratory analyzes related to this science. 4- The ability to analyze and discuss the results of practical experiments by following the scientific method in reasoning. 5- Training students on how to write a thesis and scientific research. 6- Preparing specialized cadres for the labor market by providing students with the required skills.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Introduction to the Human Body: Anatomy and physiology, different branches of physiology. Structural and functional organization; chemical level, cell level, tissue. level, organ level, system level, organism level. [14. hrs] - Characteristics of Life and Homeostasis: Characteristics of life; organization, metabolism, responsiveness, growth, development, & reproduction. Homeostasis; negative-feedback mechanism & positive-feedback responses. [14. hrs] - Movement Through the Plasma Membrane: Plasma membrane; the structure and function of cell membrane. Movement types of materials across the plasma membrane; diffusion, facilitated diffusion, active transport, filtration, endocytosis and exocytosis. [14.. hrs] Neural Control: Divisions of the nervous system; central nervous system, peripheral nervous system, autonomic nervous system, "fight-or-flight" mechanism. Nervous cells, membrane potentials, the synapse, neural reflexes. [14 hrs] - Hormonal Control: Hormones; chemical categories of hormones, hormone action. Endocrine glands; pituitary gland, The pineal body, thyroid gland, parathyroid glands, thymus gland, adrenal glands, pancreas, testes and ovaries, other hormones, prostaglandins. [14 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The educational institution should evaluate the academic program and develop the courses in accordance with the approved international standards in conjunction with the knowledge progress taking place in order to ensure the achievement of quality and academic accreditation, and that this institution should be able to continuously improve in order to achieve the desired strategic goals of the education outcomes. In

	addition to updating the course by expanding some topics that are of importance in the context of cognitive development, expanding the research horizons of students, and obtaining new information related to the prescribed curriculum.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	2,6,9	LO #1, 2, 4,5,7, and 8
	Assignments	2	10% (10)	4,11	LO # 3, 6,9 and 10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	14	LO # 11,12, and 13
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to the human body
Week 2	Structural and functional organization
Week 3	Characteristics of life
Week 4	Homeostasis mechanism
Week 5	Movement types of materials across the plasma membrane
Week 6	Divisions of the nervous system; autonomic nervous system
Week 7	Membrane potentials, the synapse, & Neural reflexes
Week 8	Exam.
Week 9	Hormones; definition, the term & chemical categories
Week 10	Hormone action mechanisms
Week 11	Thyroid gland, parathyroid glands, & adrenal glands
Week 12	The pancreas
Week 13	The pineal body & thymus gland
Week 14	Testes and ovaries & prostaglandins
Week 15	Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Maintenance and regulation of body temperature
Week 2	Osmotic relations; study the osmosis of erythrocytes to water and some other substances

Week 3	Determination the types of laboratory physiological solutions
Week 4	Effect of some drugs on osmotic regulation
Week 5	How to use a spectrophotometer to examine samples
Week 6	How to use a flame photometer to examine the minerals
Week 7	How to use ELISA to examine biochemical parameters
Week 8	Exam.
Week 9	Electroencephalography
Week 10	Study of reflexes in the nervous system
Week 11	Pithing the frog
Week 12	Neural control of skeletal muscle
Week 13	Contractility of skeletal muscle; the twitch and motor unit summation
Week 14	Contractility of skeletal muscle; mechanical summation, contracture, tetanus & fatigue
Week 15	Exam.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1) Seeley R. R., Tate P., Stephens T. D. Anatomy & Physiology. McGraw-Hill Science Inc. 2) Hall J.E. Guyton and Hall, Textbook of Medical Physiology. Saunders Inc.	no
Recommended Texts	Anatomy & Physiology	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	parasitic protozoa	رمز المقرر	Path-215
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/5/31

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	3	3	9
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	3	9
امتحان نصف الفصل*	الامتحان				
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					150
*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية					

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**parasitic protozoa**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-215**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Pathological analyses		**College**	**Applied Science**	
Module Leader	Ohood Mozahim Shakir		**e-mail**	Email: uhood.m@uoamarra.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	none		**e-mail**	none	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	principles of microbiology path 111	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	33. This Module covers the basics of parasitology of humans and includes the use of microscopy, culture, serology and molecular biology principles and techniques for the diagnosis of infections in humans. The aim of this Module is to develop an understanding of the parasitology relating to human disease. 34. The Module does assume a good grounding in biological science. An undergraduate 35. knowledge of microbiology and/or employment in a medical microbiology laboratory would 36. protozoa is a specialized discipline within medical microbiology. A thorough understanding of parasitology requires an in-depth knowledge of the detection, identification, and treatment of parasites. The candidate would be required to know how to collect, transport and store appropriate samples. 37. The identification of protozoa is very important. The characteristics that differentiate species are of primary significance. Identification techniques including fixation and staining of samples for microscopy and culture techniques will be covered. Other available techniques for the diagnosis of infection include serology, molecular biology and identification. 38. The choice of treatment of infection, the public health risks and epidemiology of each protozoa will be covered but is of lower importance to the candidate.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	49. Identify the common causative agents, occurrence and modes of transmission of the common faeco-oral diseases caused by intestinal protozoa and roundworms. 50. List the various terms associated with protozoa 51. Explain how you would diagnose and treat cases of amoebiasis, giardiasis, infection, based on their symptoms and signs

	52. Discuss the reaction and involvement of atoms in electric circuits. 53. Describe how you would apply prevention and control measures against these common protozoa. 54. Define protozoa. 55. Identify types of protozoa 56. Discuss symptoms and disease of protozoa
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Parasitology is a study of the phenomenon of parasites and parasitism. Medical parasitology traditionally has included the study of three major groups of animals: parasitic protozoa, parasitic helminths (worms), and those arthropods that directly cause disease or act as vectors of various pathogens. a. Types of parasites. b. Types of hosts. c. Host-Parasite Relationship. d. Classification and General Characters of Human Parasites. e. Salient features of protozoa f. CLASSIFICATION OF PROTOZOA [9 hrs] Classification and General Characters of Human Parasites. . [9 hrs] Life cycle stages of protozoa . [10 hrs] Part B – intestinal and urogenital protozoa Fundamentals Most parasitic protozoa have a distinct nucleus. There are some species which have two similar (e.g., *Giardia*,) or two dissimilar nuclei (e.g., *Balantidium* coli). Reproduction is either asexual (simple binary fission) or by both asexual and sexual processes. Sporogony is a process of spore formation by asexual division inside the zygote/cyst or oocyst formed by gametogony. The resultant sporozoites are the infective stages in all cases. Most protozoa are free-living while a few are parasites of animals and human. [18 hrs] tissue & blood protozoa

	a. parasitic protozoa that include Plasmodium and Toxoplasma. These two are commonly known as the parasites, found in vectors responsible for malaria and toxoplasmosis. They have both a sexual and asexual phase. They mainly target the epithelial cells of the intestinal tract, but can also be found in the liver and other organs. Other, yet unclassified, sporozoa on the rise are Pneumocystis carinii and Cryptosporidium. They are of particular concern to the immunocompromised, particularly those with AIDS, cancer, or a recipient of transplants. P. carinii is responsible for a type of pneumonia, while Cryptosporidium produces a profuse watery diarrhea.. [24 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy this section is to provide a thorough understanding of the clinical symptoms of helminth infections of man, their diagnosis and treatment. Integral to this section is knowledge of the appropriate samples required for diagnosis, the methods of identification of each parasite, the morphological characteristics and the life cycle of the parasites

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10% (10)	3,6,10	LO #1, 2, 4,5,7, 8 and 9
	Assignments	2	10% (10)	3,7	LO # 1, 2, 4,5, and 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 11, 12 and 13
Summative assessment	Midterm Exam	2hr	10% (10)	9	LO # 1-8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - introduction for parasitology
Week 2	Introduction for phylum : protozoa
Week 3	Order : Amoebida (Entaomeoba)
Week 4	Order : Amoebida(Endolimax& Iodamoeba)
Week 5	Order :Spirotricha(Balantidium)
Week 6	Order: Diplomonadidae(Girdia)
Week 7	Order : Dinoflagellata (Nigellaria)
Week 8	Order:Trichomonadina(Trichomonus)
Week 9	Mid term exam.

Week 10	Order: Eucoccidiida(Toxoplasma)
Week 11	Order: Eucoccidiida Cryptosporidium
Week 12	Order: Kinetoplastida Trypanosoma
Week 13	Order: Kinetoplastida Leishmania
Week 14	Order :Haemosporidia Plasmodium
Week 15	Order: Piroplasmida Babesia
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: introduction for parasitology
Week 2	Lab 2: (Entaomeoba)
Week 3	Lab 3:(Balantidium)
Week 4	Lab 4: (Girdia)
Week 5	Lab 5: (Trichomonus)
Week 6	Lab 6: (Toxoplasma)
Week 7	Lab 7: Cryptosporidium
Week 8	Lab 8: Trypanosoma
Week 9	Lab 9: Trypanosoma gammbi
Week 10	Lab 10: Trypanosoma cruzi
Week 11	Lab 11: Leishmania tropica
Week 12	Lab 12: Leishmania donovani
Week 13	Lab 13: Plasmodium

Week 14	Lab 14: Babesia

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Markell and Voge's Medical Parasitology Bilingual Edition	Yes
Recommended Texts	Essentials of Medical Parasitology Apurba S Sastry ،Sandhya Bha 2018	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	Tissue culture	رمز المقرر	Path-221
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	5
SWL(hr/sem)	125	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL 64	الساعات غير الجدولة USSWL 61	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	1	1
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	3	3
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	2	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	3	6
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	3	3	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					125

*لا توجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Tissue Culture**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**Path-221**			☐ **Lecture**	
ECTS Credits	**5**			☒ **Lab**	
SWL (hr/sem)	**125**			☐ **Tutorial**	
				☐ **Practical**	
				☒ **Seminar**	
Module Level	2		**Semester of Delivery**	4	
Administering Department	Pathological Analyses		**College**	**Applied Science**	
Module Leader	Raghad Hazim Hamad		**e-mail**	raghad.h@uosamarra.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	***The module aims of tissue culture and histological preparation may vary depending on the specific educational program or course. However, here are some common objectives typically associated with these subjects*:** 1- **Understanding Tissue Culture Techniques**: The aim is to introduce students to the principles, techniques, and applications of tissue culture. This includes learning about the culture media, aseptic techniques, cell lines, primary cell cultures, and the maintenance and manipulation of cells in vitro. 2- **Cell Line Establishment**: Students may learn how to establish cell lines from various tissues or organisms. The aim is to provide them with hands-on experience in isolating and culturing cells, establishing cell lines, and maintaining their viability. 3- **Cell Culture Maintenance**: The objective is to teach students the proper methods for maintaining cell cultures. This includes learning about sub-culturing techniques, monitoring cell growth and viability, and preventing contamination. 4- **Histological Techniques**: The aim is to familiarize students with the principles and techniques used in histology, which involves the preparation, staining, and microscopic examination of tissue sections. Students may learn about tissue fixation, embedding, sectioning, staining methods (e.g., hematoxylin and eosin staining), and interpretation of histological slides. 5- **Microscopy Skills:** The objective is to develop skills in using various types of microscopes, such as light microscopes and possibly electron microscopes. Students may learn about microscope operation, sample preparation for different microscopy techniques, and image analysis. 6- **Experimental Design and Data Analysis**: The objective is to equip students with the knowledge and skills required to design experiments involving tissue culture and histological techniques. This includes understanding controls, replicates, and statistical analysis of data obtained from experiments. 7- **Troubleshooting and Problem**-Solving: Students may develop the ability to identify and troubleshoot issues that may arise during tissue culture or histological procedures. This includes recognizing common problems,

	implementing appropriate solutions, and adapting protocols to specific experimental needs. ***Overall, the module aims to provide students with a solid foundation in tissue culture techniques, histological preparation, and analysis of biological samples, enabling them to pursue further studies or careers in fields such as cell biology, pathology, biomedical research, or clinical diagnostics.***
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***The learning outcomes of a module on tissue culture and histological preparation can include the following:*** **1. Knowledge and Understanding:** - Demonstrate a comprehensive understanding of tissue culture principles, techniques, and applications. - Explain the process of histological preparation, including tissue fixation, embedding, sectioning, and staining. - Describe the different types of cells, cell lines, and tissue samples commonly used in tissue culture and histology. **2. Practical Skills:** - Perform aseptic techniques for tissue culture, including cell isolation, culturing, and sub- culturing. - Prepare and maintain cell cultures using appropriate media, supplements, and growth conditions. - Conduct histological procedures, including tissue processing, embedding, sectioning, and staining. - Use various microscopy techniques to visualize and analyze tissue samples. **3. Critical Thinking and Problem-Solving:** - Identify and troubleshoot common issues in tissue culture, such as contamination, cell death, or growth problems. - Analyze histological slides and interpret cellular structures and tissue morphology. - Evaluate experimental design and optimize protocols for specific research or diagnostic purposes. - Apply appropriate statistical methods for data analysis and draw conclusions from experimental results. **4. Communication:** - Effectively communicate scientific information related to tissue culture and histology through oral presentations or written reports. - Describe and explain experimental procedures, results, and interpretations to

	peers or a wider audience. - Use appropriate scientific terminology when discussing tissue culture and histological concepts. **5. Professionalism and Ethical Considerations:** - Demonstrate professional conduct and adhere to ethical guidelines when working with biological materials and human or animal tissues. - Understand the importance of maintaining accuracy, precision, and reproducibility in tissue culture and histological experiments. - Recognize the potential societal and ethical implications of tissue culture and histological research and applications. ***These learning outcomes aim to equip students with a solid theoretical knowledge base, practical laboratory skills, critical thinking abilities, and professional attitudes necessary for success in tissue culture and histological preparation.***
Indicative Contents المحتويات الإرشادية	***The indicative contents of a module on tissue culture and histological preparation may include the following topics:*** ***Part A: Introduction to tissue culture, cell culture media and sterile techniques,* Cell Isolation and Primary Culture, Cell Lines and Sub-culturing** **1. Introduction to Tissue Culture:** - Definition and scope of tissue culture - Historical developments and applications - Cell types and sources for tissue culture - Basic principles of cell culture techniques **2. Cell Culture Media and Sterile Techniques:** - Composition and preparation of culture media - Sterilization methods and aseptic techniques - Culture vessel selection and preparation - Maintenance of sterility and prevention of contamination **3. Cell Isolation and Primary Culture:** - Tissue dissociation techniques - Isolation and purification of specific cell types - Methods for establishing primary cell cultures

	- Optimization of culture conditions for primary cells **4. Cell Lines and Sub-culturing:** - Introduction to immortalized cell lines - Characteristics and advantages of cell lines - Techniques for sub-culturing and passaging cells - Cryopreservation and revival of cell lines **20 hrs.** Part B: **Tissue Fixation and Processing, Tissue Sectioning and Staining, Microscopy and Imaging** **5. Tissue Fixation and Processing:** - Principles of tissue fixation - Fixatives and their applications - Tissue processing steps: dehydration, clearing, and infiltration - Embedding techniques (paraffin and cryoembedding) **6. Tissue Sectioning and Staining:** - Microtomy and sectioning methods - Techniques for obtaining thin tissue sections - Staining methods, including routine stains (H&E) and special stains - Immunohistochemistry and in situ hybridization techniques **7. Microscopy and Imaging:** - Introduction to light microscopy and its applications - Brightfield, phase contrast, and fluorescence microscopy - Confocal microscopy and electron microscopy (overview) - Image acquisition, processing, and analysis techniques **20 hrs.** **Part D: Quality Control and Troubleshooting, Ethical Considerations and Safety, Experimental Design and Data Analysis** **8. Quality Control and Troubleshooting:** - Assessment of cell viability, growth, and contamination - Quality control measures for tissue culture and histology

	- Troubleshooting common issues in tissue culture and histological preparation - Documentation and record-keeping in the laboratory **9. Ethical Considerations and Safety:** - Ethical guidelines for working with human or animal tissues - Biosafety and biosecurity measures in tissue culture and histology - Disposal of biological waste and hazardous chemicals - Personal protective equipment and laboratory safety protocols **10. Experimental Design and Data Analysis:** - Experimental design considerations in tissue culture and histological experiments - Statistical analysis methods for data interpretation - Presentation and visualization of results - Critical evaluation of scientific literature in the field. **20 hrs.** ***These indicative contents provide a framework for covering the fundamental concepts, techniques, and considerations in tissue culture and histological preparation. However, the specific content and depth of coverage may vary depending on the educational program or course.***

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	***Learning and teaching strategies for a module on tissue culture and histological preparation can include a combination of the following methods:*** 1. **Lectures** Instructors can deliver lectures to provide theoretical knowledge and an overview of key concepts, techniques, and principles. This can include using visual aids such as slides, diagrams, and multimedia presentations to enhance understanding. 2. **Laboratory Sessions:** Practical hands-on laboratory sessions are crucial for developing practical skills and techniques. Students can actively participate in tissue culture and histological procedures under the guidance of instructors. This can involve cell culture maintenance, cell line establishment, tissue processing, sectioning, staining, microscopy, and data analysis.

	3. **Demonstrations**: Instructors can conduct live demonstrations of tissue culture and histological techniques, showcasing proper procedures, best practices, and troubleshooting tips. This allows students to observe and understand the techniques before attempting them independently. 4. **Group Discussions and Debates**: Encourage group discussions where students can exchange ideas, share experiences, and ask questions related to tissue culture and histological preparation. This can facilitate critical thinking, problem-solving, and the development of a deeper understanding of the subject matter. 5. **Case Studies and Problem-Solving Exercises**: Presenting real or hypothetical case studies related to tissue culture and histological challenges can engage students in problem-solving activities. This promotes critical thinking skills and allows students to apply their knowledge in practical scenarios. 6. **Research Projects or Mini-Research Assignments**: Assign research projects or mini-research assignments that require students to design experiments, carry out tissue culture or histological procedures, analyze data, and present their findings. This helps students develop research skills and fosters a deeper understanding of the subject. 7. **Guest Lectures and Industry Visits**: Invite guest speakers from research institutions, clinical laboratories, or industry to share their expertise and experiences in tissue culture and histology. Organize visits to relevant facilities to expose students to real-world applications and career opportunities. 8. **Online Resources and E-Learning:** Supplement traditional teaching methods with online resources, including interactive modules, video tutorials, virtual microscopy tools, and online quizzes or assessments. This allows students to access materials at their own pace and reinforce their understanding of the topics. 9. **Assessment Methods:** Use a variety of assessment methods, including practical assessments, laboratory reports, written assignments, quizzes, and examinations, to evaluate students' knowledge, practical skills, data analysis abilities, and critical thinking. 10**. Feedback and Reflection:** Provide timely feedback on student performance, both during laboratory sessions

	and through assessments. Encourage students to reflect on their learning experiences, identify areas for improvement, and set goals for further development. ***It is important to employ a combination of these strategies to cater to different learning styles, promote active learning, and ensure a well-rounded understanding of tissue culture and histological preparation.***

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	15% (15)	5, 10	LO # 1,2,4,5,7,8 and 9
	Assignments	2	10% (10)	2, 11	LO # 3,6,and 10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	13	LO # 11,12,13,14 and 15
Summative assessment	**Midterm Exam**	2 hr	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	
	Material Covered
Week 1	Introduction and Laboratory Design, Layout and Equipment
Week 2	Safety, Bioethics, Validation and aseptic Techniques
Week 3	Preparation Sterilization, Culture Vessels and Substrates
Week 4	Primary tissue culture ,Reagents and Media
Week 5	Subculture and Cell Lines
Week 6	Contamination , transformation and Immortalization
Week 7	**Mid-term Exam**
Week 8	Cryopreservation and Quantitation
Week 9	Cytotoxicity
Week 10	Stem Cells, Germ Cells, and Amniocytes
Week 11	Culture of Tumor Cells
Week 12	Fixation and tissue processing
Week 13	Embedding and sectioning
Week 14	Staining
Week 15	Troubleshooting in the human tissue culture
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Preparation of common culture media and reagents
Week 2	Lab 2: ell culture techniques: seeding, sub culturing, and passaging cells
Week 3	Lab 3: Isolation and establishment of primary cell cultures
Week 4	Lab 4: Overview of cell culture equipment: incubators, biosafety cabinets, microscopes, etc
Week 5	Lab 5: Identification and prevention of cell culture contamination
Week 6	Lab 6: Cell Cryopreservation and Cell Banking
Week 7	Lab 7: Introduction to cell-based assays: viability, proliferation, apoptosis
Week 8	Mid – Exam
Week 9	Independent research project utilizing tissue culture techniques
Week 10	Data analysis and presentation of research findings
Week 11	Fluorescent staining techniques for live and fixed cells
Week 12	Microscopy and image analysis of cultured cells
Week 13	Sterile technique and aseptic laboratory practices
Week 14	Maintenance and calibration of cell culture equipment
Week 15	Troubleshooting common issues in cell culture
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	***CULTURE OF ANIMAL CELLS***	No

	(A MANUAL OF BASIC TECHNIQUE AND SPECIALIZED APPLICATIONS) Sixth Edition **R. Ian Freshney** Cancer Research UK Centre for Oncology and Applied Pharmacology Division of Cancer Sciences and Molecular Pharmacology University of Glasgow	
Recommended Texts	***Cancer Cell Culture*** Methods and Protocols Second Edition Edited by **Ian A. Cree** Translational Oncology Research Centre,Queen Alexandra Hospital, Portsmouth, UK	No
Websites	Cell Culture Basics - www.cellculturebasics.com: Cell Culture Basics is a website dedicated to providing information and resources on cell culture techniques. It covers topics such as cell culture protocols, troubleshooting, and best practices, including specific sections on human tissue culture.	

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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	Medical Mycology	رمز المقرر	Path-222
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	3	6
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	3	6
امتحان نصف الفصل*	الامتحان		2	2	4
		التهيئة للامتحان	2	3	6
امتحان نهاية الفصل	الامتحان		2	3	6
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					150

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**medical mycology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-222**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Pathological Analyses		**College**	**Applied Science**	
Module Leader	Batool omran Deeb		**e-mail**	Batoolomran@uosamarra.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	principles of microbiology path 111	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	39. Introduction to Mycosis 40. The most important Fungal Infections 41. Understanding The evolution of Mycosis 42. Risk factors that contribute to Fungal Infections 43. Identify the treatment methods for Fungal Infections
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	57. Knowledge and Understanding 58. Identify the substance of the fungi 59. Identify the most important injuries and diseases they cause. 60. Understand the most important fungal diseases, their types, symptoms, and their life cycle 61. Apply diagnostic criteria, compare their types, and learn on the latest diagnostic equipment 62. Analyzing the results by comparing the result of the healthy person with the patient
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Introduction to Mycology</u> Mycology- Importance of fungi, Beneficial Effects of Fungi, Harmful Effects of Fungi, Pathogenesis of fungal diseases (Mycoses), Fungal Pathogenicity (virulence factors), and Factors predisposing to fungal infections: [10 hrs]

	Immunity to fungal infections- Cell mediated immunity, Humoral immunity, Hypersensitivity, id reaction, and hypersensivities. [10 hrs] Fungal Diseases (Mycoses)- Mycoses can be conveniently studied as: Superficial mycoses, Cutaneous mycoses, Subcutaneous mycoses, Systemic (deep) mycoses, Opportunistic mycoses, and Fungal allergies. [10 hrs] <u>Laboratory diagnosis of mycoses</u> Specimen collection, Microscopy, Culture, Serology, Skin tests, Delayed hypersensitivity reactions to fungal antigens, Molecular techniques, DNA hybridization, and PCR are useful in diagnosis of mycoses [10 hrs] <u>Dermatophytosis and Fungal Skin Infections</u> Causing agents, diagnosis , sampling, and Treatment methods. [10 hrs] <u>Subcutaneous Fungal Infections</u> Causing agents, diagnosis , sampling, and Treatment methods. [10 hrs] <u>Systemic and Yeast Blood Infections</u> Causing agents, diagnosis , sampling, and Treatment methods. [10 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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 critical 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 لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	3,6,10	LO #1, 2, 4,5,8, and 9
	Assignments	2	10% (10)	1, 6	LO # 1, 3, 6 and 9
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 11, 12 & 13
Summative assessment	**Midterm Exam**	2hr	5% (5)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Medical Mycology, Fungal Diseases (Mycoses)
Week 2	Types of mycosis

Week 3	Dermatophytosis
Week 4	Subcutaneous mycosis
Week 5	Systemic mycosis
Week 6	Blastomycosis
Week 7	Mid-term Exam
Week 8	Opportunistic Mycoses
Week 9	Examination
Week 10	Candidal infections
Week 11	Cutaneous Candidiasis
Week 12	Chronic Candidiasis
Week 13	Cardiac candidiasis
Week 14	Candidal Onychomycosis
Week 15	Aspergillosis
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: specimen collection methods
Week 2	Lab 2: Microscopical detection of pathogenic fungi in the specimen
Week 3	Lab 3: Cultivation of fungi on cultural medium plates
Week 4	Lab 4: Morphological identification of the fungi and yeasts isolates
Week 5	Lab 5: Microscopic identification of Fungal Mycelium
Week 6	Lab 6: Microscopic identification of Yeasts
Week 7	Lab 7: Germ Tube Formation Assay
Week 8	Lab 8: Chlamydospore Formation Assay
Week 9	Lab 9: Biofilm Formation Test
Week 10	Lab 10: Biochemical identification methods for fungal species

Week 11	Lab 11: Chromogenic Medium
Week 12	Lab 12: Virulence Factors Tests
Week 13	Lab 13: serological identification methods
Week 14	Lab 14: Molecular Identification techniques (PCR and DNA sequencing)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Textbook of Mycology Shubhrata R. Mishra, Discovery Publishing House, 2010	No
Recommended Texts	Scientific books and research published in refereed journals	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 (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

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

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.

توزيع العبء الدراسي للطالب

اسم المقرر	**principles of immunology**	رمز المقرر	Path-223
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/5/30**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	9	9
تحضير الدروس		تحضير الدروس اليومي	5	15	75
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	4	2	8
الامتحانات اليومية		التهيئة للامتحانات اليومية	4	3	12
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		3	1	3
		التهيئة للامتحان	12	1	12

العبء الكلي للمادة خلال الفصل	**200**
***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**	

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**principles of immunology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**Path-223**			☐ **Lecture**	
ECTS Credits	**6**			☒ **Lab**	
SWL (hr/sem)	**150**			☐ **Tutorial**	
				☐ **Practical**	
				☒ **Seminar**	
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	**Applied Science**	
Module Leader	Asmaa Aysa Mahmood		**e-mail**	asmaysy89@gmail.com	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	44. To understand the components of immune system. 45. To know the type of immunity (innate and acquired immunity) and their structure 46. To understand the cell and antibody mediated immunity. 47. To identify the structure and function of Ag and Abs. 48. To define the complement and their pathways. 49. To understand the important cytokines and their roles in immune response.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	63. Identify the basic component of immune system . 64. Define the cellular and humeral immunity 65. Recognize Aga properties 66. List the type of immunization(passive and active) 67. Summarize which type of immune response depending on the Ags type and their receptors on phagocytic cell. 68. Discuss the direct and in direct phagocytosis 69. Describe the Abs structure and different class(IgG , IgM ,IgA , IgD ,IgE) 70. Discuss the operations of complement pathways depended on Ags. 71. Discuss the various properties MHCs and their role in auto immune disease .

	72. Explain the role of different cytokines in immune response. 73. Identify the pro-inflammation and anti-inflammation of cytokines.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Immunology is the science that study the resistant to non self such as microorganisms, malignant cells, transplant tissues. Our immune host defenses can be divided into two major categories: innate (natural) and adaptive (acquired). Each sub –division have humeral and cellular components. All cells of the immune system have their origin in the bone marrow and they include 1.myeloid (neutrophils, basophils, eosinpophils, macrophages and dendritic cells)& lymphoid (B lymphocyte, T lymphocyte and Natural Killer) cells. Anatomical barriers to infections (mechanical ,chemical, biological factor). [8 hrs] Classification and General Characters immune system. . [10 hrs] Origion and functions of immune cells . [4 hrs] Ag and antibodies structure and functions Antigens are molecules that react with antibodies, whereas immunogens are molecules that induce an immune response. A **hapten** is a molecule that is not immunogenic by itself but can react with specific antibody. many drugs (e.g.,penicillins) are haptens, and the catechol in the plant oil that causes poison oak and poison ivy is a hapten.Haptens are not immunogenic because they cannot activate helper T cells. The failure of haptens to activate is due to their inability to bind to MHC proteins; they cannot bind because they are not polypeptides and only polypeptides can be presented by MHC proteins. Furthermore, haptens are univalent and therefore cannot activate B cells by themselves. [16 hrs] complement & cytokines b. The complement system consists of approximately 20 proteins that are present innormal human (and other animal) serum. Adjuvants enhance the immune response to an immunogen. They are chemically unrelated to the immunogen and differ from a carrier protein because the adjuvant is not covalently bound to the immunogen, whereas the carrier protein is. Adjuvants can act in a variety of ways; they can cause slow release of immunogen, thereby prolonging the stimulus; enhance uptake of immunogen by antigen-presenting cells; Some human vaccines contain adjuvants such as aluminum hydroxide or lipids. The three important proinflammatory cytokines are IL-1, IL-6, and

	TNF. The term *proinflammatory* means "to stimulate or enhance inflammation." The main anti-inflammatory cytokines are IL-10 and transforming growth factor β(TGFβ). [20 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy this section is to provide a thorough understanding of the components of immune system , their division and types of immune response depended on the Ags types. Integral to this section is knowledge of the appropriate cytokine produce during the response (pro or anti-inflamation cytokines) , the pathwayes of complement activation, the structure and classes of antibodies,MHC types.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3, 6	LO #1, 2, 3,4 and 5
	Assignments	1	10% (10)	6	LO # 1-5
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 11,12 and 13
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Overview of the immune system
Week 2	Components of immune system (celluler & humeral)
Week 3	Type of immunity (essential & acquired)immunity
Week 4	Origin of immune cells and their functions
Week 5	Antigens
Week 6	Antibody
Week 7	Mid-term Exam
Week 8	Complement and their pathways
Week 9	Major histocompatibility molecules (MHCs) and their types and functions in tissue

	transplantation
Week 10	phagocytosis
Week 11	Antigen recognition
Week 12	Immune response to bacterial infection
Week 13	Immune response to viral infection
Week 14	Important cytokines(part 1)
Week 15	Important cytokines(part 2)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to immune system(cells & organs)
Week 2	Lab 2: dilution method(Ag & Abs)
Week 3	Lab 3: titration
Week 4	Lab 4: Antigen preparation
Week 5	Lab 5:phagocytosis
Week 6	Lab 6: complement fixation
Week 7	Lab 7: T & B rosette
Week8	Use animals lab. In immunity
Week9	Types of Ag and Abs reactions(part 1)
Week10	Types of Ag and Abs reactions(part 2)
Week11	Principles of ELIZA

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1.Essential Clinical Immunology, Edited by John B. Zabriskie Published in the United States of America by Cambridge University Press2009, New York. 2.Review of medical microbiology and immunology,by Warren Levinson ,30th ed.,Mc Graw Hill.	Yes
Recommended Texts	Practical Immunology, Fourth Edition Frank C. Hay Olwyn M.R., Westwood Blackwell Science	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**medical physiology**	رمز المقرر	**Path-224**
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/6/1**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	3	3	9
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	3	3
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					150

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Medical physiology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-224**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Laboratory investigations		**College**	Science	
Module Leader	Zina Lafta Hassan		**e-mail**	zeena.iafta@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Principles of physiology Path-214	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- A comprehensive review of the functional activities of the various body systems. 2- Exposing the learner to the most recent advances in medical physiology knowledge. 3 - Giving students the chance to apply scientific thinking techniques. 4- Developing a student's scientific and practical personality to better equip him to serve the community through research and teaching. 5 - Through the process of writing research papers, students learn how to learn for themselves. 6- Enriching students' cognitive status by posing questions and having class discussions about them. 7- Expanding pupils' perspectives, boosting their self-esteem, and bolstering their scientific and professional personalities are the next three goals. 8- To give students the necessary practical abilities. 9- Teaching pupils how to write reports, evaluate data, and create posters. 10 - Encouraging students to use contemporary scientific sources, cite them in their capstone projects, and get them ready for research for graduate school.
Module Learning Outcomes	1- Creating graduate students with the capacity for learning and research. 2- The capacity to use laboratory instruments and apparatus and to instruct pupils on

مخرجات التعلم للمادة الدراسية	how to care for various pieces of equipment. 3- Enable pupils to perform this science-related laboratory analysis. 4- The capacity to evaluate and debate the outcomes of real-world experiments using the scientific way of thinking. 5- Teaching students how to conduct research and prepare a thesis. 6- Providing pupils with the necessary skills to prepare specialized cadres for the work market.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>The cardiovascular system:</u> Heart; cardiac cycle, Conduction system of the heart, electrocardiogram, heart sounds, cardiac output. Blood vessels; blood pressure. Blood; plasma, blood cells, preventing blood loss, blood clotting, blood grouping. [10 hrs] <u>The lymphatic system:</u> Lymphatic system functions. Lymphatic vessels. Lymphatic organs; tonsils, lymph nodes, spleen, thymus. [10 hrs] The respiratory system: Anatomy of the respiratory system. Respiratory process mechanisms; ventilation, pulmonary volumes and capacities, gas exchange, factors affecting the gas exchange, gas transport. [10hrs] <u>The digestive system:</u> Anatomy of the respiratory system. The digestion processes. The absorption mechanisms. Nutrition & metabolism. [10 hrs] <u>The urinary system:</u> Anatomy of the urinary system. Urine movement. Urine production; filtration, reabsorption, & secretion. Regulation of urine concentration and volume. [10 hrs]

	<u>The male reproductive system:</u> The male reproductive system- Anatomy of the male reproductive system. Spermatogenesis. Physiology of male reproduction. The female reproductive system- Anatomy of the male reproductive system. Follicle and oocyte development. Ovulation. Physiology of female reproduction. Fertilization and pregnancy. [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The educational institution should evaluate the academic program and develop academic courses in accordance with approved international standards to coincide with the progress of knowledge in order to ensure the achievement of quality and academic accreditation, and this institution should be capable of continuous improvement in order to achieve the desired strategic goals of educational outcomes.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	2,6,9	LO #1, 2, 4 ,5,7,and 8
	Assignments	2	10% (10)	4,11	LO # 3, 6,9 and 10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	14	LO # 11,12,13 and 14
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The cardiovascular system; the heart
Week 2	The cardiovascular system; plasma & blood cells
Week 3	The cardiovascular system; blood grouping
Week 4	The lymphatic system; anatomy & general functions
Week 5	The lymphatic system; lymphatic organs
Week 6	The respiratory system; anatomy & general functions
Week 7	The respiratory system; the respiratory process mechanisms
Week 8	Mid-term exam.
Week 9	The digestive system; digestion
Week 10	The digestive system; absorption
Week 11	The urinary system

Week 12	The male reproductive system
Week 13	The female reproductive system
Week 14	Fertilization and pregnancy
Week 15	Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	How to draw blood (phlebotomy) & blood smear preparation
Week 2	Recording the heartbeat on the kymograph
Week 3	blood cell count
Week 4	Determination of hemoglobin content
Week 5	Measurement of the hematocrit (HCT), [known as packed cell volume (PCV)].
Week 6	Measurement of clotting time & hemorrhage time.
Week 7	Determination of blood groups
Week 8	Exam.
Week 9	Measurement of pulmonary volumes by spirometer
Week 10	The salivary amylase action
Week 11	Preparation of stomach extract and study of pepsin enzyme action
Week 12	Preparing the extract of the small intestine and studying the action of its enzymes
Week 13	Preparing the extract of pancreas and studying the action of its enzymes
Week 14	The semen analysis
Week 15	Exam.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1) **Essentials of Anatomy & Physiology**. Seeley R. R., Tate P., Stephens T. D. McGraw-Hill Science Inc. US. 12th edition, 2020. 2) **Guyton and Hall Textbook of Medical Physiology**. John E. Hall & Michael E. Hall. Saunders Inc. US. 14th edition, 2020.	no
Recommended Texts	**Guyton and Hall Textbook of Medical Physiology**. John E. Hall & Michael E. Hall. Saunders Inc. US. 14th edition, 2020.	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	parasitic helminths	رمز المقرر	Path-225
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	5
SWL(hr/sem)	125	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	7	14
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	2	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	3	6
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		3	1	3
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					125

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**parasitic helminths**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-225**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	**pathological analyses**		**College**	**Science**	
Module Leader	Maroof Sabti Juma Al-ammash		**e-mail**	Maroof. Al-ammash@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	50. This Module covers the basics of parasitology of humans and includes the use of microscopy, culture, serology and molecular biology principles and techniques for the diagnosis of infections in humans. The aim of this Module is to develop an understanding of the parasitology relating to human disease. 51. The Module does assume a good grounding in biological science. An undergraduate 52. knowledge of microbiology and/or employment in a medical microbiology laboratory would 53. protozoa is a specialized discipline within medical microbiology. A thorough understanding of parasitology requires an in-depth knowledge of the detection, identification, and treatment of parasites. The candidate would be required to know how to collect, transport and store appropriate samples. 54. The identification of protozoa is very important. The characteristics that differentiate species are of primary significance. Identification techniques including fixation and staining of samples for microscopy and culture techniques will be covered. Other available techniques for the diagnosis of infection include serology, molecular biology and identification. 55. The choice of treatment of infection, the public health risks and epidemiology of each helminth will be covered but is of lower importance to the candidate.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	74. Identify the common causative agents, occurrence and modes of transmission of the common faeco-oral diseases caused by intestinal helminth and roundworms. 75. List the various terms associated with helminth

	76. Explain how you would diagnose and treat cases of amoebiasis, giardiasis, infection, based on their symptoms and signs 77. Discuss the reaction and involvement of atoms in electric circuits. 78. Describe how you would apply prevention and control measures against these common helminth. 79. Define helminth. 80. Identify types of helminth 81. Discuss symptoms and disease of helminth
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Parasitology is a study of the phenomenon of parasites and parasitism. Medical parasitology traditionally has included the study of three major groups of animals: parasitic protozoa, parasitic helminths (worms), and those arthropods that directly cause disease or act as vectors of various pathogens. a. Types of helminth. b. Types of hosts. c. Host-Parasite Relationship. d. Classification and General Characters of Human Parasites. e. Salient features of hehminth f. CLASSIFICATION OF helminth [9 hrs] Classification and General Characters of Human Parasites. . [9 hrs] Life cycle stages of helminth . [10 hrs] Fundamentals Most parasitic helminth. Reproduction is either asexual (simple binary fission) or by both asexual and sexual processes. Nematode: includes huge numbers of worms which are either free living or parasitic in nature. Parasitic type found in human, animal & plant all nematode are diecious (male & female) have separated sex. [24 hrs] tissue & blood helminth Nematodes are generally elongate, cylindrical, and tapered at both ends. The

	basic body design is a tube within a tube, the outer tube being the body wall and underlying muscles, and the inner tube the digestive tract. Between the tubes is the fluid-filled pseudocoelom in which the reproductive system and other structures are found. Sexual dimorphism (dioecious) is evident: at the curved, posterior end of the male are a copulatory organ and other specialized organs, and males are also usually smaller than females. Parasitic nematodes vary widely in size with species. Nematodes are colorless and vary from translucent to opaque when examined alive. It is not uncommon for some to absorb colored matter from surrounding host tissues or fluids. c. [18 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 critical 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 لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	LO #1, 2,3,4, 6,7,8 and 9
	Assignments	2	10% (10)	1, 6	LO # 3, 4, and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 11,12 and 14
Summative assessment	Midterm Exam	2 hr	10% (10)	9	LO # 1-8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Helminthes
Week 2	Nenatohelminthes
Week 3	Order: Ascaridata Ascaris
Week 4	Order :Trichelata (Trichnela)
Week 5	Order :Trichelata (Trichuris)
Week 6	Order: Oxyurata Enterobius
Week 7	Order: Strongylata Ancylostoma
Week 8	Order: Strongylata Necator
Week 9	Mid exam.

Week 10	Phylum : Platyhelminth
Week 11	Order: Echinostomata Fasciala
Week 12	Order: Strigeata Schistosoma
Week 13	Order:Opisthorchiata Clonorchis
Week 14	Order: Cyclophyllidea Taenia
Week 15	Order: Cyclophyllidea Echinococcus

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction Helminthes
Week 2	Lab 2: Ascaridata Ascaris
Week 3	Lab 3: Trichelata (Trichuris)
Week 4	Lab 4: Trichnela
Week 5	Lab 5: Oxyurata Enterobius
Week 6	Lab 6: Ancylostoma
Week 7	Lab 7: Necator
Week 8	Lab 8 Clonorchis
Week 9	Lab 9 Platyhelminth
Week 10	Lab 10 Strongylata
Week 11	Lab 11 Fasciala
Week 12	Lab 12 Schistosoma
Week13	Lab 13 Taenia
Week 14	Lab 14 Echinococcus

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	A Manual of Medical Helminthology Ralph Muller	No
Recommended Texts	Medical Helminthology J. M. Watson	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	biochemistry	رمز المقرر	Path-226
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	5
SWL(hr/sem)	125	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		0	0	0
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	10	10
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	0	0	0
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	3	6
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	9	1	9
العبء الكلي للمادة خلال الفصل					125

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**biochemistry**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Path-226**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	**pathological analyses**		**College**	**Applied science**	
Module Leader	Mohammed Hameed Mahal		**e-mail**	mohammedhameed@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**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	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	56. Understand how the chemical properties of molecules determine the ways in which they interact and react with each other. 57. Understand different types of chemical reactions and how they are used by living organisms. 58. Use a variety of models to understand and explain chemical and biochemical phenomena, being aware of their strengths and weaknesses. 59. Apply thermodynamic and kinetic principles to explain the molecular driving forces in chemical and biochemical reactions. 60. Develop effective and safe chemical and biochemical laboratory skills that require use of the methods and instrumentation of modern biochemistry. 61. To integrate content, skills, critical thinking and the published works of others to design feasible experiments and independent research projects employing the scientific method. 62. To demonstrate the ability to analyze and interpret data, including critically analyzing experimental design and data interpretation in the primary literature. 63. To develop scientific writing skills through the writing of papers using scientific conventions of format, succinctness, objectivity and accuracy. 64. To develop oral communication skills within the context of scientific conventions of format, succinctness, objectivity and accuracy through the oral and poster presentations
Module Learning Outcomes	Students will be able to explain/describe the synthesis of proteins, lipids, nucleic acids, and carbohydrates and their role in metabolic pathways along with their regulation at the epigenetic, transcriptional, translational, and post-translational levels including RNA and protein folding, modification, and degradation. Regulation by non-coding RNAs will be tied to the developmental and physiological functioning

مخرجات التعلم للمادة الدراسية	of the organism.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Theory Parts Carbohydrates Carbohydrates include sugars and starches. These compounds contain only the elements carbon, hydrogen, and oxygen. Functions of carbohydrates in living things include providing energy to cells, storing energy, and forming certain structures, such as the cell walls of plants. The monomer that makes up large carbohydrate compounds is called a monosaccharide. The sugar glucose, represented by the chemical model below, is a monosaccharide. It contains six carbon atoms (C) and several atoms of hydrogen (H) and oxygen (O). Thousands of glucose molecules can join together to form a polysaccharide such as starch. (15 hrs) Lipids Lipids include fats and oils. They contain primarily the elements carbon, hydrogen, and oxygen, although some lipids contain additional elements such as phosphorus. Functions of lipids in living things include storing energy, forming cell membranes, and carrying messages. Lipids consist of repeating units that join together to form chains called fatty acids. Most naturally occurring fatty acids have an unbranched chain of an even number (generally from 4 to 28) of carbon atoms. (15 hrs) Proteins Proteins include enzymes, antibodies, and many other important compounds in living things. They contain the elements carbon, hydrogen, oxygen, nitrogen, and sulfur. The functions of proteins are very numerous. They include helping cells keep their shape, making up muscles, speeding up chemical reactions, and carrying messages and materials. The monomers that make up large protein compounds are called amino acids. There are 23 different amino acids that combine into long chains (called polypeptides) to form the building blocks of a vast array of proteins in living things. (10 hrs) Nucleic Acids Nucleic acids include the molecules DNA (deoxyribonucleic acid) and RNA (ribonucleic

	acid). They contain the elements carbon, hydrogen, oxygen, nitrogen, and phosphorus. Their functions in living things are to encode instructions for making proteins, to help make proteins, and to pass the instructions from parents to offspring. The monomer that makes up nucleic acids is the nucleotide. All nucleotides are the same except for a component called a nitrogen base. There are four different nitrogen bases, and each nucleotide contains one of these four bases. The sequence of nitrogen bases in the chains of nucleotides in DNA and RNA makes up the code for protein synthesis, called the genetic code. The animation below represents the very complex structure of DNA, which consists of two chains of nucleotides. (10 hrs) Practical Parts Include special tests to detect 1- Monosaccharides and their types. Detection of ketone and aldehyde 2- Fats and their types, saturated and unsaturated fats 3- Amino acids and their types, aromatic and alphatic acids (10 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Biochemistry is a very difficult subject, as it covers so many areas. Therefore, it is necessary to start teaching biochemistry from the basic concepts. It is far more important to teach students about conducting experiments in a laboratory in a clear and easy way. And then, the students should learn the key topics. It requires many things to be learned. So, when you are teaching biochemistry, you should start with the basics first. Students should understand the basic concepts of chemistry, and they should be able to follow along. After that, you should move on to the more complicated topics

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	2,5, 11	LO 3, 4, 9 and 10
	Assignments	2	10% (10)	7, 13	LO 6, 11, and 12
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	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	
	Material Covered
Week 1	Introduction to Biochemistry

Week 2	**Carbohydrates**
Week 3	Basic of CHO
Week 4	Classification of CHO
Week 5	Classification of CHO
Week 6	**Lipids**
Week 7	Midterm exam
Week 8	Nature of Lipids in cells
Week 9	**Amino Acids**
Week 10	Classification of Amino acids according to its structure
Week 11	Classification of Amino acids according to its essential and non-essential
Week 12	**Proteins**
Week 13	Function of Proteins
Week 14	Classification of Protein according to its structure
Week 15	Nucleic Acids
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to biochemistry Lab
Week 2	Lab 2: Carbohydrates tests
Week 3	Lab 3: Ketones and Aldehyde tests
Week 4	Lab 4: Mono-carbohydrates tests

Week 5	Lab 5: di and poly saccharides tests
Week 6	Lab 6: Amino acids test
Week 7	Lab 7: Types of Amino acids Tests
Week 8	Lab 8: proteins tests
Week 9	Lab 9: Lipids tests
Week 10	Lab 9: types of lipids Tests

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Fundamentals of Biochemistry, Lippincott Illustrated Reviews 2018	Yes
Recommended Texts	clinical chemistry for medical students DM Vasodivan, 2016	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	infectious diseases	رمز المقرر	Path-311
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	0	0	0
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		1	1	1
		التهيئة للعرض التقديمي	4	3	12
الامتحانات اليومية		التهيئة للامتحانات اليومية	4	2	8
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	8	1	8
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					150
*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية					

توقيع :

اسم مدرس المادة:

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	clinical immunology	رمز المقرر	Path-312
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	9	9
تحضير الدروس		تحضير الدروس اليومي	5	15	75
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	4	2	8
الامتحانات اليومية		التهيئة للامتحانات اليومية	4	3	12
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		3	1	3
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					200
*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية					

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**principles of immunology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-223**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Asmaa Aysa Mahmood		**e-mail**	Email: asmaysy89@gmail.com	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	65. To understand the components of immune system. 66. To know the type of immunity (innate and acquired immunity) and their structure 67. To understand the cell and antibody mediated immunity. 68. To identify the structure and function of Ag and Abs. 69. To define the complement and their pathways. 70. To understand the important cytokines and their roles in immune response.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	82. Identify the basic component of immune system . 83. Define the cellular and humeral immunity 84. Recognize Aga properties 85. List the type of immunization(passive and active) 86. Summarize which type of immune response depending on the Ags type and their receptors on phagocytic cell. 87. Discuss the direct and in direct phagocytosis 88. Describe the Abs structure and different class(IgG , IgM ,IgA , IgD ,IgE) 89. Discuss the operations of complement pathways depended on Ags. 90. Discuss the various properties MHCs and their role in auto immune disease . 91. Explain the role of different cytokines in immune response. 92. Identify the pro-inflammation and anti-inflammation of cytokines.
Indicative Contents	Indicative content includes the following.

المحتويات الإرشادية	
	Immunology is the science that study the resistant to non self such as microorganisms, malignant cells, transplant tissues. Our immune host defenses can be divided into two major categories: innate (natural) and adaptive (acquired). Each sub –division have humeral and cellular components. All cells of the immune system have their origin in the bone marrow and they include 1.myeloid (neutrophils, basophils, eosinpophils, macrophages and dendritic cells)& lymphoid (B lymphocyte, T lymphocyte and Natural Killer) cells. Anatomical barriers to infections (mechanical ,chemical, biological factor). [8 hrs] Classification and General Characters immune system. . [10 hrs] Origion and functions of immune cells . [4 hrs] Ag and antibodies structure and functions Antigens are molecules that react with antibodies, whereas immunogens are molecules that induce an immune response. A **hapten** is a molecule that is not immunogenic by itself but can react with specific antibody. many drugs (e.g.,penicillins) are haptens, and the catechol in the plant oil that causes poison oak and poison ivy is a hapten.Haptens are not immunogenic because they cannot activate helper T cells. The failure of haptens to activate is due to their inability to bind to MHC proteins; they cannot bind because they are not polypeptides and only polypeptides can be presented by MHC proteins. Furthermore, haptens are univalent and therefore cannot activate B cells by themselves. [16 hrs] complement & cytokines d. The complement system consists of approximately 20 proteins that are present innormal human (and other animal) serum. Adjuvants enhance the immune response to an immunogen. They are chemically unrelated to the immunogen and differ from a carrier protein because the adjuvant is not covalently bound to the immunogen, whereas the carrier protein is. Adjuvants can act in a variety of ways; they can cause slow release of immunogen, thereby prolonging the stimulus; enhance uptake of immunogen by antigen-presenting cells; Some human vaccines contain adjuvants such as aluminum hydroxide or lipids. The three important proinflammatory cytokines are IL-1, IL-6, and TNF. The term *proinflammatory* means “to stimulate or enhance inflammation.” The main anti-inflammatory cytokines are IL-10 and transforming growth factor β(TGFβ). [20 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy this section is to provide a thorough understanding of the components of immune system , their division and types of immune response depended on the Ags types. Integral to this section is knowledge of the appropriate cytokine produce during the response (pro or anti-inflamation cytokines) , the pathwayes of complement activation, the structure and classes of antibodies,MHC types.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	3, 6	LO #1, 2, 3,4 and 5
	Assignments	1	10% (10)	6	LO # 1-5
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 11,12 and 13
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Overview of the immune system
Week 2	Components of immune system (celluler & humeral)
Week 3	Type of immunity (essential & acquired)immunity
Week 4	Origin of immune cells and their functions
Week 5	Antigens
Week 6	Antibody
Week 7	Mid-term Exam
Week 8	Complement and their pathways
Week 9	Major histocompatibility molecules (MHCs) and their types and functions in tissue transplantation
Week 10	phagocytosis
Week 11	Antigen recognition
Week 12	Immune response to bacterial infection
Week 13	Immune response to viral infection
Week 14	Important cytokines(part 1)
Week 15	Important cytokines(part 2)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to immune system(cells & organs)
Week 2	Lab 2: dilution method(Ag & Abs)
Week 3	Lab 3: titration
Week 4	Lab 4: Antigen preparation
Week 5	Lab 5:phagocytosis
Week 6	Lab 6: complement fixation
Week 7	Lab 7: T & B rosette
Week8	Use animals lab. In immunity
Week9	Types of Ag and Abs reactions(part 1)
Week10	Types of Ag and Abs reactions(part 2)
Week11	Principles of ELIZA

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1.Essential Clinical Immunology, Edited by John B. Zabriskie Published in the United States of America by Cambridge University Press2009, New York. 2.Review of medical microbiology and immunology,by Warren Levinson ,30th ed.,Mc Graw Hill.	Yes
Recommended Texts	Practical Immunology, Fourth Edition Frank C. Hay Olwyn M.R., Westwood Blackwell Science	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**medical molecular biology**	رمز المقرر	Path-313
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/6/1**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	**محاضرات في القاعة الدراسية**		**2**	**15**	**30**
المختبر	**دوام المختبر**		**2**	**15**	**30**
المناقشات	**المناقشات**		0	0	0
مشروع عملي*	**مشروع عملي**		**0**	**0**	**0**
		التهيئة للمشروع	0	0	0
تحضير الدروس		**تحضير الدروس اليومي**	4	**15**	60
العروض التقديمية*	**القاء العرض التقديمي**		1	2	2
		التهيئة للعرض التقديمي	2	2	4
الامتحانات اليومية		**التهيئة للامتحانات اليومية**	4	2	8
امتحان نصف الفصل*	**الامتحان**		**0**	**0**	**0**
		التهيئة للامتحان	5	**1**	5
امتحان نهاية الفصل	**الامتحان**		**3**	**1**	**3**
		التهيئة للامتحان	8	**1**	8
العبء الكلي للمادة خلال الفصل					150
***لا توجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**					

توقيع :

اسم مدرس المادة: :

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**medical molecular biology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-313**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	3		**Semester of Delivery**	5	
Administering Department	**pathological analyses**		**College**	**Applied** science	
Module Leader	Marwan Qahtan Jasim		**e-mail**	marwan.walady@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof		**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	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	71. Understanding the molecular biology theory. 72. To understand nucleic acids basic and 3D structure. 73. This course deals with the central dogma of molecular biology. 74. Understanding the flow of genetic information. 75. To understand how genes are expressed via transcription and translation. 76. Understanding the control of gene expression and its relationship with diseases. 77. Understanding the medical applications of molecular biology techniques.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	93. Recognize the structure of nucleic acids. 94. Understanding how DNA replicates. 95. Knowledge of transcription and how RNA is produced from DNA. 96. Understanding how genetic information is decoded via translation to produce protein. 97. Knowing the difference between prokaryotic and eukaryotic gene structure and function. 98. Obtain the skill to perform PCR technique. 99. Experimental design of PCR technique to be used for diagnostic purposes. 100. Identify different mechanisms of gene control. 101. Linking the gene control with disease control. 102. Performing experiment of reverse transcription.

	103. Analysis of DNA print. 104. Estimation the level of gene expression. 105. Understanding how DNA is digested and ligated enzymatically. 106. Performing cells transformation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A- Molecular biology theory and nucleic acids structure The concept of molecular biology, nucleic acids basic structure, nucleic acids three dimensional structure, the difference between DNA and RNA, types of RNA and their functions, the difference between the prokaryotic and eukaryotic gene structure and function. [20 hrs] Part B- Nucleic acids functions DNA replication, transcription, and protein translation [15 hrs] Part C- Gene control basic mechanisms. [10 hrs] Lactose operon, tryptophan operon, gene silencing mechanisms. Part D- Molecular biology basic techniques. Conventional polymerase chain reaction, real-time PCR as a diagnostic tool as well as a tool for gene expression estimation, DNA print, cDNA technology [17 hrs] Part E- Molecular modification techniques [13 hrs] Restriction digestion of DNA, ligation, and transformation.
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 laboratory, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, and by considering type of simple experiments.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.74
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	15% (15)	2,6,9	1,2,4,5,7,8
	Assignments	2	10% (10)	4,11	3,6,10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	14	11,12,13,14
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction – Molecular biology Theory
Week 2	Nucleic acids basic structure
Week 3	Nucleic acids 3D structure
Week 4	DNA replication
Week 5	Transcription
Week 6	Translation
Week 7	Conventional PCR
Week 8	Mid-exam
Week 9	Comparison between prokaryotic and eukaryotic genome
Week 10	cDNA technology
Week 11	Gene control in eukaryotes
Week 12	DNA print
Week 13	Estimation the level of protein expression
Week 14	Restriction enzymes and ligation
Week 15	Transformation
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	**Material Covered**
1	laboratory safety and precautions

2	Working with micropipettes
3	Buffers and solutions preparations
4	DNA extraction from blood
5	DNA extraction from bacteria
6	DNA extraction from tissues
7	RNA extraction
8	Mid-exam
9	Agarose gel electrophoresis
10	PCR
11	restriction enzymes
12	cDNA technology
13	ligation
14	transformation
15	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Principles and Techniques of Biochemistry and Molecular Biology Seventh edition, John Walker, 2010	no
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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	Pathological analysis	رمز المقرر	Path-314
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/5/30**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	8	8
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	4	2	8
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	3	6
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	5	1	5
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	14	1	14
العبء الكلي للمادة خلال الفصل					150

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**pathological analyses**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** **Science Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-314**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	5		**Semester of Delivery**	1	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Faesal Ghaze Hassen		**e-mail**	Faysal.alsamarraie @uosamarra.edu.iq	
Module Leader's Acad. Title	Professor		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Principle of pathological analysis path 212	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	78. To identify between tests according the samples type. 79. To understand of introduction for pathological analysis 3.To understand of complete blood count. 80. To understand of blood groups and Rh system 4.To understand of kidney function tests. 81. To understand of liver function tests.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	.1.Able to understand common aspects between different types of tests. 2.able to numerate the type of diabetes. 107. Able to describe the interactions between antibody and antigens. 108. Able to define medical conditions to relation with tests. 109. Able to identify of causes of disease with tests. 110. Able to understand of complications of diabetes. 111. Able to understand of functions of liver and kidney

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1-blood sampling,blood group,ESR,WBC.RBC,PLATELET,WBC Diffrental,bleeding time,clotting time,prothrombin time,GUE,GST,SEMEN analysis,pregnancy test (30 hours) 2-practical lab tests: blood sampling,blood group,ESR,WBC.RBC,PLATELET,WBC Diffrental,bleeding time,clotting time,prothrombin time,GUE,GST,SEMEN analysis,pregnancy test (30 hours) 3-discusion (15 hours).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The primary approach that will be used to present this module is to promote students engagement in the activities while also enhancing and broadening their critical thinking abilities. This will be accomplished through lectures, interactive tutorials, and taking into account the kinds of easy experiments that include certain sampling tasks that the students will find engaging.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – blood sampling
Week 2	Blood sampling
Week 3	Blood group
Week 4	ESR
Week 5	WBC count
Week 6	RBC count
Week 7	Platelet count & WBC Differential cells
Week 8	Mid term exam
Week 9	Bleeding time

Week 10	Clotting time
Week 11	Prothrompin time
Week 12	GUE
Week 13	GUS
Week 14	Semen analysis
Week 15	Pregnancy test
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week 1	Lab :Introduction – blood sampling
Week 2	Lab:blood sampling
Week 3	Lab 3: Blood group
Week 4	Lab 4: ESR
Week 5	Lab 5: WBC count
Week 6	Lab 6: RBC count
Week 7	Lab 7: Filters
Week 8	WBC Differential cells
Week 9	Bleeding time
Week 10	Clotting time
Week 11	Prothrompin time
Week 12	GUE

Week 13	GSE
Week 14	Semen analysis
Week 15	Pregnancy test

Learning and Teaching Resources مصادر التعلم والتدريس		
	Mosby's Manual of Diagnostic and Laboratory Tests (Pagana, Mosby's Manual of Diagnostic and Laboratory Tests) 5th Edition by Kathleen Deska Pagana PhD RN (Author), Timothy J. Pagana MD FACS (Author	**Available in the Library?**
Required Texts	Laboratory and Diagnostic Tests A MANUAL OF NINTH EDITION Frances Talaska Fischbach, RN, BSN, MSN	no
Recommended Texts		No
Websites	https://medlineplus.gov/laboratorytests.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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**microbial diagnosis**	رمز المقرر	Path-315
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/5/30**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		**2**	**15**	**30**
المختبر	دوام المختبر		**2**	**15**	**30**
المناقشات	المناقشات		**1**	**15**	**15**
مشروع عملي*	مشروع عملي		**0**	**0**	**0**
		التهيئة للمشروع	**1**	10	10
تحضير الدروس		تحضير الدروس اليومي	**2**	**15**	**30**
العروض التقديمية*	القاء العرض التقديمي		**0**	**0**	**0**
		التهيئة للعرض التقديمي	**2**	2	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	**2**	**3**	**6**
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	8	1	8
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	13	**1**	13
العبء الكلي للمادة خلال الفصل					**150**
***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**					

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**microbial diagnosis**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-315**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	3		**Semester of Delivery**	3	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Osama Nadhom Nijris		**e-mail**	usama.n@uosamarra.edu.iq	
Module Leader's Acad. Title	Professor		**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	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	82. This Module covers the diagnostic of microbiology and includes the use of microscopy, culture, serology and molecular biology principles and techniques for the diagnosis of infections in humans. The aim of this Module is to develop an understanding of the parasitology relating to human disease. 83. The Module does assume a good grounding in biological science. An undergraduate 84. knowledge of microbiology and/or employment in a medical microbiology laboratory would 85. -Evaluate the factors that are involved with the epidemiology, pathogenesis, detection, diagnosis and control of infectious diseases (including antibiotics, vaccines and antibody therapies). 86. . Analyse and discuss the results of practical experiments in an area related to disease epidemiology and/or control, or antibiotic sensitivity testing. 87. Evaluate drug strategies for the control of infectious diseases and the current problems associated with the development of drug resistance.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	112. Critically evaluate the impact of laboratory results, testing methodologies, and Standard Operating Procedures on patient pathways. 2 113. Critically appraise recent developments in the field of Infection Science, in relation to laboratory service improvement. 3 114. Critically discuss the role of multidisciplinary teaming on effective laboratory service provision in Infection Science. 115. indicative Module Content Critical evaluation of clinical, diagnostic and research approaches within clinical microbiology, bacteriology 116. the student after graduationwill be able to work in diagnostic laboratories in hospitals and other central labs, as well as teaching in high schools . 117. Define causative of diseases . 118. Identify types of microbiology
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Microbiologists work in public health laboratories, hospital laboratories, reference or independent laboratories, and physician office laboratories (POLs). Depending on the level of service and type of testing of each facility, in general a microbiologist will perform one or more of the following functions: 1- Cultivation (growth), identification, and antimicrobial susceptibility testing of microorganisms

	2- Direct detection of infecting organisms by microscopy 3- Direct detection of specific products of infecting organisms using chemical, immunologic, or molecular techniques 4- Detection of antibodies produced by the patient in response to an infecting organism (serology) [30 hrs] Overview of Bacterial Identification Methods and Strategies. [10 hrs] Quality in the Clinical Microbiology Laboratory and infection Control [10 hrs] Diagnosis by Organ System (part 1) [10 hrs] 1- identify and describe some of the medical consequences that occur when the blood stream is infected by microorganisms. 2- List the most common etiologic agents responsible for lower respiratory disease and pneumonia in patients of various ages and categories: children <5 years of age, school-age children, young adults, older adults, and immunocompromised patients. 3- Identify the principal causative organism of pharyngitis; name other organisms capable of causing pharyngitis 4- Define meningitis, and describe the two major types of meningitis including the etiologic agents Diagnosis by Organ System (part 2). [10 hrs] 1- List the common types of eye infections, the associated etiologic agents, and the at-risk patient population for each. 2- Explain host and microbial factors that determine whether bacteria will be able to colonize and cause a urinary tract infection 3- Describe the normal flora of the male and female genital tracts, and differentiate normal flora from pathogenic organisms 4- Identify nonbacterial and bacteria agents of infection of the gastrointestinal tract, and name their associated diseases.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	the fundamental courses for laboratory investigations students, where it enables the student to recognize the most important bacterial species causing various infections whether they were endogenous or community acquired or even opportunistic, also it summarize the most important diagnostic methods and differentiate different species which eventually make the student able to achieve the diagnosis of pathogenic bacteria from various specimens. .

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	2,5,11	LO #1, 3, 4,9,10 and 11
	Assignments	2	10% (10)	7,13	LO # 6,11 and 12
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Laboratory Safety and Specimen Management
Week 2	Traditional Cultivation and Identification of microbial
Week 3	Nucleic Acid-Based Analytic Methods for Microbial Identification and Characterization
Week 4	Immunochemical Methods Used for Organism Detection,
Week 5	Laboratory Methods and Strategies drfyjhilgthggolAntimicrobial Susceptibility Testing
Week 6	Diagnosis of Bloodstream Infections
Week 7	Diagnosis of infection of the Lower Respiratory System
Week 8	Mid term exam
Week 9	Diagnosis of Meningitis, Encephalitis, and other Central Nervous System
Week 10	Diagnosis of Infections of the Eyes, Ears, and Sinuses,
Week 11	Diagnosis of Infections of the Urinary
Week 12	Diagnosis of Genital Tract Infections
Week 13	Diagnosis of Gastrointestinal Tract Infections
Week 14	Diagnosis of Skin, Soft Tissue, and Wound Infections
Week 15	Diagnosis of Normally Sterile Body Fluid Marrow, and Solid Tissue
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: COLLECTION, TRANSPORT AND EXAMINATION OF SPECIMEN
Week 2	Lab 2: Collection techniques
Week 3	Lab 3: Transport of microbiological specimens collected in a hospital
Week 4	Lab 4: Collection, Transport and examination of sputum specimens
Week 5	Lab 5: Collection, Transport and examination of Blood specimens
Week 6	Lab 6: Collection, transport and examination of mouth and throat specimens
Week 7	Lab 7: Collection, transport and examination of eye specimens
Week 8	Lab 8: Collection, transport and examination of effusions (synovial, pleural, pericardial, ascitie and

	hydroceles fluids)
Week 9	Exanimation
Week 10	Lab 9: Colleciton, transport and examination of cerebrospinal fluid
Week 11	Lab 10: Collection, Transport and Examination of urogenital specimen
Week 12	Lab 11: Collection, transport and examination of skin specimen
Week 13	Lab 12: Collection, Transport and examination of Ear Discharges
Week 14	Lab 13: Collection, transport and examination of stool specimen

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Bailey _ Scott_s Diagnostic Microbiology, 13th Edition 2014	Yes
Recommended Texts	Textbook of Diagnostic Microbiology 5th Ed 2015	No

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 (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

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جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	research methodology	رمز المقرر	Path-321
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	4
SWL(hr/sem)	100	تاريخ الاعداد	2023/5/30

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر				
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	0	0	0
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		1	1	1
		التهيئة للعرض التقديمي	2	2	2
الامتحانات اليومية		التهيئة للامتحانات اليومية	1	2	2
امتحان نصف الفصل*	الامتحان		1	1	1
		التهيئة للامتحان	5	1	5
امتحان نهاية الفصل	الامتحان		3	1	3
		التهيئة للامتحان	10	1	10
العبء الكلي للمادة خلال الفصل					100

*لا توجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	research methodology	رمز المقرر	Path-321
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	4
SWL(hr/sem)	100	تاريخ الاعداد	2023/5/30

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر				
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	0	0	0
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		1	1	1
		التهيئة للعرض التقديمي	2	2	2
الامتحانات اليومية		التهيئة للامتحانات اليومية	1	2	2
امتحان نصف الفصل*	الامتحان		1	1	1
		التهيئة للامتحان	5	1	5
امتحان نهاية الفصل	الامتحان		3	1	3
		التهيئة للامتحان	10	1	10
العبء الكلي للمادة خلال الفصل					100

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توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**research methodology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐**Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-321**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	3		**Semester of Delivery**	6	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Marwa Jasim Mohammed		**e-mail**	marwa.jasim@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	PhD	
Module Tutor	non		**e-mail**	E-mail	
Peer Reviewer Name	non		**e-mail**	E-mail	
Scientific Committee Approval Date	1/6/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	88. To develop problem solving skills and understanding of scientic concepts 89. To understand science , and theory and interpretation 90. This course deals with the basic concept of scientific research . 91. This is the basic subject for writing the references in search . 92. To understand obstacles in scientific research . 93. To learing the search writing .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	94. Recognize references styles . 95. List the various terms associated with curriculum term . 96. Know what is mean of scientific collection data . 97. Discuss the stages of scientific research . 98. Describe the quetionnare . 99. Define the science and development . 100. Identify the basic circuit elements of scientific research . 101. Discuss the operations of scientific research parts . 102. Discuss the various interview . 103. Explain the scientific research engines .
Learning and Teaching Strategies	

استراتيجيات التعلم والتعليم	
Strategies	104. 105. Type something like: The main strategy that will be learn the students the methods of the methodology of scientific research for writing the research in the next fourth stage and know the steps of scientific research and the types of scientific research 106. As well as writing the proposal of a scientific research, while at the same time refining and expanding their critical 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. 107.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4, 12	LO #1, 2, 10 and 14
	Assignments	2	10% (10)	3, 11	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	2	10% (10)	2,12	LO # 5, 8 and 10

Summative assessment	**Midterm Exam**	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	108. Introduction in Scientific Methodology
Week 2	109. Basics of scientific concepts
Week 3	110. Hypothesis and deduction
Week 4	111. Theory and Interpretation
Week 5	112. Science ,its impotance and their purpose
Week 6	113. Methods of collection data of scientific research
Week 7	114. Mid-term Exam + scientific research parts
Week 8	115. Condition and requirements of scientific research
Week 9	116. Obstacles to scientific research
Week 10	117. scientific research steps
Week 11	118. scientific research engines
Week 12	119. scientific research references styles academic writing
Week 13	120. Stages of scientific research developments
Week 14	121. How to write references
Week 15	122. Harvard style
Week 16	123. Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Non
Week 2	Non
Week 3	Non
Week 4	Non
Week 5	Non
Week 6	Non
Week 7	Non

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Research Methodology	yes
Recommended Texts	Fundamentals of scientific concepts	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance

(50 - 100)	**B -** Very Good	جيد جدا	80 - 89	Above average with some errors
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Fail Group	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

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

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**enzymology**	رمز المقرر	Path-323
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/6/1**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	10	10
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	2	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	4	3	12
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	8	1	8
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	13	1	13
العبء الكلي للمادة خلال الفصل					**150**

***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**enzymology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-323**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	3		**Semester of Delivery**	6	
Administering Department	**pathological analyses**		**College**	**Applied science**	
Module Leader	Humam Ezzat Mohammed		**e-mail**	Humam.ezzat36@uosamarra.edu.iq	
Module Leader's Acad. Title	Instructor		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	To understand the kinetics and mechanisms of action of enzymes, to become familiar with the basic methods of studying enzymes, and to appreciate how individual reactions are controlled and integrated into the metabolic pathways of the cell. Acquired theoretical and experimental knowledge will enable students to find appropriate employment in different development, scientific-research laboratories, or to continue their further studies in biochemistry or related disciplines.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon successful completion of this course, students should be able to: explain relationship between the structure and function of enzymes; explain how enzymes are able to increase speed of an biochemical reaction in sense of thermodynamics, kinetics and molecular interactions; use catalytic strategies in interpreting mechanisms of enzymatic action; interpret and explain significant mechanisms of regulation of enzymatic action and specifies importance of enzymes in regulation of metabolism; apply appropriate methods for determination of catalytic parameters and activity of enzymes and resolve problems considering kinetics and thermodynamics of enzymatic reactions; analyze options for applying enzymes and their inhibitors in medicine and various industries; apply theoretical, practical, IT and statistical knowledge during processing experimental results and their correct interpretation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Theoretical instructions Introduction to enzymology, basic properties of enzymes. Classification and nomenclature of enzymes. Enzymes kinetics. Inhibition. Influence of temperature and pH on enzymatic reactions.(15hrs) Basics of catalysis. Mechanisms of enzymatic reactions. Regulatory enzymes. Regulation of enzymatic action. Enzymes in organized systems(15hrs) study of the activity and properties of enzymes in specimens taken from patients, as an aid to the diagnosis and understanding of disease (15 hrs) Practical instructions: Experimental exercises in generating, analysis and processing of kinetic data in accordance with theoretical program of the course. [15 hrs] Use of enzymes in clinical diagnostics. (10 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Clinical enzymology is the study of the activity and properties of enzymes in specimens (usually of blood) taken from patients, as an aid to the diagnosis and understanding of disease. Research in many areas of enzymology is undertaken to strengthen the foundations on which the clinical interpretation of such enzyme measurements rests. Some aspects of this research are briefly described.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	2,5, 11	LO 3, 4, 9 and 10
	Assignments	2	10% (10)	7, 13	LO 6, 11, and 12
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	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	
	Material Covered
Week 1	Introduction - . Enzyme characteristics and properties
Week 2	Enzyme nomenclature/classification
Week 3	kinetic concepts
Week 4	Briggs-Haldane steady-state treatment , Michaelis constant (Km)
Week 5	Enzyme inhibition
Week 6	Classification of inhibition
Week 7	Midterm exam
Week 8	types and kinetics
Week 9	Isoenzymes and isozymes
Week 10	Enzyme regulation,
Week 11	Partial Proteolysis , Phosphorylation, adenylylation, disulphide reduction
Week 12	Serum Enzymes
Week 13	Factors affecting enzyme levels in blood
Week 14	Specific enzymes
Week 15	Metabolic Enzymes : phosphofructokinase, glycogen phosphorylase
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Principle, assay, and clinical significance of transaminases
Week 2	Lab 2: Principle, assay, and clinical significance of creatine kinase
Week 3	Lab 3: Principle, assay, and clinical significance of lactate dehydrogenase
Week 4	Lab 4: Principle, assay, and clinical significance of phosphatases
Week 5	Lab 5: Principle, assay, and clinical significance of isocitrate dehydrogenase
Week 6	Lab 6: Principle, assay, and clinical significance of amylase
Week 7	Lab 7: Principle, assay, and clinical significance of lipase
Week 8	Lab 8: Principle, assay, and clinical significance of glucose-6-phosphate dehydrogenase
Week 9	Lab 9: Principle, assay, and clinical significance of Myoglobin
Week 10	Lab 9: Principle, assay, and clinical significance of ceruloplasmin

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	CLINICAL CHEMISTRY 2018 , CROOK MARTIN	Yes
Recommended Texts	CLINICAL BIOCHEMISTRY FOR MEDICAL STUDANTS 2016, D M Vasodivan	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**Antibiotics**	رمز المقرر	Path-324
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	**7**
SWL(hr/sem)	**175**	تاريخ الاعداد	**2023/6/1**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	9	9
تحضير الدروس		تحضير الدروس اليومي	4	15	60
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	3	3	6
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	1	5
امتحان نصف الفصل*	الامتحان		0	1	4
		التهيئة للامتحان	5	2	5
امتحان نهاية الفصل	الامتحان		4	2	4
		التهيئة للامتحان	10	1	10
العبء الكلي للمادة خلال الفصل					150

***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Antibiotics**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**Path-313**			☐ **Lecture**	
ECTS Credits	**6**			☒ **Lab**	
SWL (hr/sem)	**150**			☐ **Tutorial**	
				☐ **Practical**	
				☒ **Seminar**	
Module Level	113		**Semester of Delivery**	6	
Administering Department	Type Dept. Code		**College**	**Applied Science**	
Module Leader	Asmaa Aysa Mahmood		**e-mail**	Email: asmaysy89@gmail.com	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Principle Of Microbiology Part III	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	124. Solving problem overuse of antibiotic 125. Management Misuse of antibiotics 126. Prevention resistance to appearance of new strain of bacteria against antibiotics 127. Study concept of antibiotics 128. To understand synthetic of antibiotic 129. Modification of mechanism action of antibiotics
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	119. Best choice appropriate of antibiotics 120. Differential between broad spectrum and narrow spectrum 121. Differential between bacteriostatic and bactericidal 122. Explain how can synthetic of antibiotics 123. Describe original source of antibiotics 124. Study why microorganism produce antibiotics 125. Identify the microorganism produce antibiotics and microorganism non produce 126. Study the genes responsible of resistance 127. Discuss movement genes from one microorganism to another 128. Differential between Anti-Bacterial , Anti-Viral and Anti-Parasite

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Antibiotics is a study produce of microorganism to antibiotics against environmental factors such as dry . moisture . nutrient and sun light as well as identify factor responsible to resistance of microorganism to some antibiotic and description of mechanism of antibiotic's include :- 1- Concept of antibiotics 2- Classification of antibiotics 3- Source of antibiotics 4- Mechanism action of Antibiotica A-Inhibition of cell wall B-Inhibition of Cytoplasmic Membrane C-Inhibition of Protein synthesis D-Inhibition of Nucleic acid ((15 hrs)) Classification and General Characters of antibiotics ((10 hrs)) Original source to produce antibiotic ((15 hrs)) Opinion why microorganism produce antibiotics Mechanism of killing Mode of action Against on cell wall Against on cytoplasmic membrane Against on protein synthesis ((4 hrs)) Part B – Relations ship include ;- 1- Relation ship between host and antibiotics

	2- Relation ship between Microorganism and antibiotics 3- Triangles of disease include:- A- Host B- Vector C- Pathogenic Microorganisms ((15hrs)) Part C– Resistance of pathogenic microorganism to antibiotic include:- 1- Chromosome control 2- Plasmid control 3- Transposon 4- Integron 5- All include A- Produce enzyme B- Loss of receptor C- Change permeability D- Mutation ((15hrs))

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy depend on choice appropriate antibiotics to infection after confirmed test of samples as well as depend best guises even appearance result of samples from laboratory and selective site of samples from site of infection such as urine. Stool, blood , C.S.F, Sputum and Saliva and identify type of microorganism causes of infection before choice an appropriate antibiotics

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	10% (10)	3, 6,11	LO #1, 2, 4,5,9 and 10
	Assignments	2	10% (10)	1, 6	LO # 1,3, 6 and 9
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 3, 6 and 13
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-7
	Final Exam	3	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – Concept of antibiotics
Week 2	Selective toxicity
Week 3	Inhibition of Cell Wall Synthesis
Week 4	Inhibition of Cell Membrane Function
Week 5	Inhibition of Protein Synthesis

Week 6	Route Of Drug Administration
Week 7	Host-Pathogen Relationships
Week 8	Mid term exam
Week 9	Antimicrobial Drugs Used in Combination of Antimicrobial Agents
Week 10	Antimicrobial Chemotherapy
Week 11	Penicillin's
Week 12	Cephalosporin's
Week 13	Other Beta-Lactam Drugs
Week 14	Anti-Viral
Week 15	Chemotherapy
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Double Disc Synergy Test (DDST)
Week 2	Imipenem-EDTA synergy test
Week 3	Boronic acid test
Week 4	Modified Hodge Test (MHT)
Week 5	Combination meropenem disc test
Week 6	Nitrocefin test
Week 7	CCCP test
Week 8	MIC test

Week 9	MBC test
Week 10	Metalo B-Lactamace
Week 11	Chellatig factors
Week 12	Disk diffusion
Week 13	Solution od disk
Week 14	Preparation od disk

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Lippincott fourth edition	Yes
Recommended Texts	Gawedes	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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**hematology**	رمز المقرر	Path-325
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	7
SWL(hr/sem)	175	تاريخ الاعداد	**2023/6/1**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		**2**	**15**	**30**
المختبر	دوام المختبر		**2**	**15**	**30**
المناقشات	المناقشات		1	**15**	15
مشروع عملي*	مشروع عملي		1	10	10
		التهيئة للمشروع	2	10	20
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		1	1	1
		التهيئة للعرض التقديمي	3	2	6
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	2	6
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	**1**	4
		التهيئة للامتحان	17	**1**	17
العبء الكلي للمادة خلال الفصل					175

***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**hematology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Code	**Path-325**				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	3		**Semester of Delivery**	6	
Administering Department	**pathological analyses**		**College**	**Science**	
Module Leader	Mohammed Khattab Omar		**e-mail**	M.khattab@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**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	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This Module covers the basics of hematology of humans and includes the : 1. Definition of the basic components of blood (blood cells and plasma) 2. Identify the hemopoietic tissue and its characteristics (bone marrow) 3. Define the process of hemopoiesis for each type of cell, 4. Identify the components of erythrocyte traits, 5. identify the characteristics and functions of leukocytes, 6. clarify the role of platelets, and identify the process of blood clotting
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize the basic components of blood (blood cells and plasma) 2. Identify the hemopoietic tissue and its characteristics (bone marrow) 3. Define the process of hemopoiesis for each type of cell, 4. Identify the components of erythrocyte traits, 5. identify the characteristics and functions of leukocytes, 6. clarify the role of platelets, and identify the process of blood clotting
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy this section is to provide a thorough understanding of the basic components of the blood, their synthesis, and unctions. This knowledge will help the students in understanding the next module (blood diseases)

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 12	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 14	LO # 3, 4, 6 and 13
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	6	LO # 1-5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction –blood component
Week 2	The plasma component, plasma proteins
Week 3	Hemopoiesis, stem cells
Week 4	Hemopoietic tissue (bone marrow microenvironment)
Week 5	Granulopoesis, &megacariopoiesis, lymphopoiesis
Week 6	Mid term
Week 7	Leukocytes types and functions
Week 8	Hemoglobin structure, synthesis
Week 9	Hemoglobin types, functions, hemoglobin oxygen dissociation curve
Week 10	Erythrocyte membrane
Week 11	Erythrocyte metabolism
Week 12	Platelet structure and function
Week 13	Blood clotting
Week 14	Coagulation pathways
Week 15	Anticoagulants
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: blood collection and anticoagulants
Week 2	Lab 2: preparation of blood smear and staining
Week 3	Lab 3: RBC count
Week 4	Lab 4: WBC count
Week 5	Lab 5: PCV
Week 6	Lab 6: hemoglobin estimation 1
Week 7	Lab 7: hemoglobin estimation 2
Week 8	Lab 8: differentiation count of leukocytes
Week 9	Lab 9: leukocytes
Week 10	Lab 10: platelet count
Week 11	Lab 11: fragility test
Week 12	Lab 12: ESR
Week 13	Lab 13: Blood matching
Week 14	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Atlas of hematology	Yes
Recommended Texts	Essential Hematology	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**blood diseases**	رمز المقرر	Path-411
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/5/30**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		**2**	**15**	**30**
المختبر	دوام المختبر		**2**	**15**	**30**
المناقشات	المناقشات		2	8	16
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	2	**5**	10
تحضير الدروس		تحضير الدروس اليومي	0	0	0
العروض التقديمية*	القاء العرض التقديمي		1	1	1
		التهيئة للعرض التقديمي	0	0	0
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	15	30
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	**2**	12
امتحان نهاية الفصل	الامتحان		**3**	1	3
		التهيئة للامتحان	18	**1**	18
العبء الكلي للمادة خلال الفصل					**150**

***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**blood diseases**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-411**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	7		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	**Applied Science**	
Module Leader	Mohammed Khattab Omar		**e-mail**	M.khattab@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Hematology	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This Module covers the basics of blood diseases inf humans and includes the description of the disease, its incidence and its signs and symptoms with the treatment if available. This modules include the following: 7. Understanding the types of diseases 8. Definition of anemia 9. Several types of the classification of anemia 10. Identifying each type of anemia 11. Identify the benign disorders of leukocytes 12. Understanding leukemia and lymphoma, the basic straatigies of their treatment 13. clarify the causes of bleeding
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	7. Recognize the basic signs and symptoms of anemia 8. Identify the the types of anemia 9. Understanding the laboratory findings in each type of anemia 10. Identify the causative agents in the main leukocytes disorders 11. identify the characteristics of each type of leukemia 12. recognize the laboratory findings with bleeding disorders
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy this section is to provide a thorough understanding of the clinical symptoms and signs, and laboratory findings of blood diseases. Understanding the therapeutic strategies and their effects in the final laboratory diagnosis of the disease

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction –pathology- signs and symptoms in general
Week 2	Introduction to anemia, general signs, general classifications of anemias
Week 3	Microcytic anemias- iron deficiency
Week 4	Other microcytic hypochromic anemias
Week 5	Hemoglobinopathies- thalassaemia
Week 6	Hemoglobinopathies- sickle cell disease
Week 7	Megaloblastic anemia
Week 8	Hemolytic anemias
Week 9	Aplastic anemias
Week 10	Polycythemia
Week 11	Benign disorders of leukocytes
Week 12	Leukemia
Week 13	Lymphoma
Week 14	Bleeding disorders – vascular disorders- thrombocytopenia-platelets dysfunctions
Week 15	Bleeding disorders- **hemophilia, DIC**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered

Week 1	Lab 1: blood collection and anticoagulants
Week 2	Lab 2: preparation of blood smear and staining
Week 3	Lab 3: blood indices
Week 4	Lab 4: blood film – abnormal cells 1
Week 5	Lab 5: blood film – abnormal cells 2
Week 6	Lab 6: blood film – abnormal cells 3
Week 7	Lab 7: anemia, classification (normocytic, microcytic, macrocytic)
Week 8	Lab 8: iron deficiency anemia
Week 9	Lab 9: megaloblastic anemia
Week 10	Lab 10: hemolytic anemias
Week 11	Lab 11: leukemia
Week 12	Lab 12: lymphoma
Week 13	Lab 13: bleeding disorders (PLT, PT, MPV)
Week 14	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Atlas of hematology	Yes
Recommended Texts	Essential Hematology	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	clinical chemistry	رمز المقرر	Sc-path412
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	10	10
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	2	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	4	3	12
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	8	1	8
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	13	1	13
العبء الكلي للمادة خلال الفصل					150

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Clinical Chemistry**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Sc-path412**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	4		**Semester of Delivery**	7	
Administering Department	**pathological analyses**		**College**	**Applied sciences**	
Module Leader	Humam Ezzat Mohammed		**e-mail**	Humam.ezzat36@uosamarra.edu.iq	
Module Leader's Acad. Title	Instructor		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The guiding educational principle in the clinical chemistry is a simple one: engaged students learn. Through an ambitious undergraduate research program, a fresh emphasis on internships, and a problem-based pedagogy, we seek to immerse our students in the doing of science as we help them develop a solid foundation in clinical chemistry. In the classroom, in laboratory courses, and through relevant research experiences, our students will build a fundamental knowledge of chemistry and a working understanding of the process of scientific investigation. Our students will use their knowledge to solve problems of increasing sophistication, often employing the state-of-the-art technology that underlies modern chemical investigation. Our students will be able to critically evaluate scientific information and communicate such information, clearly and effectively, to scientists and nonscientists alike.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Graduates from our program will possess a strong foundational knowledge of modern inorganic, organic, analytical, physical, and biological chemistry. Students will demonstrate scientific understandings of the structure of matter and of its physical and chemical transformations. Students will apply appropriate theories to predict chemical structure, reactivity, and physical properties. Graduates from our program will be proficient in applying modern laboratory methods and technological tools to the studies of chemical systems. Students will apply standard laboratory techniques to carry out quantitative analysis, chemical synthesis, characterization of compounds, and measurement of chemical reactivity. Students will learn the theoretical bases, operating principles, and experimental uses of scientific instrumentation and software applications, and will apply these

	technologies appropriately to study chemical systems. Graduates from our program will be skilled in the methods of scientific investigation. Students will formulate testable hypotheses and design appropriately controlled experiments to test those hypotheses. Students will collect, analyze, and evaluate experimental data. Graduates from our program will be able to think as chemists, critically evaluating scientific information and solving scientific problems. Students will engage in problem-solving activities that require analysis, synthesis, and evaluation as a means of testing and strengthening their developing knowledge. Students will access, search, evaluate, and critique the primary scientific literature. Graduates from our program will be able to effectively communicate scientific information. Students will organize, evaluate, summarize, and communicate experimental data and scientific concepts in both written and oral formats.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to clinical chemistry: history, concepts and relationship to other medical sciences, uses in clinical medicine • Definitions and explanations of clinical chemistry terminologies; screening, monitoring, diagnosis, prognosis (15 hrs) Description of different body fluids and their normal constituents: Whole blood, Plasma , Serum, Urine, Cerebral spinal fluid (C.S.F), Saliva and Sweat (15 hrs) Water & Electrolytes (10 hrs) PH Balance, Acid – Base Disorder [10 hrs] Renal function, Pathophysiological diseases(10 hrs) Liver Function, liver function alteration during disease(10 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Educators must commit to learning effective teaching strategies to prepare our learners for career success. By doing so we can ultimately build foundational and higher-order thinking skills in a broad, complex and sometimes less emphasized subject matter within medicine. Additionally, we will present successful pedagogic frameworks used to teach clinical chemistry and lab medicine with emphasis on learner-centered engagement and feedback, structured curriculum, clear learning goals

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	2,5, 11	LO 3, 4, 9 and 10
	Assignments	2	10% (10)	7, 13	LO 6, 11, and 12
	Projects / Lab.	1	10% (10)	Continuous	All

	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	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	
	Material Covered
Week 1	Introduction to Clinical Biochemistry
Week 2	DEFINITIONS: ACID, BASE, BUFFER , ACID-BASE BALANCE
Week 3	Buffer Systems: Regulation of H, Regulation of Acid-Base Balance: Lungs and Kidneys
Week 4	Acid-Base Disorders: Acidosis and Alkalosis
Week 5	Carbohydrate Metabolism disorder
Week 6	Dyslipidemia
Week 7	Midterm Eaxm
Week 8	Glomerular Filtration / Tubular Function
Week 9	ANALYTIC PROCEDURES
Week 10	Clearance Measurements / Urine Electrophoresis / 2-Microglobulin / Myoglobin / Microalbumin
Week 11	Glomerular Diseases, Tubular Diseases, Urinary Tract Infection/Obstruction, Renal Calculi
Week 12	Liver Function
Week 13	BIOCHEMICAL FUNCTIONS/ Excretory and Secretory / Synthetic / Detoxification and Drug Metabolism
Week 14	LIVER FUNCTION ALTERATIONS DURING DISEASE / Jaundice / Cirrhosis

Week 15	ASSESSMENT OF LIVER FUNCTION/LIVER FUNCTION TESTS / Bilirubin / Urobilinogen in Urine and Feces / Serum Bile Acids / Enzymes
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Clinc. Chem. Lab, &spectrophotometer
Week 2	Lab 2: S. Calcium Test
Week 3	Lab 3: S. Urea Test
Week 4	Lab 4: S. Creatinine Test
Week 5	Lab 5: S. Uric Acid Test
Week 6	Lab 6: S. Cholesterol Test
Week 7	Lab 7: S. T G Test
Week 8	Lab 8: S. HDL Test
Week 9	Lab 9: Total Bilirubin Test
Week 10	Lab 10: Prothrombin Time Test
Week 11	Lab 11: S. Total protein Test
Week 12	Lab 12: S. Albumin Test

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	CLINICAL CHEMISTRY 2018 , CROOK MARTIN	Yes
Recommended Texts	CLINICAL BIOCHEMISTRY FOR MEDICAL STUDANTS 2016, D M Vasodivan Tietz Textbook of clinical Chemistry and molecular diagnostics 2017	Yes
Websites	https://www.aacc.org/	

Grading Scheme

مخطط الدرجات

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

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**medical biotechnology**	رمز المقرر	Path-413
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/6/1**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	3	3	4
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	3	9
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					**150**

***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**

توقيع:

اسم مدرس المادة:

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**medical biotechnology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**Path-413**			☒ **Lab**	
ECTS Credits	**6**			☐ **Tutorial**	
SWL (hr/sem)	**150**			☐ **Practical**	
				☒ **Seminar**	
Module Level	4		**Semester of Delivery**	7	
Administering Department	Dept. of pathological analyses		**College**	College of science	
Module Leader	Marwan Qahtan Jasim		**e-mail**	marwan.walady@uosamarra.edu.iq	
Module Leader's Acad. Title	Asst. Prof		**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	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	130. To develop problem solving skills and understanding of medical Biotechnology applications. 131. To understand gene therapy and tissue engineering applications. 132. This course deals with the basic concept of Biotechnology applications. 133. This is the basic subject for all Biotechnology applications . 134. To understand immobilized enzyme, biosensors, and bioreactors. 135. To perform DNA fingerprinting and DNA sequencing analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	129. Understanding of Biotechnological Principles: Students will gain a solid understanding of the basic principles and concepts of biotechnology as they apply to medical research and healthcare. 130. List the various terms associated with medical Biotechnology applications. 131. Knowledge of Molecular Biology Techniques: Students will learn about various molecular biology techniques commonly used in medical biotechnology, such as DNA sequencing, PCR (Polymerase Chain Reaction), gene cloning, and gene expression analysis. 132. Discuss the reaction and involvement of applications in Biotechnology. 133. Describe stem cell, tissue culture and Tissue engineering applications. 134. Define gene therapy and tissue engineering applications .

	135. Awareness of Medical Diagnostics: Students will learn about the applications of biotechnology in medical diagnostics, including techniques such as DNA microarrays, and basics of biosensors. 136. Understanding of Stem Cell Technology: Students will explore the field of stem cell research and the use of stem cells in regenerative medicine, tissue engineering, and therapeutic applications. 137. Discuss the various properties of immobilized enzyme, biosensors, and bioreactors. 138. Explain the Phage therapy applications. 139. Identify the DNA fingerprinting and DNA sequencing .
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Diagnostic Biotechnology applications What is Biotechnology, Different types of biotechnology, Applications of Biotechnology. [10 hrs] Diagnostic Biotechnology: Exploring various diagnostic techniques, such as immunoassays, molecular diagnostics, and biosensors, used in medical diagnostics. Enzymes, immobilized enzyme, Advantages of immobilized enzymes,Disadvantages of enzyme immobilization and methods of Immobilization. [10 hrs] Molecular Biology Techniques: Lecture on essential laboratory techniques used in medical biotechnology, such as DNA sequencing, polymerase chain reaction (PCR), and gene expression analysis.[10 hrs] DNA fingerprint Restriction fragment length polymorphism (PCR),amplification of short tandem repeats ,Applications of DNA Fingerprinting.[10hrs] Part B - medical Biotechnology applications bioreactor technology and pharmaceuticals production : Lecture on the production of therapeutic proteins, including the use of recombinant DNA technology and the development of biologics. [5 hrs] Bioreactor,Bioreactor´s environmental conditions,Bioreactors Types,the components of bioreactor ,Classification of bioreactor depending on the size of production. [10 hrs] Stem cells

	Types of Stem Cells by Differentiation Potential,What do differentiation ,Plurpotency mean in stem cells?,General types of stem cells. [15 hrs] Introduction to Nanotechnology: Nanomaterials for Medical Applications, Nanobiosensors and Diagnostics, Nanotechnology in Cancer Diagnosis and Treatment. [5 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 critical 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 لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	5% (10)	2, 6,9	LO #1, 2, 4,5,7 and 8
	Assignments	2	10% (10)	2, 12	LO # 3, 6 and 10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (10)	14	LO # 11, 12,13 and 14
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to medical biotechnology
Week 2	Diagnostic Biotechnology and Immobilization of enzyme
Week 3	Biosensor and Microarray
Week 4	PCR applications
Week 5	DNA sequencing
Week 6	DNA fingerprinting
Week 7	Mid-term Exam
Week 8	Bioreactor technology and pharmaceuticals production
Week 9	Stem Cell Technology

Week 10	Tissue culture
Week 11	Tissue engineering applications
Week 12	Medical nanobiotechnology
Week 13	Pharmacogenomics
Week 14	Ethical and Regulatory Considerations
Week 15	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to protein and DNA extraction method
Week 2	Lab 2: cell Lysis methods
Week 3	Lab 3: protein precipitation
Week 4	Lab 4: Dialysis of protein solution
Week 5	Lab 5: protein concentration assay and standard curve
Week 6	Lab 6: chromatography
Week 7	Lab 7: Mid-term Exam
Week 8	Lab 8: electrophoresis of protein
Week 9	Lab 9: chromatography
Week 10	Lab 10: DNA extraction -1
Week 11	Lab 11: DNA extraction -2
Week 12	Lab 12: DNA purity and concentration assessment methods
Week 13	Lab 13: DNA electrophoresis

Week 14	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Biotechnology in Medical Sciences by Khan, F. A. (2014). (1st ed.). CRC Press.	No
Recommended Texts	Fundamentals of Medical Biotechnology, by Rajneesh Prajapat (Author), M. Kasturi (Author), B. Manivannan (Author), Anita Mishra (Author) (2021), Publisher : Nova Science Pub Inc; 1st edition.	No
Websites	Khan Academy (https://www.khanacademy.org/) Open Yale Courses (https://oyc.yale.edu/) European Bioinformatics Institute (EMBL-EBI) (https://www.ebi.ac.uk/training)	

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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	Toxicology	رمز المقرر	Path-414
نوع المقرر	Core	عدد الوحدات الاوربية (ECTS)	6
SWL(hr/sem)	150	تاريخ الاعداد	2023/6/1

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	2	3	6
الامتحانات اليومية		التهيئة للامتحانات اليومية	2	3	6
امتحان نصف الفصل*	الامتحان		2	2	4
		التهيئة للامتحان	3	2	6
امتحان نهاية الفصل	الامتحان		3	2	6
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					150

*لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Toxicology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path-414**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	4		**Semester of Delivery**	7	
Administering Department	Pathological Analyses		**College**	**Applied Science**	
Module Leader	Batool omran Deeb		**e-mail**	: Batoolomran@uosamarra.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	136. Identification of microbial toxins 137. Identify the most important injuries and diseases they cause. 138. Understand the most important poisonings, their types and symptoms 139. Apply diagnostic criteria, compare their types, and learn on the latest diagnostic equipment 140. Analyzing the results by comparing the result of the healthy person with the patient
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	140. Define the microbial toxicology 141. Familiar with microorganisms produced toxins 142. Differentiate between chemical toxins and biological toxins 143. Compare between Endotoxins and Exotoxins 144. Diagnose the symptoms of bacterial toxins and mycotoxins 145. List the types of bacterial and mycotoxins 146. Write briefly the structure of any microbial toxin 147. Describe the detoxification methods of the microbial toxins 148. List the method used for assaying the bacterial and myco-toxins
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Toxicology Definitions

	Sub-disciplines of Toxicology: Food Toxicology, Clinical Toxicology, Microbial Toxicology, Environmental Toxicology, Occupational (Industrial) Toxicology, Regulatory Toxicology, Forensic Toxicology, and Analytical toxicology. [10 hrs] Important Terms in Toxicology- Toxin, Toxic Symptom, Selective toxicity, and the toxoid. [10 hrs] Classification of Toxic Agents- Heavy Metals, Solvents and Vapors, Radiation, Pesticides, Biotoxins, Phytotoxins, Zootoxins, and Microbial toxins. [10 hrs] <u>Microbial Toxins</u> Definition, Importance, Health problems, Types, and detection methods. Classification of microbial toxins according to their chemical structure, type of disease and speed of action. [10 hrs] Bacterial Toxins- Types of Bacterial Toxins, Exotoxins, Endotoxins, External and Internal Toxins. Bacterial protein toxins, bacterial toxins with enzymatic activity. [10 hrs] Mycotoxins – Toxigenic Fungi, Chemical structure of mycotoxins, Metabolism of toxins in the liver, Detoxification of mycotoxins, and Analyses methods for toxin detection. [10 hrs] The most important Mycotoxins: Aflatoxins, Ochratoxin A (OTA), Zearalenone (ZEA), Ergot, Fumonisins, Deoxynivalenol (DON), and Trichothecenes. [10 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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 critical 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 لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	3,6,10	LO #1, 2, 4,5,8, and 9
	Assignments	2	10% (10)	1, 6	LO # 1, 3, 6 and 9
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 11, 12 & 13
Summative assessment	**Midterm Exam**	2hr	5% (5)	7	LO # 1-6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Toxicology, Microbial toxins, and Bacterial toxins
Week 2	Staphylococcus toxicosis, and Bacillus anthracis Toxins
Week 3	Shiga toxins (Verotoxins), and Clostridial toxins

Week 4	Diphtheria, Cholera (CT) Toxins
Week 5	Streptococcus pyogenes Toxins
Week 6	Pseudomonas aeruginosa Toxins
Week 7	Mid-term Exam
Week 8	MYCOTOXINS
Week 9	Aflatoxins
Week 10	Ochratoxin A (OTA)
Week 11	Zearalenone (ZEA)
Week 12	Ergot
Week 13	Fumonisins
Week 14	Deoxynivalenol (DON)
Week 15	Trichothecenes

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Isolation and Identification of Toxigenic Microorganisms
Week 2	Lab 2: Detection of Toxigenic Bacteria in Food Products
Week 3	Lab 2: Detection of Toxigenic Fungi in Food Products
Week 4	Lab 4: Microbial toxins Isolation
Week 5	Lab 5: Thin Layer Chromatography (TLC) Techniques
Week 6	Lab 6: Separation Methods for toxin Purification
Week 7	Lab 7: Assessment of toxigenic effects on living cells
Week 8	Lab 8: Methods for assaying the microbial toxins
Week 9	Lab 9: Biological assays
Week 10	Lab 10: Immunological assays
Week 11	Lab 11: Gel diffusion assays
Week 12	Lab 12: Haemagglutination

Week 13	Lab 13: Coagglutination
Week 14	Lab 14: Nucleic acid probes and polymerase chain Reaction (PCR technique)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Textbook of Toxicology	No
Recommended Texts	Scientific books and research published in refereed journals	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 (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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	endocrinology	رمز المقرر	Path-421
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/6/1**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	3	3	9
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	3	9
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
			العبء الكلي للمادة خلال الفصل		150

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**endocrinology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Sc-path421**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	8		**Semester of Delivery**	2	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Aseel mokdad Hatam Abdulwahed		**e-mail**	aseel.mh@uosamarra.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1-to identify between neural and endocrinal regulation 2- to understand of Chemical Classification of Hormones 3-to understand of Hormone Interactions 4-to understand of mechanism of hormones action 5-to understand of hormonal control 6-to understand of endocrine glands function
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-able to understand common aspects between neural and endocrinal regulation. 2-able to numerate chemical classification of hormone. 3- able to define prehormone and prohormone. 4-able to describe hormonal interactions synergistic ,permissive antagonistic. 5- able to identify of Hormones That Bind to Nuclear Receptor Proteins. 6- able to identify of Hormones That Use Second Messengers. 7-able to understand of mechanism of steroid hormones. 8-able to understand of mechanism of thyroid hormones. 9-able to understand of functions of pituitary gland, thyroid gland,

	adrenal gland, gonads, pancreas and other glands.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part 1- endocrine Glands and Hormones 30 hours Part 2- lab lectures of endocrinology 30 hours Part 3- discustion 15 hours

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The primary approach that will be used to present this module is to promote student engagement in the activities while also enhancing and broadening their critical thinking abilities. This will be accomplished through lectures, interactive tutorials, and taking into account the kinds of easy experiments that include certain sampling tasks that the students will find engaging.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Common Aspects of Neural and Endocrine Regulation
Week 2	Chemical Classification of Hormones
Week 3	Prohormones and Prehormones
Week 4	Hormone Interactions
Week 5	Effects of Hormone Concentrations on Tissue Response
Week 6	Hormones That Bind to Nuclear Receptor Proteins
Week 7	Mid-Exam
Week 8	Hormones That Use Second Messengers
Week 9	Hypothalamic Control of the Posterior Pituitary

Week 10	Hypothalamic Control of the Anterior Pituitary
Week 11	Feedback Control of the Anterior Pituitary
Week 12	Functions of the Adrenal Cortex
Week 13	Functions of the Adrenal Medulla
Week 14	Production and Action of Thyroid Hormones and Parathyroid Glands
Week 15	pancreas and Other Endocrine Glands
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction of Common Aspects of Neural and Endocrine Regulation
Week 2	Lab 2: Chemical Classification of Hormones
Week 3	Lab 3: prolactinimia
Week 4	Lab 4: acromegly
Week 5	Lab 5: cushing disease
Week 6	Lab 6: pituitary adenoma
Week 7	Lab 7: Filters
Week 8	craniophrigioma
Week 9	hypopituitarism
Week 10	Hypogonadotrpic hypogonadism
Week 11	hypophysitis
Week 12	Diabetes insipidus
Week 13	hypotthyrodism

Week 14	Graves disease
Week 15	Hashimato disease

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1 Stuart Ira Fox and rompoliski k (2019)- Human physiology .Textbooks. fifteenth edition.	Yes
Recommended Texts	-Williams Textbook of ENDOCRINOLOGY 12th EDITION 201	No
Websites	https://www.ese-hormones.org/	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	pathology	رمز المقرر	Path422
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/5/31**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	1	5	5
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		0	0	0
		التهيئة للعرض التقديمي	3	3	9
الامتحانات اليومية		التهيئة للامتحانات اليومية	3	3	9
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	6	1	6
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					**150**

***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**pathology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Path422**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	8		**Semester of Delivery**	2	
Administering Department	Pathological Analyses		**College**	**Applied Science**	
Module Leader	Aseel mokdad Hatam Abdulwahed		**e-mail**	aseel.mh@uosamarra.edu.iq	
Module Leader's Acad. Title	Assist Professor		**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	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Histology - 211	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	***The module aims of pathology can vary depending on the specific educational program or course. However, here are some common objectives typically associated with the study of pathology:*** 1. **Understanding Disease Processes**: The aim is to provide students with a comprehensive understanding of the underlying mechanisms and processes involved in the development and progression of diseases. This includes learning about cellular and molecular changes, genetic factors, environmental influences, and the interaction between host and pathogen. 2. **Recognizing and Interpreting Pathological Changes**: The objective is to develop the ability to recognize and interpret pathological changes in tissues, organs, and body systems. Students learn to identify the morphological features of diseases through the examination of tissue samples, such as inflammation, necrosis, neoplasia, and degeneration. 3. **Diagnostic Skills:** The aim is to equip students with the skills necessary to make accurate diagnoses based on clinical information, laboratory tests, and histopathological findings. This includes understanding the principles and limitations of diagnostic techniques, such as imaging studies, laboratory assays, and molecular diagnostics. 4. **Pathogenesis and Pathophysiology**: Students may learn about the mechanisms by which diseases develop and the resulting functional abnormalities in the body. The aim is to understand the pathophysiological processes underlying various diseases and their impact on organ systems. 5. **Clinicopathological Correlations**: The objective is to establish a correlation between the clinical presentation of a disease and its pathological features. Students learn to integrate clinical history, physical examination findings, and laboratory data with pathological findings to formulate accurate diagnoses and prognosis. 6. **Therapeutic Implications**: The aim is to develop an understanding of the therapeutic implications of pathological conditions. This includes learning about

	the principles of pharmacotherapy, surgical interventions, and other therapeutic modalities used in the management of diseases. 7. **Research and Evidence-Based Medicine**: Students may be introduced to the principles of research in pathology and the importance of evidence-based medicine. The objective is to develop critical thinking skills and an understanding of research methodologies, data analysis, and the interpretation of scientific literature. 8. **Communication and Interprofessional Collaboration**: The aim is to foster effective communication skills necessary for interacting with patients, healthcare professionals, and other members of the interdisciplinary healthcare team. Students learn to communicate pathological findings, provide consultative services, and participate in multidisciplinary discussions. 9. **Ethical and Professional Considerations**: Students are exposed to ethical and professional principles relevant to the practice of pathology. This includes understanding patient confidentiality, informed consent, and the ethical use of human tissues for diagnostic and research purposes. 10**. Lifelong Learning**: The objective is to cultivate a mindset of continuous learning and professional development in the field of pathology. Students are encouraged to stay updated with the latest advancements in the field, participate in continuing education activities, and engage in lifelong learning to enhance their diagnostic skills and knowledge. ***Overall, the module aims to provide students with a solid foundation in the principles, concepts, and skills of pathology, enabling them to pursue further studies or careers in fields such as anatomical pathology, clinical pathology, research, or healthcare administration***.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	***The module learning outcomes for a pathology course can encompass a range of knowledge, skills, and competencies that students are expected to achieve by the end of the course. Here are some typical learning outcomes associated with the study of pathology:*** **1. Knowledge and Understanding:** - Demonstrate a comprehensive understanding of the underlying mechanisms and processes involved in the development and progression of diseases. - Identify and explain the morphological features and characteristics of different diseases at the cellular, tissue, and organ levels. - Describe the pathophysiological changes that occur in various diseases and their impact on organ systems. **2. Diagnostic Skills:** - Apply knowledge of clinical information, laboratory tests, and histopathological

	findings to make accurate diagnoses of diseases. - Interpret and analyze diagnostic test results, imaging studies, and laboratory assays to aid in disease diagnosis and management. - Recognize patterns and correlate clinical presentations with pathological findings to develop differential diagnoses. **3. Critical Thinking and Problem-Solving:** - Analyze and evaluate scientific literature and research studies related to pathological processes and disease mechanisms. - Apply critical thinking skills to interpret and synthesize complex pathological data and information. - Develop logical and evidence-based approaches to solve diagnostic challenges and clinical problems in the field of pathology. **4. Clinicopathological Correlations:** - Establish correlations between clinical presentations, laboratory findings, and pathological features to guide diagnosis and management decisions. - Communicate and present clinicopathological correlations to healthcare professionals and contribute to multidisciplinary discussions and decision-making processes. **5. Research Skills:** - Understand the principles and methodologies of research in pathology, including study design, data collection, analysis, and interpretation. - Evaluate and critique research studies and scientific literature related to pathological processes and disease mechanisms. - Apply research skills to contribute to the advancement of knowledge in the field of pathology through the design and execution of research projects. **6. Communication and Interpersonal Skills:** - Effectively communicate pathological findings, diagnostic impressions, and recommendations to healthcare professionals and patients. - Collaborate and work effectively within interdisciplinary healthcare teams to provide comprehensive patient care. - Demonstrate professional and ethical conduct in interactions with patients, colleagues, and other stakeholders in the field of pathology. **7. Lifelong Learning and Professional Development:** - Recognize the importance of ongoing professional development and engage in lifelong learning activities to stay current with advancements in the field of

	pathology. - Demonstrate a commitment to ethical practice, patient safety, and quality improvement in the field of pathology. ***These learning outcomes aim to equip students with a solid theoretical foundation, critical thinking abilities, diagnostic skills, and effective communication and collaboration skills necessary for successful practice in the field of pathology.***
Indicative Contents المحتويات الإرشادية	***The indicative contents of a pathology module may cover a wide range of topics related to the study of diseases and their underlying mechanisms. Here are some typical indicative contents that can be included in a pathology course:*** **Part A: Introduction, Cellular adaptation, Inflammation and repair, Neoplasia** 1. Introduction to Pathology: - Definition and scope of pathology - Historical developments and importance in healthcare - Subspecialties within pathology (e.g., anatomical pathology, clinical pathology) 2. Cellular Adaptations and Injury: - Cell injury and death (e.g., apoptosis, necrosis) - Causes and mechanisms of cellular injury (e.g., hypoxia, inflammation, genetic factors) - Cellular adaptations to stress (e.g., hypertrophy, atrophy, metaplasia) 3. Inflammation and Repair: - Acute and chronic inflammation - Mediators and cellular components of inflammation - Tissue repair and wound healing 4. Neoplasia and Cancer: - Introduction to neoplasia and benign versus malignant tumors - Carcinogenesis: genetic and environmental factors - Tumor classification, grading, and staging 25 hrs **Part B : Systemic pathology, Infectious disease, Hematopathology, Laboratory diagnosis** 5. Systemic Pathology:

	- Pathological processes and diseases affecting different organ systems (e.g., cardiovascular, respiratory, gastrointestinal, renal, endocrine, nervous, musculoskeletal) - Morphological and functional changes associated with specific diseases in each system 6. Infectious Diseases: - Pathogenesis and characteristics of infectious diseases - Bacterial, viral, fungal, and parasitic infections - Host defense mechanisms and immune response to infections 7. Hematopathology: - Blood disorders and hematological malignancies - Hematopoiesis and bone marrow pathology - Coagulation disorders and bleeding disorders 8. Laboratory Diagnostics: - Principles of laboratory diagnostics in pathology (e.g., blood tests, molecular diagnostics, imaging studies) - Interpretation of laboratory findings and diagnostic test results - Role of pathology in personalized medicine and targeted therapies 25 hrs **Part C : Autopsy and forensic pathology, Molecular and Genetic pathology, Quality Assurance , Ethical and legal issues in pathology** 9. Autopsy and Forensic Pathology: - Introduction to autopsy procedures and postmortem examination - Forensic pathology and medicolegal investigations - Role of autopsy in determining cause and manner of death 10. Molecular and Genetic Pathology: - Genetic disorders and inheritance patterns - Molecular techniques in pathology (e.g., polymerase chain reaction, DNA sequencing) - Role of molecular and genetic testing in disease diagnosis and management

	11. Quality Assurance and Patient Safety: - Principles of quality assurance and quality control in pathology - Laboratory accreditation and proficiency testing - Patient safety and error prevention in pathology practice 12. Ethical and Legal Issues in Pathology: - Ethical considerations in pathology (e.g., informed consent, patient confidentiality) - Legal aspects of pathology practice (e.g., malpractice, forensic implications) - Professional responsibilities and codes of conduct These indicative contents provide a broad overview of the topics typically covered in a pathology module. The specific content and depth of coverage may vary depending on the educational program, course duration, and the intended level of study. (25 hrs.)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Module strategies for a pathology course can be designed to engage students, promote active learning, and facilitate the acquisition of knowledge and skills. Here are some effective strategies that can be used: ***1. Lectures and Discussions***: Deliver interactive lectures that combine theoretical concepts with real-life examples and case studies. Encourage student participation through questions, discussions, and group activities to enhance understanding and critical thinking. 2. ***Case-Based Learning***: Use case studies and clinical scenarios to apply pathological concepts to real-world situations. Students can analyze patient histories, interpret diagnostic tests, and make diagnostic and therapeutic decisions based on their understanding of pathology. 3. ***Laboratory Sessions***: Conduct practical laboratory sessions to familiarize students with various pathological techniques, including slide preparation, staining, microscopy, and interpretation of histopathological findings. Provide hands-on experience and guidance to develop technical skills. 4. ***Problem-Solving Exercises***: Assign problem-solving exercises or worksheets that require students to analyze and interpret pathological data, such as laboratory

	results, imaging studies, or histopathological images. This helps develop critical thinking and analytical skills. 5. ***Collaborative Learning***: Encourage group work and collaborative learning activities, such as group projects, case discussions, or research assignments. This fosters teamwork, communication skills, and a deeper understanding of pathology through peer-to-peer interaction. 6. ***Multimedia and Visual Aids***: Incorporate multimedia resources, such as videos, animations, and interactive online tools, to illustrate complex pathological concepts and processes. Visual aids help reinforce understanding and engagement. 7. ***Guest Speakers***: Invite guest speakers, such as practicing pathologists or researchers, to share their expertise, experiences, and real-world insights. This provides students with exposure to diverse perspectives and current trends in the field of pathology. 8. ***Field Trips and Observations***: Organize visits to pathology laboratories, diagnostic centers, or medical facilities where students can observe and learn about the practical aspects of pathology. This hands-on experience enhances their understanding of pathology in a clinical setting. 9. ***Research Projects***: Assign research projects or independent study assignments that allow students to delve deeper into specific pathological topics of interest. This promotes critical thinking, research skills, and a deeper understanding of pathology. 10. Assessment Strategies: Use a variety of assessment methods, such as quizzes, examinations, laboratory reports, case presentations, and research projects, to evaluate students' knowledge, analytical skills, and understanding of pathology concepts. 11. ***Technology Integration***: Incorporate technology tools, such as virtual microscopy platforms, online pathology databases, or diagnostic software, to enhance learning and allow students to explore and practice pathology skills in a virtual environment. 12. ***Reflective Practice***: Encourage students to reflect on their learning experiences, integrate knowledge from different sources, and apply it to real-life scenarios. Provide opportunities for self-assessment and encourage students to set goals for improvement. ***It is essential to use a combination of these strategies to cater to different learning styles, promote active engagement, and create a dynamic learning environment in the pathology module.***

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	3, 8, 13	LO # 1,2,4,5,7and 8
	Assignments	2	10% (5)	1, 11	LO # 3,6,9 and 10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	10	LO # 11,12,13,14 and 15
Summative assessment	**Midterm Exam**	2 hr	25% (20)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Pathology and Cellular Adaptations

Week 2	Acute and Chronic Inflammation
Week 3	Tissue Repair and Regeneration
Week 4	Immunopathology
Week 5	Neoplasia
Week 6	Systemic Pathology (Cardiovascular System)
Week 7	Mid _ Exam
Week 8	Systemic Pathology (Respiratory System)
Week 9	Systemic Pathology (Gastrointestinal System) I
Week 10	Systemic Pathology (Gastrointestinal System) II
Week 11	Systemic Pathology (Renal and Genitourinary System)
Week 12	Systemic Pathology (Endocrine System)
Week 13	Systemic Pathology (Nervous System)
Week 14	Systemic Pathology (Musculoskeletal System)
Week 15	**Special Topics and Review**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Pathology and Basic Laboratory Techniques - Introduction to pathology and laboratory techniques - Safety protocols in the laboratory - Microscope usage and basic staining techniques

Week 2	Lab 2: Cellular Adaptations and Cellular Injury (Laboratory) - Microscopic examination of cellular adaptations: hypertrophy, hyperplasia, atrophy, and metaplasia - Microscopic examination of cellular injury and necrosis
Week 3	Lab 3: Acute and Chronic Inflammation (Laboratory) - Microscopic examination of acute inflammation: cellular infiltrates and tissue changes - Microscopic examination of chronic inflammation: granulomas and fibrosis
Week 4	Lab 4: Tissue Repair and Regeneration (Laboratory) - Microscopic examination of tissue repair: granulation tissue and scarring - Microscopic examination of regenerative processes in different tissues
Week 5	Lab 5: Immunopathology (Laboratory) - Laboratory techniques for the detection of immune reactions (immunohistochemistry, immunofluorescence, etc.) - Analysis of tissue samples for autoimmune diseases and hypersensitivity reactions
Week 6	Lab 6: Neoplasia (Laboratory) - Examination of tumor specimens: gross examination and microscopic analysis - Identification of histopathological features associated with benign and malignant tumors
Week 7	Lab 7: Mid- Exam
Week 8	Lab 8: Cardiovascular System Pathology (Laboratory) - Examination of heart specimens: gross examination and microscopic analysis - Identification of pathological changes in myocardial infarction, atherosclerosis, and hypertensive heart disease
Week 9	Lab 9: Respiratory System Pathology (Laboratory)
Week 10	Lab 10: Gastrointestinal System Pathology (Laboratory) I
Week 11	Lab 11: Renal and Genitourinary System Pathology (Laboratory)
Week 12	Lab 12: Endocrine System Pathology (Laboratory)

Week 13	Lab 13: Nervous System Pathology (Laboratory)
Week 14	Lab 14: Gastrointestinal System Pathology (Laboratory) II
Week 15	Lab 15: Review and Practical Assessments
Week 16	Lab 16:

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Basic Pathology by Kumar, Abbas, and Aster: This concise companion to Robbins and Cotran Pathologic Basis of Disease offers a condensed version of the main textbook, making it suitable for medical students and those seeking a more concise overview of pathology.	NO
Recommended Texts	Pathophysiology of Disease: An Introduction to Clinical Medicine by Gary D. Hammer and Stephen J. McPhee: While not exclusively a pathology textbook, this resource integrates pathophysiology with clinical medicine, offering a comprehensive understanding of disease mechanisms and their clinical manifestations.	No
Websites	Johns Hopkins University School of Medicine - Department of Pathology (pathology.jhu.edu): The Department of Pathology at Johns Hopkins University provides a website with access to pathology lectures and educational materials. The site covers various pathology topics and includes recorded lectures, online courses, and resources for medical students, residents, and professionals.	

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.

جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**Genetic Engineering**	رمز المقرر	Path-423
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	6
SWL(hr/sem)	150	تاريخ الاعداد	**2023/5/30**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	**محاضرات في القاعة الدراسية**		**2**	**15**	**30**
المختبر	**دوام المختبر**		**2**	**15**	**30**
المناقشات	**المناقشات**		0.5	14	7
مشروع عملي*	**مشروع عملي**		**0**	**0**	**0**
		التهيئة للمشروع	0	0	0
تحضير الدروس		**تحضير الدروس اليومي**	2	**15**	30
العروض التقديمية*	**القاء العرض التقديمي**		1	7	7
		التهيئة للعرض التقديمي	5	1	5
الامتحانات اليومية		**التهيئة للامتحانات اليومية**	4	14	7
امتحان نصف الفصل*	**الامتحان**		1	2	2
		التهيئة للامتحان	13	**1**	13
امتحان نهاية الفصل	**الامتحان**		**3**	**1**	**3**
		التهيئة للامتحان	16	**1**	16
العبء الكلي للمادة خلال الفصل					150

***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**genetic engineering**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**Path-423**			☐ **Lecture**	
ECTS Credits	**6**			☒ **Lab**	
SWL (hr/sem)	**150**			☐ **Tutorial**	
				☐ **Practical**	
				☒ **Seminar**	
Module Level	4		**Semester of Delivery**	8	
Administering Department	**pathological analyses**		**College**	**Applied Science**	
Module Leader	Batool omran Deeb		**e-mail**	Batoolomran@uosamarra.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name	Not applicable		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	medical molecular biology path313	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	141. Provide a comprehensive overview of the principles, techniques, and applications of genetic engineering. 142. Explore the fundamental concepts of genetic manipulation, including gene cloning, gene transfer, and DNA modification. 143. Genetic engineering has the potential to revolutionize healthcare. The module aims to examine the impact of genetic engineering on various aspects of healthcare, including diagnosis, treatment, and prevention of diseases. This can involve studying the latest advancements and breakthroughs in the field. 144. Examine the ethical implications associated with genetic engineering, including the potential risks, benefits, and societal impact of manipulating genetic material. 145. Investigate the role of genetic engineering in medical advancements, such as gene therapy, personalized medicine, and the development of genetically modified organisms for pharmaceutical production. 146. Provide hands-on laboratory experiences to develop skills in gene cloning, polymerase chain reaction (PCR), DNA sequencing, gene expression analysis, and other techniques commonly used in genetic engineering research. 147. The module aims to foster effective communication and collaboration skills among students. This can involve group projects, presentations, and discussions to encourage the exchange of ideas and perspectives related to medical genetic engineering. 148.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	149. Understand the principles and techniques of medical genetic engineering. 150. Analyze and evaluate the applications and advancements of genetic engineering in medicine. 151. Critically assess the ethical and legal considerations associated with genetic engineering in healthcare. 152. Evaluate the impact of genetic engineering on healthcare and its potential to improve diagnosis, treatment, and prevention of diseases. 153. Demonstrate practical skills in laboratory techniques used in genetic

	engineering. 154. Conduct independent research, analyze scientific literature, and propose innovative ideas in medical genetic engineering. 155. Collaborate effectively with peers in group projects, discussions, and presentations. These learning outcomes aim to equip students with a comprehensive understanding of medical genetic engineering, practical laboratory skills, critical thinking abilities, and effective communication and collaboration skills in the field.
Indicative Contents المحتويات الإرشادية	1) Historical context and milestones in medical genetic engineering, and Importance and applications in the field of medicine 2) Recombinant DNA technology and gene cloning 3) Principles and applications of targeted genome editing (14 hours) 4) Ethical considerations and challenges in gene editing 5) Introduction to gene therapy and its potential in treating genetic disorders Types of gene therapy approaches (e.g., gene addition, gene silencing(Clinical trials and advancements in gene therapy) 6) Genetic engineering in drug production and pharmaceutical applications, Production of therapeutic proteins through GMOs, Regulation and safety considerations of GMOs in medicine (14 hours) 7) Ethical frameworks and principles in genetic engineering, Ethical issues surrounding germline gene editing and genetic enhancement, Intellectual property rights and legal implications in genetic engineering research 8) Introduction to personalized medicine and its relation to genetic profiling Genomic medicine and its impact on diagnosis and treatment decisions Privacy and data security challenges in genetic profiling 9) Application of genetic engineering in disease prevention and public health, Genetic screening and testing for inherited diseases, Genetic interventions for disease prevention and risk reduction

	(14 hours) 10) Recent advancements in gene editing technologies beyond CRISPR-Cas9 Synthetic biology and its applications in medical genetic engineering Emerging techniques and their potential impact on medicine 11) Access to genetic therapies and healthcare disparities, Genetic discrimination and its societal impact, Cultural and social considerations in the implementation of genetic engineering 12) Genetic engineering approaches in cancer research and treatment, Gene-based therapies and immunotherapies for cancer, Challenges and future directions in genetic engineering for cancer treatment (14 hours) 13) Genetic engineering strategies for combating infectious diseases, Gene-based vaccines and antiviral therapies, Genetically modified vectors for drug delivery and disease prevention 14) Genetic engineering applications in treating neurological disorders, Challenges and prospects in gene therapy for neurodegenerative diseases, Gene editing approaches for inherited neurological disorders 15) Genetic modification of stem cells for regenerative medicine, induced pluripotent stem cells (iPSCs) and their applications, Gene editing tools for manipulating stem cell genomes, Emerging trends and future directions in medical genetic engineering Open discussions on ethical dilemmas and societal implications, Reflection on the module's content and its impact on healthcare (14 hours) **Note: The specific topics and durations of each lecture can be adjusted based on the needs and preferences of the course instructor and the available time for each session.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The Learning and Teaching Strategies for the Medical Genetic Engineering module involve a combination of lectures, interactive discussions, laboratory sessions, group projects, guest speakers, case studies, literature review assignments, technology-

	based learning, varied assessment methods, feedback, reflection, and field trips. Lectures provide foundational knowledge, while interactive discussions and case studies promote critical thinking and ethical considerations. Laboratory sessions offer practical experience, and group projects encourage collaboration and application of knowledge. Guest speakers bring real-world insights, literature reviews foster research skills, and technology-based learning enhances engagement. Various assessment methods evaluate understanding, and feedback supports student growth. Field trips provide exposure to industry applications. These strategies aim to create an interactive and supportive learning environment for students in the module.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	5% (5)	4, 8, 9	LO #1, 2, and 10
	Assignments	1	7% (7)	11	LO # 3, 4, 6 and 7
	Projects / Lab.	2	20% (20)	6, 13	All
	Report	1	3% (3)	14	LO # 11,12&13
Summative assessment	**Midterm Exam**	2 hr	15% (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 Medical Genetic Engineering
Week 2	Gene Manipulation Techniques
Week 3	Gene Editing Tools and Techniques
Week 4	Gene Therapy
Week 5	Genetically Modified Organisms (GMOs) in Medicine
Week 6	Ethical and Legal Considerations in Medical Genetic Engineering Personalized Medicine and Genetic Profiling
Week 7	Mid term exam
Week 8	Genetic Engineering and Disease Prevention
Week 9	Social and Ethical Implications of Medical Genetic Engineering
Week 10	Genetic Engineering and Cancer
Week 11	Genetic Engineering in Infectious Diseases
Week 12	Gene Therapy for Neurological Disorders
Week 13	Genetic Engineering and Stem Cells
Week 14	Future Perspectives and Ethical Discussions in Medical Genetic Engineering
Week 15	Advances in Genetic Engineering Techniques
Week 16	**Final term exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	**Material Covered**
Week 1	Lab 1: Plasmid extraction protocol
Week 2	Lab 2: Restriction enzymes, DNA digestion protocol
Week 3	Lab 3: DNA ligases, DNA ligation protocol
Week 4	Lab 4: DNA gel extraction protocol
Week 5	Lab 5: Primer designing protocol
Week 6	Lab 6: Polymerase chain reaction protocol
Week 7	Lab 7: DNA sequencing
Week 8	Lab 8: Bioinformatic analysis
Week 9	Lab 9: Bacteria Transformation
Week 10	Lab 10: Protein expression induction
Week 11	Lab 11: Protein overproduction screening by SDS-PAGE
Week 12	Lab 12: Protein isolation
Week 13	Lab13: Southern blotting
Week 14	Lab 14: Northern blotting
Week 15	Lab 15: Western blotting

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Principles of Gene Manipulation and Genomics	Available online

Recommended Texts	Principles of Gene Manipulation and Genomics	Electronic copy is available
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
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جامعة سامراء
كلية العلوم التطبيقية
قسم التحليلات المرضية

توزيع العبء الدراسي للطالب

اسم المقرر	**Epidemiology**	رمز المقرر	Path424
نوع المقرر	**Core**	عدد الوحدات الاوربية **(ECTS)**	**6**
SWL(hr/sem)	**150**	تاريخ الاعداد	**2023/5/30**

نوع النشاط	الساعات المجدولة SSWL	الساعات غير الجدولة USSWL	ساعة لكل اسبوع	عدد الاسابيع	العبء الكلي للنشاط
محاضرات	محاضرات في القاعة الدراسية		2	15	30
المختبر	دوام المختبر		2	15	30
المناقشات	المناقشات		1	15	15
مشروع عملي*	مشروع عملي		0	0	0
		التهيئة للمشروع	0	0	0
تحضير الدروس		تحضير الدروس اليومي	2	15	30
العروض التقديمية*	القاء العرض التقديمي		1	1	1
		التهيئة للعرض التقديمي	4	3	12
الامتحانات اليومية		التهيئة للامتحانات اليومية	4	2	8
امتحان نصف الفصل*	الامتحان		0	0	0
		التهيئة للامتحان	8	1	8
امتحان نهاية الفصل	الامتحان		4	1	4
		التهيئة للامتحان	12	1	12
العبء الكلي للمادة خلال الفصل					150
***لاتوجد ساعات مجدولة لهذه النشاطات كون تم استيفاؤها ضمن الصفوف الدراسية**					

توقيع :

اسم مدرس المادة:

University of Samarra
College of Applied Science
Department of pathological analyses

MODULE DESCRIPTION
وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**epidemiology**	**Module Delivery**	
Module Type	**Core**		☒ **Theory**
Module Code	**Path424**		☐ **Lecture**
ECTS Credits	**6**		☐ **Lab**
SWL (hr/sem)	**150**		☒ **Tutorial**
			☐ **Practical**
			☒ **Seminar**

Module Level	8	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Faesal Ghaze Hassen	**e-mail**	Faysal.alsamarraie @uosamarra.edu.iq
Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To describe the distribution and magnitude of health and disease problems in the population. 2. To identify the etiological factors – risk factors in the population. 3. To provide the data essential to planning, implementation, and evaluation of services for prevention, control, and treatment of disease and to set up priorities for these services. 4. to eliminate or reduce health problems or its consequences 5. to promote the health and well-being of society as a whole.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Describe key features and applications of descriptive and analytic epidemiology. 2. Calculate and interpret ratios, proportions, incidence rates, mortality rates, prevalence, and years of potential life lost. 3. Calculate and interpret mean, median, mode, ranges, variance, standard deviation, and confidence interval. 4. Prepare and apply tables, graphs, and charts such as arithmetic-scale line, scatter diagram, pie chart, and box plot. 5. Describe the processes, uses, and evaluation of public health surveillance. 6. Describe the steps of an outbreak investigation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Introduction to Epidemiology** Study Designs, Definition, Types of Epidemiological Study (5 hrs) **Study Designs**, Descriptive Observational Studies, Analytical or Comparative Studies, Analytical Observational Studies, Registries, Interventional/Experimental Studies, Blinding, Consent Form, Intent to Treat, Analysis,Quasi-experimental Studies, Clinical Trials and their Phases, Research Questions and Study Types, Meta-analysis, (5 hrs) **Sampling Procedure**, Population, Reasons for Sampling, Sampling Techniques, Variables, Data and its Presentation, Variables and their Types, Data and its Types, Tabulation and Graphical Presentation of Data (5 hrs) **Biostatistics:** Basic , Measures of Central Tendency , Measures of Variation, Basics in Epidemiology and Biostatistics , Standard Error of Mean , Normal Distribution(5 hrs) **Estimation and Hypothesis** Testing, Point Estimate, Interval Estimate, Hypothesis Testing, Introduction to the Scale of Probability, Test of Hypothesis, Decision Errors,

	(5 hrs) **Measures of Disease Frequency**, Ratio, Proportion and Rate, Prevalence and Incidence, Special Types of Incidence Rates(5 hrs) **Measures of Association**, Association between Two Continuous Variables, Relative Risk and Odds Ratio, Factors Affecting Study Outcomes, Introduction, Bias, Control of Bias, Confounding, Effect Modifiers, (5 hrs) **Sample Size Estimation**, Sample Size, Sample Size for Single Proportion, Sample Size for Single Group Mean, Sample Size for Two Proportions, Sample Size for Two Group Means, Sample Size for Sensitivity and Specificity, Suggested Websites for Sample Size Calculator, (5 hrs) **Screening**, Reliability and Validity of a Screening Test, Sensitivity and Specificity, Predictive Values, (5 hrs) **Basic Statistical Tests**, Unpaired Samples, Paired Samples, What are Validity and Reliability in Research Findings, (5 hrs) **Overview of Data Collection Techniques**, Different Data Collection Techniques, Data Analysis Plan, (5 hrs) **Importance of Data Analysis Plan**, What Should the Plan Include. (5 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 critical 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 لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 8 and 9
	Assignments	2	5% (5)	2, 14	LO # 3, 4, 6, 11, 12, and 13
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	20% (20)	7	LO # 1-6
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Epidemiology (Definition, Historical Evolution)
Week 2	Study Designs
Week 3	Sampling Procedure (population, reason for sampling, sampling techniques)
Week 4	Variables, Data, and its Presentation (Variables and their Types, Data and its Types, Tabulation and Graphical Presentation of Data)
Week 5	Biostatistics: Basic (Measures of Central Tendency, Measures of Variation)
Week 6	Estimation and Hypothesis (Testing Point Estimate, Interval Estimate, Hypothesis Testing, Introduction to the Scale of Probability, Test of Hypothesis, Decision Errors)
Week 7	Measures of Disease Frequency (Ratio, Proportion and Rate, Prevalence and Incidence, Special Types of Incidence Rates)
Week 8	Mid-term Exam
Week 9	Measures of Association (Association between Two Continuous Variables, Relative Risk and Odds Ratio)
Week 10	Factors Affecting Study Outcomes (Introduction, Bias, Control of Bias, Confounding, Effect Modifiers)
Week 11	Sample Size Estimation
Week 12	Screening (Reliability and Validity of a Screening Test, Sensitivity and Specificity, y Predictive Values)
Week 13	Basic Statistical Tests (Unpaired Samples, Paired Samples, What are Validity and Reliability in Research Findings?)
Week 14	Overview of Data Collection Techniques
Week 15	Data Analysis Plan

Week 16	**A preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	BASICS IN EPIDEMIOLOGY AND BIOSTATISTICS, Waqar H Kazmi, Farida Habib Khan, First Edition: 2015. Jaypee Brothers Medical Publishers (P) Ltd.	NO
Recommended Texts	Principles of Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics. Third Edition, 2012. U.S. Department Of Health And Human Services	No
Websites	https://www.cdc.gov/csels/dsepd/ss1978/index.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 (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.