



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Principle of Microbiology		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	PAT-111		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	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 Objectives أهداف المادة الدراسية	1. Understand the fundamental principles and concepts of microbiology, including the definition, scope, and historical development of the field. 2. Identify and classify different groups of microorganisms, including bacteria, archaea, fungi, viruses, and protozoa. 3. Describe the structure and function of microbial cells, including their cellular components, organelles, and metabolic processes. 4. Explain the principles of microbial genetics, including DNA replication, transcription, translation, and mechanisms of genetic transfer. 5. Analyze the growth and reproduction of microorganisms, including factors influencing microbial growth and the bacterial growth curve. 6. Discuss the structure, function, and pathogenicity of bacteria, viruses, and fungi, and their interactions with host organisms.
	7. Understand the principles of microbial control and sterilization, including various methods of physical, chemical, and biological control. 8. Explore the role of microorganisms in various applied fields, such as biotechnology, industrial processes, and environmental microbiology. 9. Evaluate the impact of antimicrobial agents and mechanisms of antimicrobial resistance on human health and public health. 10. Develop scientific skills, including microscopy techniques, laboratory safety practices, and the interpretation of microbiological data. 11. These objectives provide a framework for students to develop a strong foundation in microbiology and prepare them for further studies or careers in related fields.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Describe the structure, function, and characteristics of microorganisms, including bacteria, archaea, fungi, viruses, and protozoa. 2. Explain the principles of microbial genetics, including DNA replication, transcription, translation, and genetic transfer mechanisms. 3. Understand the processes of microbial growth, including factors influencing growth and the bacterial growth curve. 4. Identify and discuss the mechanisms of pathogenesis and virulence factors employed by microorganisms. 5. Explain the principles of microbial control and sterilization, including various physical, chemical, and biological methods. 6. Analyze the impact of antimicrobial agents and mechanisms of antimicrobial resistance on human health and public health. 7. Evaluate the role of microorganisms in various applied fields, such as biotechnology, industrial processes, and environmental microbiology. 8. Demonstrate proficiency in laboratory techniques and skills relevant to microbiological analysis and research. 9. Apply critical thinking and problem-solving skills to analyze and interpret microbiological data and experimental results. 10. Demonstrate knowledge of laboratory safety practices and ethical considerations in microbiological research.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. A. Definition, scope, and historical development of microbiology B. Importance of microorganisms in various fields and industries C. Overview of major groups of microorganisms (bacteria, archaea, fungi, viruses) D. Functions of organelles and structures involved in microbial physiology E. Principles of microbial genetics and inheritance F. Microbial Growth and Control G. Factors influencing microbial growth and reproduction H. Bacterial growth curve and population dynamics I. Principles of microbial control, sterilization, and disinfection
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Learning and Teaching Strategies أساليب التعلم والتعليم	
Strategies	A. Lectures: Conduct engaging lectures to introduce and explain key concepts, theories, and principles of microbiology. Use multimedia resources, visual aids, and real-life examples to enhance understanding. B. Laboratory Work: Incorporate hands-on laboratory sessions to provide students with practical experience in microbiological techniques, such as
	microscopy, culture techniques, and identification methods. Encourage active participation and critical thinking during lab activities. C. Group Discussions and Case Studies: Organize group discussions and case study analysis to promote student engagement and collaborative learning. Encourage students to analyze real-life scenarios related to microbiology and apply their knowledge to propose solutions. D. Online Resources and Simulations: Utilize online resources, virtual laboratories, and interactive simulations to supplement classroom learning. These resources can provide additional opportunities for students to explore concepts, perform virtual experiments, and reinforce their understanding. E. Assignments and Projects: Assign individual or group projects that require students to apply their knowledge of microbiology to practical situations. This can include research projects, literature reviews, or designing experiments related to microbial processes.

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

Module Evaluation تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Microbiology
Week 2	Microbial Diversity and Classification
Week 3	Microscopy and Staining Techniques
Week 4	Microbial Cell Structure and Function
Week 5	Microbial Metabolism and Growth
Week 6	Microbial Genetics
Week 7	Bacterial Structure and Function
Week 8	Bacterial Reproduction and Growth
Week 9	Viral Structure and Replication
Week 10	Fungal Structure and Function
Week 11	Microbial Pathogenesis
Week 12	Antimicrobial Agents and Resistance
Week 13	Microbial Control and Sterilization
Week 14	Industrial and Applied Microbiology
Week 15	Environmental Microbiology and Public Health
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي المختبري

	Material Covered
Week 1	Lab 1: Orientation to the laboratory and safety guidelines, Introduction to laboratory equipment and tools
Week 2	Lab 2: Microscopy techniques: Principles and handling of light microscopes Preparation of microscope slides and observation of microorganisms
Week 3	Lab 3: Aseptic techniques and microbial culture methods Inoculation and streaking techniques on agar plates
Week 4	Lab 4: Microbial growth and enumeration techniques Serial dilution and viable plate count methods
Week 5	Lab 5: Gram staining technique: Differentiation of Gram-positive and Gram-negative bacteria Microscopic examination of stained bacterial samples
Week 6	Lab 6: Microbial biochemistry: Identification of metabolic pathways through biochemical tests Interpretation of test results and identification of microorganisms
Week 7	Lab 7: Microbial genetics: Introduction to genetic transfer methods (conjugation, transformation) Performance of genetic transfer experiments using appropriate bacterial strains

Week 8	Lab 8: Antibiotic susceptibility testing: Kirby-Bauer disc diffusion method ,Interpretation of results and determination of bacterial antibiotic resistance
Week 9	Lab 9: Microbial control methods: Heat treatment, chemical disinfection, and antiseptics, Evaluation of the efficacy of different control measures
Week 10	Lab 10: Environmental microbiology: Sampling techniques and isolation of microorganisms from environmental sources, Characterization of environmental isolates through microscopy and biochemical tests
Week 11	Lab 11: Industrial microbiology: Introduction to fermentation processes and industrial applications Hands-on experience with fermentation setups and monitoring
Week 12	Lab 12: Viral culture and identification techniques , Growth of viral samples in cell cultures and identification through cytopathic effects
Week 13	Lab 13: Molecular techniques: DNA extraction and polymerase chain reaction (PCR), Amplification and analysis of microbial DNA samples
Week 14	Lab 14: Data analysis and interpretation of laboratory results , Presentation of laboratory findings and discussion of scientific implications
Week 15	Lab 15: Laboratory review and recap of key concepts, Assessment and feedback session

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Prescott, L. M., Harley, J. P., & Klein, D. A. (2019). Microbiology (10th ed.). McGraw-Hill Education.	Yes
Recommended Texts	"Jawetz, Melnick & Adelberg's Medical Microbiology" by Karen C. Carroll, Janet Butel, Stephen A. Morse, Timothy A. Mietzner.	yes
Websites	https://microbewiki.kenyon.edu/	

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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Cytology		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	PAT-112			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	1	Semester of Delivery		1
Administering Department	PATH	College	SCI	
Module Leader	Name	e-mail	E-mail	
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	11/10/2025	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 Objectives

أهداف المادة الدراسية

12. Understand the fundamental principles of cytology: Students should grasp the basic concepts and principles of cytology, including cell structure and function, cell cycle, cell division, and cellular organelles.
13. Familiarity with cell identification techniques: Students should become acquainted with various techniques used in cell identification and analysis, such as microscopy, staining methods, and cell culture.
14. Study of cellular components and their functions: Students should learn about the different components within a cell, such as the nucleus, cytoplasm, mitochondria, endoplasmic reticulum, and Golgi apparatus, and understand their roles in cellular processes.
15. Recognize and classify different cell types: Students should be able to identify and classify different types of cells based on their morphology, structure, and specialized functions. This includes understanding the characteristics of epithelial cells, connective tissue cells, muscle cells, nerve cells, and blood cells.
16. Understand the principles of cell division: Students should comprehend the process of cell division, including mitosis and meiosis, and their significance in growth, development, and reproduction.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

Knowledge and Understanding:

10. Demonstrate a solid understanding of the fundamental principles of cytology, including cell structure, function, and the cell cycle.
11. Describe the different cellular components and their roles in cellular processes.
12. Explain the principles and techniques used in cell identification and analysis.
13. Identify and classify different cell types based on their morphology and specialized functions.
14. Understand the principles of cell division, including mitosis and meiosis, and their significance in growth, development, and reproduction.
15. Perform basic laboratory techniques used in cytology, such as sample preparation, staining, and microscopy.
16. Analyze and interpret cytological specimens, such as Pap smears, fine-needle aspirations, and body fluid samples.
17. Apply appropriate safety protocols and ethical considerations in cytological procedures, including the handling and disposal of cytological samples.
18. Apply critical thinking skills to analyze and solve problems in cytology.
19. Propose innovative approaches or techniques in cytology based on evidence and reasoning.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Definition and scope of cytology 2. Historical development of cytology 3. Importance of cytology in various fields, such as medicine and research
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Active Learning: F. Encourage students to actively engage with the material through discussions, group activities, and hands-on laboratory work. G. Incorporate case studies and real-life examples to illustrate the practical applications of cytology. H. Promote critical thinking by posing thought-provoking questions and challenges for students to analyze and solve. Multimedia Resources: I. Utilize multimedia resources such as videos, animations, and interactive online modules to enhance understanding of complex cytological processes. J. Provide access to online databases and virtual microscopy platforms to allow students to explore and analyze cytological images independently. Laboratory Practicals: K. Conduct laboratory practical sessions where students can perform cytological techniques, prepare slides, and observe cellular structures under microscopes. L. Assign hands-on activities that involve staining and examining cytological specimens to reinforce theoretical knowledge and develop practical skills. Small Group Discussions: N. Organize small group discussions or collaborative learning activities where students can exchange ideas, ask questions, and discuss cytological concepts. O. Assign group projects or case studies that require students to work together to analyze and interpret cytological findings. Peer Teaching and Presentations: P. Assign students to present on specific cytology topics to their peers, fostering a deeper understanding of the subject matter. Q. Encourage peer teaching, where students take turns explaining concepts to one another, reinforcing their own knowledge while helping their peers.

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 الغير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تَقْيِيم المَادَّة الدِّرَاسِيَّة

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
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Week 1	Definition and scope of cytology
Week 2	Cell Structure and Function:
Week 3	Cell membrane structure and function
Week 4	Cytoplasmic organelles (e.g., nucleus, mitochondria, endoplasmic reticulum, Golgi apparatus)
Week 5	Cytoplasmic organelles
Week 6	Cytoplasmic organelles
Week 7	Cellular transport mechanisms (e.g., diffusion, osmosis, active transport)
Week 8	Cell Cycle and Cell Division:
Week 9	Cellular metabolism and energy production
Week 10	Techniques in Cytology:
Week 11	Advances in Cytology and Future Directions:
Week 12	Cytological Specimens and Interpretation:
Week 13	Cellular Abnormalities and Diseases:
Week 14	Ethical Considerations and Safety in Cytology:
Week 15	Integration with Other Disciplines:
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي المخطط

	Material Covered
Week 1	Lab Safety Orientation and Basic Microscopy Techniques
Week 2	Preparation and Observation of Plant and Animal Cells
Week 3	Observation and Staging of Mitotic Cells
Week 4	Differential Staining Techniques (e.g., Romanowsky, Gram)
Week 5	Microscopic Examination of Epithelial Tissues
Week 6	Identification and Staining of Connective Tissue Components
Week 7	Microscopic Examination of Skeletal Muscle Cells
Week 8	Staining and Identification of Blood Cell Types

Week 9	Staining and Identification of Blood Cell Types
Week 10	Nervous System: Brain and Cranial Nerves
Week 11	Preparation and Evaluation of Pap Smears
Week 12	Examination of Body Fluids (e.g., pleural fluid, ascitic fluid)
Week 13	Detection and Analysis of Cancerous Cells
Week 14	virtual Microscopy and Molecular Cytology Techniques
Week 15	Final Lab Exam on Cytology Concepts and Techniques

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Cytology: Diagnostic Principles and Clinical Correlates" by Edmund S. Cibas and Barbara S. Ducatman" "Cytopathology: An Introduction" by Barbara H. S. Singer, Soonweng Cho, and Ruth L. Katz	Yes
Recommended Texts	"Cytopathology: An Introduction" by Barbara H. S. Singer, Soonweng Cho, and Ruth L. Katz	No
Websites	https://www.cytologytesting.com/ https://www.cytology-iac.org/	

Grading Scheme

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

معلومات المادة الدراسية				
Module Delivery		Statistics الإحصاء الحياتي		عنوان المقرر
☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	Core		نوع المقرر	
	path-124		رمز المقرر	
	3		عدد الوحدات	
	75		عدد الساعات	
1	Semester of Delivery		1	مستوى المقرر
SCI		College	PATH	Administering Department
E-mail		e-mail	Name	Module Leader
Ph.D.	Module Leader's Qualification		Professor	Module Leader's Acad. Title
E-mail		e-mail	Name (if available)	Module Tutor
E-mail		e-mail	Name	Peer Reviewer Name
1.0	Version Number		12/10/2025	Scientific Committee Approval Date

العلاقة مع المواد الدراسية الأخرى			
	الفصل الدراسي	-	المعهد
	الفصل الدراسي	-	المقرر المشترك

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
أهداف المادة الدراسية - التعرف على المفاهيم الأساسية للإحصاء والاحصاء الحياتي - التعرف على علاقة الاحصاء والاحصاء الحياتي بالعلوم الاخرى وخاصة العلوم البيولوجية. - التعرف على كيفية جمع البيانات للدراسة التي سجرها الباحث في دراسته. - معرفة تطبيقات الاحصاء والاحصاء الحياتي في مختلف العلوم. - القدرة على استخدام الاحصاء في حل المعضلات الحيائية والبيئية.	
أ- المعرفة والفهم 1- اكتساب الخبرة والمعرفة في جمع البيانات الاحصائية. 2- حلول المشاكل الجداول الاحصائية . 3- إيجاد مقاييس التشتت والنزعة المركزية. ب-- المهارات الخاصة بالموضوع ب1- التدريب الصفي ب2- تقارير علمية ب3- بحث تخرج ج- مهارات التفكير ج1- تطوير قدرة الطالب للعمل على أداء الواجبات وتسليمها في الموعد المقرر . ج2- التفكير المنطقي والاحصائي في إيجاد النتائج الاحصائية لدراسة المشكلة ومدى تأثير الظواهر على تلك الدراسة. ج3- تطوير قدرة الطالب على الحوار والمناقشة.	مخرجات التعلم للمادة الدراسية
المحتويات الإرشادية	

استراتيجيات التعلم والتعليم	
● إدارة المحاضرة على نحو يشعر بأهمية الوقت. ● تشجيع الإجابات الصحيحة ومناقشة الإجابات الخاطئة بدلا من اعتماد العقاب فيها . ● تكليف الطالب ببعض الأنشطة والواجبات الجماعية. ● تخصيص نسبة من الدرجة للأنشطة الجماعية. ● المشاركة الفاعلة في قاعة الدرس دليل التزام الطالب وتحمله المسؤولية. ● الالتزام بالموعد المحدد في تقديم الواجبات والبحوث. تعتبر الاختبارات الأتية , الفصلية والنهائية عن الالتزام والتحصيل المعرفي والمهاري.	استراتيجيات

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/w)	48	Structured SWL (h/w)	3
الحمل الدراسي المنتظم للطلاب خلال الفصل		الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/w)	27	Unstructured SWL (h/w)	2
الحمل الدراسي غير المنتظم للطلاب خلال الفصل		الحمل الدراسي غير المنتظم للطلاب أسبوعيا	

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	60
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Module Evaluation					
تَقْيِيمُ المَادَّةِ الدِّرَاسِيَّةِ					
شِبْهُ السَّعْمِ	اِسْبِوع	(الوزن) (الدرجة)	الوقت / العدد		
LO #1, #2 and #10, #11	5 and 10	10% (10)	2	اِخْتِبَارَات	التَّيْقِيْمُ التَّيْمِي
LO #3, #4 and #6, #7	2 and 12	10% (10)	2	مِهَام	
All	Continuous	10% (10)	1	مُسَارِيْع	
LO #5, #8 and #10	13	10% (10)	1	تَقْرِير	
LO #1 - #7	7	10% (10)	2hr	اِخْتِبَارُ مَصْفِ الفَصْلِ	التَّيْقِيْمُ اِلْمَلْخَص
All	16	50% (50)	3hr	اِخْتِبَارُ نِهَائِي	
		100% (100 Marks)	Total assessment		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Material Covered	الاسبوع
المقدمة في الاحصاء , تعريف الاحصاء و الاحصاء الحياتي.	الاول
علاقة الاحصاء والاحصاء الحياتي بالعلوم البيولوجية.	الثاني
تقسيم علم الاحصاء والمعلم و الرموز الاحصائية.	الثالث
بعض المفاهيم الاحصائية .	الرابع
طرق جمع البيانات , مصادر جمع البيانات, والاستمارات الاحصائية.	الخامس
طرق عرض وتلخيص البيانات : العرض الجدولي للبيانات , التوزيع التكراري, التوزيع الهندسي للبيانات.	السادس
الخطوات العامة لتكوين جدول توزيع تكراري.	السابع
المقاييس الاحصائية: مقاييس النزعة المركزية او مقاييس التمرکز او المتوسط 1- (المتوسط الحسابي , المتوسط الفرضي , المتوسط الحسابي المرجح او الموزون)	الثامن
مقاييس النزعة المركزية: الوسيط , المنوال(للبيانات المبوبة و الغير مبوبة).	التاسع
مقاييس التشتت : مقاييس التشتت (المدى , الانحراف المتوسط) لبيانات المبوبة , والبيانات الغير مبوبة.	العاشر
التباين , الانحراف المعياري, الخطأ القياسي.	الحادي عشر
تعريف معامل الارتباط , حساب معدل الارتباط , معامل الارتباط البسيط و الرتب.	الثاني عشر
تعريف معامل الانحدار , حساب معدل الانحدار	الثالث عشر
مبادئ الاحتمالية : الاحتمال الشرطي والاحتمال التوافقي .	الرابع عشر
التحليل الاحصائي, الوحدة التجريبية, المعاملات التكرارات.	الخامس عشر

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسرعي المختبر

Material Covered	
	Week 1
	Week 2
	Week 3
	Week 4
	Week 5
	Week 6
	Week 7

Learning and Teaching Resources

مصادر التعلم والتدريس

مؤقراً بالمكتبة	Text	
نعم	1 - الاحصاء تأليف محمود حسن وامير المشهداني - جامعة بغداد	المصادر المطلوبة
نعم	1- مبادئ الاساليب الإحصائية , تأليف د. عبد العزيز فهمي هيكلي, ١٩٦٦, دار النهضة العربية , بيروت	المصادر الموصى بها
www. Freescience.info/math		رابط على الانترنت

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	path-101		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	1
Administering Department	PATH	College	SCI
Module Leader		e-mail	
Module Leader's Acad. Title	Assis. Lect.	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	11/10/2025	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 Objectives أهداف المادة الدراسية	The main objectives of the course are to: 1. Introduce students to the digital world by considering fundamental computer hardware and the most popular microcomputer applications. 2. Explain systems and applications software. 3. Introduce and practice file management, data storage and security principles. 4. Consider basic operating system features (using the Windows environment). 5. This Microsoft Word training course aims to provide new users with the essential skills needed to create, edit and print professional looking documents using text, tables, lists and pictures as well as covering simple mail merge. 6. Particular emphasis is placed on developing accurate and well-designed documents. 7. The course begins by showing you how to navigate around Microsoft Word. 8. It then quickly gets you to create a new document before moving onto features such as text manipulation and enhancement, creating and using tabs and tables, embellishing documents with clip art and pictures, creating multiple documents through merging and printing documents. 9. Give students hands-on experience on popular application software packages, which may include word processing, electronic spreadsheets, database management, presentation graphics, statistical applications and other.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completion of the course students are expected to be able to: Understand basic computer hardware fundamentals. Understand and practice file management principles. Become proficient in the use of the windows environment. Create word processing documents and understand word processing fundamentals. Use an electronic spreadsheet to solve relevant problems. Prepare graphs to present important facts. Use presentations graphics software to prepare attractive presentations. work with the basic features of Word create a new document work with a document display documents using various views select and work with text in a document use a range of font formatting techniques format paragraphs work effectively with features that affect the page layout of your document create and modify tabs and tables insert and work with clip art and pictures use the Mail Merge Wizard to perform mail merges print a document find the information you need in Help create high quality document designs and layouts.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Identify the hardware components of a computer.</u> • Lists the hardware components such as processor, memory, disk, main board, etc. • Explains the features (speed, capacity, etc.)of the hardware components of a computer. • Explains the relationships between the components of a computer and how data are transferred among the components. • Uses computer using input devices, such as keyboard and mouse.

	- Transfers data outside the computer using output devices, such as screen and printer. - Saves files to removable devices and loads files from removable devices. - Connects to the Internet using network cards. - Identifies BIOS and changes settings in BIOS. - Lists jobs of operating system. - Uses the Windows and Linux operating systems. - Tests the performance of hardware components on some specific programs. Part B – MS Word. - This Microsoft Word training course aims to provide new users with the essential skills needed to create, edit and print professional looking documents using text, tables, lists and pictures as well as covering simple mail merge. Particular emphasis is placed on developing accurate and well-designed documents. - The course begins by showing you how to navigate around Microsoft Word. It then quickly gets you to create a new document before moving onto features such as text manipulation and enhancement, creating and using tabs and tables, embellishing documents with clip art and pictures, creating multiple documents through merging and printing documents. - This Microsoft Word training course aims to provide users with the skills to work with larger documents efficiently, create standard documents for repeated use as well as covering advanced mail merge techniques. This Microsoft Word training course aims to provide experienced users with the skills to work with document referencing features, longer document tools, tracking changes, document protection, diagrams and develop automation using fields and macros.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Be able to start and exit a Windows application and utilize sources of online help. Identify common on-screen elements of Windows applications, change application settings and manage files within an application. Perform common editing and formatting functions. Perform common printing functions. - Determine Your Document Readability Statistics - Generate Lorem Ipsum Random Text to Your Document - Highlight a Sentence With a Click - Microsoft Word Tricks and Tips-Show Hidden Character - Replace Invisible Characters and Formatting - Insert Complex Math equations

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem)	36	Unstructured SWL (h/w)	2

الحمل الدراسي غير المنتظم للطلاب خلال الفصل		الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem)	100		
الحمل الدراسي الكلي للطلاب خلال الفصل			

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuou s	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	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	Definition of computer and its historical development and hardware and its structure
Week 2	Definition of Processor, hard disk, memory, mainboard, ROM memory
Week 3	Operating systems. Disk and file management. Other operations. (Using WINDOWS)

Week 4	Input devices: Keyboard and mouse and Output devices: Screen and printer
Week 5	Control Panel
Week 6	Network and application software
Week 7	Getting started with Word
Week 8	Your first document
Week 9	Working with a document
Week 10	Viewing documents
Week 11	Working with text and Text appearance
Week 12	Working with pages, Tabs and tables, and Clip Art and pictures
Week 13	Performing a mail merge and Printing your documents
Week 14	Document and formatting techniques
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المناهج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: hardwares and Windows installation
Week 2	Lab 2: Processor, hard disk, and memory, mainboard, ROM memory
Week 3	Lab 3: Control Panel and Screen and printer
Week 4	Lab 4: Network and application software
Week 5	Lab 5: Home, Insert, Theme ribbons
Week 6	Lab 6: Layout, view, mailing ribbons
Week 7	Lab 7: References

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	COMPUTER HARDWARE	No
Recommended Texts	COMPUTER HARDWARE MS WORD 2019	Yes
Websites	https://nou.edu.ng/coursewarecontent/CIT%20210%20-%20Computer%20Hardware.pdf	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	اللغة العربية		Module Delivery
Module Type	S		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	Uni-102		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	1
Administering Department	PATH	College	SCI
Module Leader	Hamed Abd AL reda Jabar	e-mail	Haimid.jabar.@qu.edu.iq
Module Leader's Acad. Title	teacher	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	12/10/2025	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 Objectives

أهداف المادة الدراسية

- 1- أن ينشأ الطالب على حب اللغة العربية والاعتزاز بها اعتزازاً كبيراً بوصفها لغة القرآن الكريم . 2- تنمية قدرة الطالب على التعبير الصحيح في التخاطب ، و التحدث ، و الكتابة .
- 3- تعريف الطالب بالفوائد الأساسية لفروع اللغة العربية وتراكيبها وأساليبها السليمة كي يستفيد منها ويقدّر على استعمالها .
- 4- التعرف على مواطن الجمال في اللغة العربية وآدابها .
- 5- تنمية الذوق الأدبي الرفيع لدى الطالب حتى يدرك به جمال الأسلوب ، و روعته ، أو ضعفه ، و ركاكته .
- 6- تمكين الطالب من الاطلاع على ما في المكتبة العربية من المؤلفات ، و الكشف عما يعرض له من ألفاظ صعبة في المعاجم العربية المناسبة لمستواه .
- 7 - العمل على النهوض باللغة العربية والعمل على نشرها قدر المستطاع .
- 8- أن يظفر الطالب بحفظ قدر كافٍ من النصوص الأدبية ، و أن يستمتع بها ، و يتذوق مظاهر الجمال فيها .
- 9- أن يحسن الطالب التعبير عما في نفسه ، وما تقتضيه المواقف سواء كان هذا التعبير شفهيّاً ، أو كتابيّاً بلغة مستقيمة .
- 10- معرفة الطالب بأساسيات الإملاء و ما يمكنه من رسم الكلمات رسماً صحيحاً .

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

- تتضمن مخرجات مادة اللغة العربية المفردات الآتية : 1- مقدمة عامة عن اللغة العربية .
- 2- قواعد كتابة همزة الوصل .
- 3- قواعد كتابة همزة القطع الابتدائية والمتوسطة والمتطرفة . 4- قواعد العدد والمعدود .
- 5- كتابة الالف اللينة .
- 6- علامات الاعراب الاصلية والفرعية .
- 7- كتابة الضاد والطاء وطرق التفريق بينهما . 8- الممنوع من الصرف .
- 9- طرق الكشف عن الكلمات في المعجمات اللغوية .
- 10- الافعال الناقصة .

11- الحروف المشبهة بالفعل . 12- المبتدأ

والخير .

13- المفاعيل في العربية .

14- نصوص قرآنية مختارة مع التحليل . 15- نصوص أدبية مختارة مع

التحليل .

تتضمن المحتويات الإرشادية ما يلي :

1- التنشئة والتهديب السلوكي الفويم لدى الطلاب .

2- تحقيق التوازن في كل نواحي الحياة .

3- المساهمة في بناء الشخصية السوية .

4- المساهمة في مواجهة وحل مشاكل الطلاب . 5-

التوعية النفسية والتربوية والعلمية للطلاب . 6- متابعة التحصيل الدراسي للطلاب

.

7- معرفة أسباب ضعف وتدني التحصيل الدراسي لدى الطلاب ومعالجته بكل السبل المتاحة .

8- رعاية ذوي الاحتياجات الخاصة .

9- اكتشاف مواهب الطلاب، وقدراتهم .

10- العمل على تشجيع الطلاب في تنمية واستثمار مهاراتهم وتطويرها .

11- حث الطلبة على تنوع مصادر التعلم ووسائل التقويم العلمي والاكاديمي . 12- السعي في تعزيز المحتوى العلمي على الشبكة العنكبوتية .

13- الحث على التعلم الإلكتروني واستخدام الحاسوب في التعليم . 14- تعزيز الثقة بالنفس عند الطلاب في مواجهة

أُمُور الحياة .

Indicative Contents

المحتويات الإرشادية

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	تهدف استراتيجية تعلم مادة (اللغة العربية وآدابها) تحقيق المخرجات العلمية الآتية : 1- التعرف إلى مستويات نظام اللغة العربية .
	2- معرفة القواعد النحوية والصرفية .
	3- وصف المناهج النقدية والظواهر الأدبية . 4- التعرف
	بأبرز المصنفات اللغوية والأدبية .
	5- تحديد المشكلات اللغوية والأدبية لدى الدارسين .
	6- القراءة المعاصرة للنصوص اللغوية والأدبية قراءة صحيحة . 7- تحليل النصوص
	وشرحها .
	8- الربط بين النص ومحيطه الخارجي .
	9- قراءة النصوص الأدبية وكتابتها وفق المعايير النحوية والصرفية . 10- تدقيق النصوص اللغوية وتصويب الأخطاء
	الواردة فيها .
	11- الكتابة الإبداعية التي تعبر عن الذات وقضايا المجتمع .
	12- التعبير الشفوي وفن الإلقاء في الميدان المهني والمناسبات العامة . 13- توظيف أدوات البحث العلمي في كتابة الأبحاث
	العلمية .
	14- استعمال المعاجم اللغوية ومعرفة طريقة البحث فيها .

Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	63	Structured SWL (h/w)	2
الحمل الدراسي المنتظم للطلاب خلال الفصل		الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem)	37	Unstructured SWL (h/w)	2
الحمل الدراسي غير المنتظم للطلاب خلال الفصل		الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem)	100		
الحمل الدراسي الكلي للطلاب خلال الفصل			

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	مقدمة عامة عن اللغة العربية
Week 2	قواعد كتابة همزة الوصل
Week 3	قواعد كتابة همزة القطع
Week 4	العدد والمعدود
Week 5	كتابة ألف التثنية
Week 6	علامات الإعراب الأصلية والفرعية
Week 7	كتابة الضاد و طوق التفرقة بينهما
Week 8	طرق الكشف عن الكلمات في المعجمات العربية
Week 9	الممنوع من الصرف
Week 10	الأفعال الناقصة

Week 11	الحروف المشبهة بالفعل وطرق عملها
Week 12	المتبأ والخبر
Week 13	المفاعيل في العربية
Week 14	نصوص قرآنية مختارة مع التحليل
Week 15	نصوص أدبية مختارة مع التحليل
Week 16	امتحان الطلبة

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التصنيف	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جداً	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 (يُعيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Analytical Chemistry		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PAT-113			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	1	Semester of Delivery	1	
Administering Department	PAT	College	Type College Code	
Module Leader		e-mail		
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	11/10/2025	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 Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of Analytical determination of element through the application of mechanism of reaction such as coagulation . 2. To understand carbocation carbanion and Free radical from a given reaction . 3. This course deals with the basic concept of organic reactions. 4. This is the basic subject for all organic and inorganic reactions. 5. To understand Marovinkovs Rule and AntiMarkovinkov rules. 6. To perform Quantitative and Qualitives Organic analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how organic reaction works in peroxide and gasous media . 2. List the various terms associated with organic reactions. 3. Summarize what is meant by a Free radical . 4. Discuss the reaction and involvement of atoms in organic reactions . 5. Describe melting point , boiling point, sublimation . 6. Define Satizef Rule . 7. Identify the Organic reaction of Alkane and their applications. 8. Discuss the operations of fermentation in an alcohols . 9. Discuss the various physical properties of alkane , alkene , and alkyne. 10. Explain the Markovinikov Rule and Satzef Rule laws used in Organic reaction . 11. Identify the Tautomerism and effect relationship with respect to acid and base.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Atomic Theory

	Molecular Orbitals – Electron and Quantum numbers definitions, anions and cations and Free radical, Combining resistive reactions in different rule and law , Introduction to organic synthesis and analysis. [15 hrs] Structure of Organic Molecules Nomenclature of Organic Compound Alkanes Cycloalkanes Alkenes Dienes Alkynes and Alkyl Halides . [15 hrs] Alcohols Poly hydric alcohols Ehers and Epoxides . [10 hrs] Ehers and Epoxides Thiols and Thioethers Organic Reaction Mechanisms Isomerism and Stereochemistry . [15 hrs] Revision problem classes [6 hrs] <u>Part B - Analogue Electronics</u>
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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 types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	64	Structured SWL (h/w)	4
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الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4a
Total SWL (h/sem) الحمل الدراسي المنتظم 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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المناهج الأسبوع النظري	
	Material Covered
Week 1	Scope of analytical chemistry , classification , Historical review
Week 2	Equilibrium in chemical systems
Week 3	The general form of equilibrium constant

Week 4	Effect of changes in conc.up on position of an equilibrium
Week 5	Le chataliers principle , equilibria in heterogenous system
Week 6	Solution : chemical composition , saturated , supersaturated and solubility
Week 7	Solubility , methods expressiant concentration of solution , chemical calculation
Week 8	Ionic equilibrium , PH , POH
Week 9	Solubility product constant , theoretical interpretation
Week 10	Application to precipitation and separation , calculation relation to PH
Week 11	Common ion effect , principle application calculation
Week 12	Electrolytic solution , Modern concept of acids and bases
Week 13	Buffer solution , types of buffer , capacity uses of PH values of buffers , Mathmatical calculation
Week 14	Hydrolysis of salts , calculation of PH values of aqueous solution and degree of hydrolysis
Week 15	Complex ions , priniciple , properties , ionization and application in analytical chemistry

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي المخطط

	Material Covered
Week 1	Lab 1: Apparatus and Materials of Analytical glasses
Week 2	Lab 2: Systematic separation and Identification of the common ion inorganic cations
Week 3	Lab 3: systematic separation of the nitrate anions
Week 4	Lab 4: systematic separation of the carbonate anions
Week 5	Lab 5: systematic separation of the bicarbonate anions
Week 6	Lab 6: systematic separation of the soluphate anions
Week 7	Lab 7: thin layer chromatography
Week 8	Lab 8: systematic separation of the borate anions
Week 9	Lab 9: Separation of caffine from tea

Week 10	Lab 10: systematic separation of the acetate anions
Week 11	Lab 11: separation and purification of organic compounds by extraction methods
Week 12	Lab 12: Methane preparation Test for saturated and unsaturated hydrocarbons
Week 13	Lab 13: systematic separation of the borate anions
Week 14	Lab 14: systematic separation of the chromate anions
Week 15	Lab 15: Qualitative analysis of complex substances (Rocks , minerals , water , alloysetc)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Organic chemistry by Morrison and Boyd 1992 1- Organic chemistry by McMurry 2016 2- Organic chemistry by schmid 2007 3- Advanced Organic chemistry by Bahl 2010 4- Organic chemistry by Solomon 2021 5- Advanced Organic chemistry by March 2012	Yes
Recommended Texts	Organic chemistry by Carey 2020	Yes
Websites	https://download-scientific-pdf-ebooks.com/993-1-library-books	

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 (فقد 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.

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	حقوق انسان و حرية و ديمقراطية		Module Delivery
Module Type	S		* Theory * Lecture Lab Tutorial Practical Seminar
Module Code	Uni-103		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	2
Administering Department	PATH	College	SCI
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	Name (if available)	e-mail	
Peer Reviewer Name	Name	e-mail	
Scientific Committee Approval Date	12/10/2025	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 Objectives أهداف المادة الدراسية	تهدف إلى توفير المفاهيم العلمية و القانونية التي اهتمت بها القوانين الدولية و الوطنية وحماية حقوق الانسان وحرابه الاساسية مما يستوجب تعليمها كمادة نظرية ضمن المواد الدراسية التي يتم ادراجها وفقا للمحاضرات الأكاديمية للطلبة في المراحل الجامعية
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	إن الغاية الأساسية من ترسيخ مفهوم هذه المواد كاساس علمي اكاديمي للطلبة بحقق تطبيق الحقوق والواجبات التي يلتزم بها الفرد وترسيخ المفهوم القانوني لدى الطلبة من حيث ضمان هذه الحقوق التي تنص عليها الدساتير الوطنية والقوانين الدولية
Indicative Contents المحتويات الإرشادية	تقوم على أساس بيان اهتمام المجتمع الدولي والقوانين الوطنية في بيان أهمية تطبيق حقوق الانسان ومفهوم الحرية والديمقراطية وفقا للمادة الاكاديمية المقدمة للطلبة الجامعيين حيث ترسخ لدى الطلبة الأساس القانوني لحقوق الانسان وتطبيقات الحرية والديمقراطية وتأثير ذلك على التطور الاقتصادي والاجتماعي والسياسي وتقديم الخدمات العامة وضمان العدالة والمساواة

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	تمثل الاستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة وتشجيع الطلاب على المشاركة في التدريبات مع تحسين مهارات التفكير النقدي لديهم وتوسيعها في نفس الوقت و سيتم تحقيق ذلك من خلال الفصول والبرامج التعليمية التفاعلية
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي لمنتظم الطلاب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2a

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	0	0	0	0
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	مفهوم حقوق الإنسان
Week 2	حقوق الإنسان في الحضارات القديمة
Week 3	دور شخصية النبي صلى الله عليه وآله في ترسيخ حقوق الإنسان
Week 4	حقوق الإنسان في الشرائع السماوية
Week 5	رسالة حقوق الإنسان عند الإمام علي عليه السلام
Week 6	مصادر حقوق الإنسان

Week 7	مواثيق إقليمية و مصادر وطنية
Week 8	حقوق الإنسان في دستور جمهورية العراق لسنة 2005
Week 9	ضمانات حقوق الإنسان و حمايتها على المستوى الدولي
Week 10	ضمانات حقوق الإنسان و حمايتها على المستوى الوطني
Week 11	الضمانات الدستورية لحقوق الإنسان في الدستور العراقي
Week 12	مستقبل حقوق الإنسان
Week 13	دور منظمات المجتمع المدني و النقابات و الجمعيات في حماية حقوق الإنسان
Week 14	الملكية الفكرية
Week 15	الحماية القانونية للحقوق وفقاً للتشريعات العراقية
Week 16	مناقشة الطلبة و عرض التقارير عن المواضيع في الأسابيع السابقة و التهيئة للامتحان

Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوعي المخطط	
	Material Covered
Week 1	لا يوجد
Week 2	لا يوجد
Week 3	لا يوجد
Week 4	لا يوجد
Week 5	لا يوجد
Week 6	لا يوجد
Week 7	لا يوجد

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

Required Texts	الدستور العراقي في الشرائع والأحكام الدستورية والأنظمة السياسية	نعم
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
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	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 (تقيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
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نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Principle of Pathological Analysis		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	PAT-121				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level		1	Semester of Delivery		2
Administering Department		PAT	College	SCI	
Module Leader	Name		e-mail	E-mail	
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		01/10/2025	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 Objectives

أهداف المادة الدراسية

7. Understand the fundamental principles and concepts of pathological analysis, including its importance in disease diagnosis, prognosis, and treatment.
8. Describe the different techniques and methodologies used in pathological analysis, such as histopathology, cytopathology, immunohistochemistry, and molecular diagnostics.
9. Explain the role of pathological analysis in identifying and characterizing various disease processes, including infections, inflammatory conditions, and neoplastic disorders.
10. Demonstrate knowledge of the different types of specimens used in pathological analysis, such as tissue samples, body fluids, and cytological specimens.
11. Develop skills in specimen collection, processing, and preparation for microscopic examination.
12. Interpret microscopic findings and correlate them with clinical information to provide accurate and meaningful diagnostic reports.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

20. Demonstrate a comprehensive understanding of the principles and concepts of pathological analysis and its role in healthcare.
21. Apply knowledge of different techniques and methodologies used in pathological analysis, such as histopathology, cytopathology, immunohistochemistry, and molecular diagnostics.
22. Interpret and analyze pathological specimens, including tissue samples, body fluids, and cytological specimens, to identify and characterize disease processes.
23. Generate accurate and detailed diagnostic reports based on microscopic findings and clinical information.
24. Apply quality control and assurance measures to ensure accuracy, precision, and reliability of pathological analysis results.
25. Demonstrate proficiency in specimen collection, processing, and preparation techniques for microscopic examination.
26. Apply critical thinking and problem-solving skills to evaluate challenging cases and contribute to the decision-making process in patient management.
27. Understand and adhere to ethical and legal considerations in pathological analysis, including patient confidentiality and data protection.
28. Stay updated with the latest advancements in pathological analysis techniques, including digital pathology, molecular diagnostics, and automation, and adapt to technological advancements in the field.
29. Collaborate effectively with other healthcare professionals and contribute to

	the multidisciplinary approach in patient care.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. a) Definition and scope of pathological analysis. b) Role of pathological analysis in healthcare. c) Promote opportunities for students to participate in professional conferences, workshops, or seminars related to pathology. d) Provide timely feedback to students on their performance and progress. Encourage self-reflection and self-assessment to promote continuous improvement and learning. e) Create a supportive and interactive learning environment that encourages active participation, critical thinking, and problem-solving skills. Adapt the teaching strategies to suit the specific needs and learning styles of the students in the Pathological Analysis module.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Conduct interactive lectures to introduce and explain key concepts, principles, and theories related to pathological analysis. Use multimedia tools, visual aids, and case studies to enhance understanding and engagement. 2. Laboratory Sessions: Organize laboratory sessions where students can practice various techniques used in pathological analysis, such as staining, microscopy, and specimen handling. Provide hands-on experience to develop practical skills and reinforce theoretical knowledge. 3. Case Studies: Present real-life case studies to students, allowing them to apply their knowledge and analytical skills in diagnosing and interpreting pathological findings. Encourage group discussions and problem-solving exercises to enhance critical thinking and decision-making abilities. 4. Group Projects: Assign group projects that require students to conduct in-depth research on specific pathological conditions or techniques. This encourages teamwork, independent learning, and presentation skills. 5. Clinical Observations: Arrange visits to pathology laboratories or clinical settings where students can observe and interact with pathologists and laboratory personnel. This provides a practical understanding of the workflow, equipment, and teamwork involved in pathological analysis.

Student Workload (SWL)

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Pathological Analysis

Week 2	Importance of laboratory testing in diagnosing and monitoring diseases
Week 3	Techniques and methods used in urine, stool, and blood analysis
Week 4	Urine Examination - Macroscopic Analysis
Week 5	Urine Examination - Microscopic Analysis
Week 6	Urine Examination - Chemical Analysis
Week 7	Stool Examination - Macroscopic Analysis
Week 8	Stool Examination - Microscopic Analysis
Week 9	Stool Examination - Chemical Analysis
Week 10	Blood Examination - Hematology
Week 11	Blood Examination - Biochemical Analysis
Week 12	Blood Examination - Immunology
Week 13	Seminal fluid Examination
Week 14	Exceptional rules in the medical term components
Week 15	Quality Assurance and Ethical Considerations
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي المخطط	
	Material Covered
Week 1	Safety precautions in the laboratory
Week 2	Macroscopic analysis of urine samples: color, transparency, odor, and volume determination
Week 3	Microscopic analysis of urine sediment: identification and significance of urinary elements
Week 4	Chemical analysis of urine samples: evaluation of glucose, protein, ketones, bilirubin, urobilinogen, nitrites, and leukocyte esterase
Week 5	Urine dipstick testing and interpretation

Week 6	Macroscopic analysis of stool samples: color, consistency, and odor
Week 7	Chemical analysis of stool samples: evaluation of fecal occult blood and reducing substances
Week8	Complete blood count (CBC) analysis: understanding and interpretation of CBC parameters
Week9	Blood typing and crossmatching techniques
Week10	Lipid profile analysis: evaluation of cholesterol, triglycerides, and high-density lipoprotein (HDL) levels
Week11	Immunological tests: introduction to serological tests for infectious diseases
Week12	Liver function tests: evaluation of liver enzymes and bilirubin levels
Week13	Kidney function tests: evaluation of blood urea nitrogen (BUN) and creatinine levels
Week14	Seminal fluid examination
Week15	Review and revision of key concepts
Week16	Assessment and practical examination

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Clinical Laboratory Science Review" by Robert R. Harr MS MLS (ASCP) "Clinical Laboratory Hematology" by Shirlyn B. McKenzie and Lynne Williams "Clinical Hematology Atlas" by Bernadette F. Rodak and Jacqueline H. Carr	Yes
Recommended Texts	"Basic Medical Laboratory Techniques" by Barbara H. Estridge, Anna P. Reynolds, and Norma J. Walters	No
Websites	Lab Tests Online (www.labtestsonline.org): A comprehensive resource that explains various laboratory tests, their purpose, procedures, and interpretation of results.	

American Society for Clinical Pathology (ASCP) (www.ascp.org): The ASCP website offers educational materials, practice guidelines, and resources for students and professionals in clinical pathology.

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
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MODULE DESCRIPTION FORM

نموذج 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	PAT-122		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	2
Administering Department	PAT	College	SCI
Module Leader	Name	e-mail	E-mail
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	11/10/2025	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 Objectives

أهداف المادة الدراسية

17. Understand the anatomical language and terminology used to describe human body structures.
18. Identify and describe the major anatomical structures and organs within the human body.
19. Explain the interrelationships between structure and function in the human body.
20. Understand the anatomical basis for common medical procedures and clinical examinations.
21. Demonstrate proficiency in anatomical dissection techniques and use of medical imaging resources.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

30. Knowledge and Understanding: a. Demonstrate knowledge of anatomical terminology, planes, and directions. b. Identify and describe the major anatomical structures and systems of the human body. c. Understand the interrelationships between structure and function in the human body. d. Explain the basic physiological processes related to human anatomy.
31. Practical Skills: a. Apply anatomical knowledge to accurately identify and locate anatomical structures. b. Demonstrate proficiency in anatomical dissection techniques and use of laboratory equipment. c. Interpret and analyze medical images, such as X-rays or CT scans, to identify anatomical structures. d. Conduct scientific observations and measurements related to anatomical structures.
32. Critical Thinking and Analysis: a. Analyze and interpret complex anatomical information, such as anatomical relationships and variations. b. Evaluate the significance and functional implications of anatomical variations or anomalies. c. Apply critical thinking to solve anatomical problems and make informed decisions. d. Compare and contrast anatomical structures and systems to understand their similarities and differences.
33. Communication and Presentation: a. Communicate anatomical concepts and information clearly and effectively. b. Present scientific findings and research related to human anatomy using appropriate terminology and visuals. c. Participate in collaborative discussions and debates on anatomical topics. d. Write reports or papers on anatomical subjects, adhering to scientific writing conventions.
34. Professionalism and Ethical Awareness: a. Demonstrate professionalism and respect for anatomical specimens, materials, and laboratory settings. b. Understand and adhere to ethical guidelines and regulations regarding the use of human cadavers or anatomical materials. c. Recognize the importance of

	confidentiality and privacy in handling anatomical information. 35. Lifelong Learning: a. Develop a curiosity for ongoing learning and exploration of human anatomy. b. Recognize the importance of staying updated with current research and advancements in the field. c. Apply anatomical knowledge and skills in future academic, clinical, or research pursuits. d. Develop an appreciation for the relevance of human anatomy in various disciplines, such as medicine, allied health, and biological sciences.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - Understand anatomical language and terminology: Students should be able to comprehend and use the specific vocabulary and terminology related to human anatomy, including anatomical positions, directional terms, and anatomical planes. - Identify and describe major anatomical structures: Students should be able to identify and describe the major organs, systems, and structures within the human body. This includes knowledge of the skeletal system, muscular system, nervous system, cardiovascular system, respiratory system, digestive system, urinary system, reproductive system, and integumentary system. - Explain the interrelationships between structure and function: Students should develop an understanding of how the structure of anatomical components influences their function within the human body. This includes comprehending how different organ systems work together to maintain homeostasis and support bodily functions. - Develop anatomical skills: Students should acquire practical skills related to human anatomy, such as anatomical dissection techniques, identification of anatomical structures through hands-on experience, and interpretation of medical images or diagrams.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Attend Lectures and Take Effective Notes: Attend all lectures and actively engage in the learning process. Take organized and concise notes, highlighting key concepts, anatomical structures, and important details mentioned by the instructor. - Utilize Visual Learning Aids: Human Anatomy often involves visualizing complex structures and systems. Utilize visual learning aids such as anatomical models, diagrams, charts, and atlases. These resources can help you better understand and remember anatomical relationships and structures.

	T. Engage in Active Learning: Actively engage with the material by participating in discussions, asking questions, and seeking clarification when needed.
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	110		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #5 #6
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #5, #6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #3, #5 and #6
Summative assessment	Midterm Exam	2hr	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 Human Anatomy
Week 2	Anatomical terminology, Anatomical planes and directions, Body cavities and regions
Week 3	Skeletal System
Week 4	Muscular System
Week 5	Nervous System: Organization of the nervous system, Structure and function of neurons
Week 6	Central nervous system (brain and spinal cord) Peripheral nervous system (nerves and ganglia) Special senses (vision, hearing, taste, smell)
Week 7	Cardiovascular System
Week 8	Respiratory System
Week 9	Digestive System
Week 10	Urinary System
Week 11	Reproductive System
Week 12	Integumentary System
Week 13	Endocrine System
Week 14	Lymphatic System and Immunity
Week 15	Environmental Microbiology and Public Health
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي المختبري

	Material Covered
Week 1	Introduction to the laboratory Safety guidelines and laboratory etiquette
Week 2	Skeletal System: Skull and Facial Bones Identification of skull bones and landmarks Introduction to cranial sutures and foramina

Week 3	Skeletal System: Axial Skeleton Identification of vertebral column, ribs, and sternum
Week 4	Skeletal System: Appendicular Skeleton - Upper Limb Identification of bones of the upper limb (shoulder girdle, arm, forearm, and hand)
Week 5	skeletal System: Appendicular Skeleton - Lower Limb Identification of bones of the lower limb (pelvic girdle, thigh, leg, and foot)
Week 6	Understanding muscle actions and functions in the upper limb
Week 7	Understanding muscle actions and functions in the lower limb
Week 8	Nervous System: Brain and Cranial Nerves
Week 9	Understanding the structure and function of the spinal cord and peripheral nerves
Week 10	Understanding the structure and function of the heart and blood vessels
Week 11	Understanding the structure and function of the respiratory system
Week 12	Understanding the structure and function of the digestive system
Week 13	Urinary System: Kidneys and Urinary Structures
Week 14	Reproductive System: Male and Female Anatomy
Week 15	Laboratory review and recap of key concepts, Assessment and feedback session

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	"Gray's Anatomy for Students" by Richard Drake, A. Wayne Vogl, and Adam W. M. Mitchell. "Atlas of Human Anatomy" by Frank H. Netter	Yes
Recommended Texts	"Atlas of Anatomy" by Anne M. Gilroy, Brian R. MacPherson, and Lawrence M. Ross	No
Websites	TeachMeAnatomy (https://teachmeanatomy.info/) AnatomyZone (https://www.anatomyzone.com/)	

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Physics		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-123		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	2
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	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 Objectives

أهداف المادة الدراسية

13. Understand the fundamental principles and concepts of medical physics as applied to the field of pathological analysis.
14. Stay updated with the latest advancements in medical physics and its impact on healthcare practices.
15. Apply knowledge of medical physics principles and techniques to solve problems related to medical imaging, radiation therapy, and radiation safety.
16. Knowledge and understanding of physical laws and principles, and their applications in medical physics.
17. An ability to use mathematical techniques and analysis to model physical behavior.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

36. Demonstrate a comprehensive understanding of the fundamental principles and concepts of medical physics.
37. Explain the physical principles underlying various medical imaging techniques, such as X-ray, CT, MRI, and ultrasound.
38. Analyze and interpret medical images to provide accurate and meaningful diagnostic information.
39. Understand the principles of radiation therapy and its application in the treatment of diseases, particularly cancer.
40. Demonstrate knowledge of radiation safety protocols and the importance of implementing radiation protection measures in medical settings.
41. Apply mathematical and computational techniques to model and simulate medical imaging processes and radiation therapy treatments.
42. Understand the principles of nuclear medicine imaging techniques and their role in diagnosing and monitoring diseases.
43. Evaluate and assess the quality and accuracy of medical imaging and radiation therapy procedures.
44. Demonstrate proficiency in utilizing medical imaging equipment and radiation therapy devices safely and effectively.
45. Stay updated with the latest advancements in medical physics research and technology, and critically evaluate their impact on healthcare practices.

Indicative Contents

Indicative content includes the following.

المحتويات الإرشادية	A. Definition and scope of medical physics, Historical development and contributions to healthcare. B. Research methodologies in medical physics C. Ethical considerations in medical physics research and practice D. Current research trends and applications in medical physics
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Delivering structured lectures to provide theoretical foundations, explanations of concepts, and demonstrations of mathematical calculations and principles in medical physics. This can be accompanied by visual aids such as slides, diagrams, and multimedia presentations. 2. Laboratory Sessions: Conducting hands-on laboratory sessions to reinforce theoretical knowledge and develop practical skills. This can include experiments related to radiation detection, medical imaging techniques, radiation safety, and quality assurance. 3. Problem-Solving Exercises: Assigning problem sets and exercises that require students to apply their knowledge of medical physics principles to solve practical problems. This can enhance critical thinking and problem-solving skills. 4. Case Studies: Presenting real-life case studies that illustrate the application of medical physics in diagnosing and treating various medical conditions. This can help students understand the relevance and practical implications of medical physics principles. 5. Group Discussions and Presentations: Encouraging students to engage in group discussions and presentations on selected topics or research papers related to medical physics. This promotes active learning, collaboration, and the development of communication skills.

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

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Terminology, Modeling, and Measurement
Week 2	Forces on and in the body

Week 3	Physics of Skelton
Week 4	Heat and Cold in Medicine
Week 5	Energy, Work and Power of the Body
Week 6	Pressure
Week 7	First Exam
Week 8	Sound in Medicine
Week 9	Ultrasound in Medicine
Week 10	Light in Medicine
Week 11	Electricity Within the Body
Week 12	Physics of Nuclear Medicine
Week 13	Medical Instrumentation - Computed Tomography (CT)
Week 14	Medical Instrumentation - Magnetic Resonance Imaging (MRI)
Week 15	Second Exam
Week 16	Terminology, Modeling, and Measurement

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي المخطط

	Material Covered
Week 1	Lab 1: Measuring tools
Week 2	Lab 2: The fall of a body through a viscous medium
Week 3	Lab 3: Temperature measurement using mercury thermometer and thermocouple
Week 4	Lab 4: The velocity of sound by means of a resonance tube closed at one end
Week 5	Lab 5: The correlation between light intensity and distance
Week 6	Lab 6: The diffraction of LASER from the single slit
Week 7	First Exam

Week 8	Lab 7: Simple Pendulum
Week 9	Lab 8: Verifying Ohm's law in electricity
Week 10	Lab9: Determining resistances using a Wheatstone bridge
Week 11	Lab10: Coefficient of Static Friction between two Surfaces
Week 12	Lab11: The density of liquid
Week 13	Lab12: Boyle's Law
Week 14	Lab13: The surface tension
Week 15	Second Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Introduction to Health Physics: Fourth Edition" by Herman Cember and Thomas E. Johnson.	Yes
Recommended Texts	"The Essential Physics of Medical Imaging" by Jerrold T. Bushberg, J. Anthony Seibert, Edwin M. Leidholdt Jr., and John M. Boone.	No
Websites	https://www.aapm.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	FX – Fail	راسب (فقد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English Language		Module Delivery
Module Type	S		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	uni-101		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	2
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	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 Objectives

أهداف المادة الدراسية

24. To develop students' general English
25. To develop the skills of reading, writing, listening and speaking.
26. Each unit is organized to enhance students' basic knowledge of vocabulary and grammar through reading texts.
27. . To enable the students, comprehend the spoken form.
28. To develop student's ability to use English in day-to-day life and real life situation.
29. To understand the written text and able to write academic paper.
30. To write simple English to express ideas.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

1. Students will heighten their awareness of correct usage of English grammar in writing and speaking
2. Students will improve their speaking ability in English both in terms of fluency and comprehensibility
3. Students will give oral presentations and receive feedback on their performance
4. Students will increase their reading speed and comprehension of academic articles
5. Students will improve their reading fluency skills through extensive reading
6. Students will enlarge their vocabulary.
7. Students will strengthen their ability to write academic papers, essays and summaries.
8. Students will learn how to form sentences.
9. Students will acquire the skills of listening, speaking, reading, writing and thinking in an integrated manner.
10. Students will use polite forms of expression and respond meaningfully both orally and in writing.
11. Students will acquire varied range of vocabulary; understand increased complexity of sentence structures both in reading and writing.

Indicative Contents

المحتويات الإرشادية

Indicative content includes the following.

Part A

	Grammar (tenses, Questions, Possessive adjectives, Subject pronouns, Object pronouns, Possessive pronouns, Verb to be is recycled and extended to include negative and question forms that enable students to be aware of the correct usage of English grammar in writing and speaking. <u>Part B</u> Reading is aimed to develop students' general English through the skills of reading dialogues and short passages. <u>Part C</u> Speaking and Listening: To help students understand basic expressions and conversations and use them in real-life situations through Roleplay , Practicing dialogues, The alphabet, Talking about daily routines, Describing lifestyles, Listening the requests, Home town, Countries, Numbers ... <u>Part D</u> Writing: To help students write basic sentences leading to a paragraph using the vocabulary learned in the textbook.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Using the explanation method for each topic, while providing the student with the subject file, explanatory videos, and applied exercises for each topic, with the involvement of The student, during the lecture, asked the oral question at one time and the written question at another by: 1 Encouraging the student to participate in speaking by presenting phrases and examples similar to those in the lecture. 2- Involve the students in the discussion in English by presenting a topic or piece of comprehensible reading or a video for discussion 3- Participating in discussion groups inside the hall or on the virtual platform of Google Classrooms (Meet its and Classroom Google). Contact Online (while encouraging students to listen to English-language videos in the academic field or social life.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقديم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
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Week 1	UNIT 1 Present simple am/is/are my/your. Question with question words. Everyday English Practicing introduction dialogues. Possessive adjectives. Plural nouns. Numbers 1-10
Week 2	UNIT 2 Present simple am/is/are His/her. Questions and answer questions about where people are from. Possessive adjectives. Countries, Numbers 10-20.
Week 3	UNIT 3 Verb to be is recycled and extended to include negative and question forms. Jobs. Personal information. Social expressions.
Week 4	UNIT 4 Possessive adjectives. Possessive 's. Has/ have Adjective + noun Irregular Plurals. The alphabet. The family. Describing a friend.
Week 5	UNIT 5 Present Simple: I/you/we/they a/an Adjective + The lexical set of sports/food/drinks. Languages and nationalities
Week 6	UNIT 6 Present Simple: He/she Question and negatives Adverbs of frequency Prepositions of time. Talking about daily routines, Asking and answering questions about daily routines, Lifestyle questionnaire. Days of the week. The time
Week 7	Mid-term Exam
Week 8	UNIT 7 Question Words. Subject Pronouns. Object Pronouns. Possessive Pronouns This and that. Describing lifestyles, preferences and places. Adjectives. Opposite adjectives.
Week 9	UNIT 8 There is /are Prepositions: in, on, under, next to. Talking and asking about what to do and where to go, Giving directions. Rooms and furniture.

Week 10	UNIT 9 Was/were born Past simple: irregular verbs. Telling a story from pictures, Saying the dates in English. Saying Years People and jobs Irregular Verbs Have, do, go.
Week 11	UNIT 10 Past simple: regular and irregular Questions Negatives Ago. Asking about holidays, a questionnaire. Weekend activities. Time expressions, Sports and leisure, Seasons.
Week 12	UNIT 11 Can / can't, Adverbs, Adjective + noun Requests. Talking about what you can do, talking about everyday problems. Verbs. Verb+ noun, Adjective+ noun.
Week 13	UNIT 12 I'd like, Some /any, Like and would like. Discussion-what is a good diet? And ordering a meal. Birthday wishes. Shopping. In a restaurant.
Week 14	UNIT 13 Present continuous, Present simple and present continuous. What's the matter? Why don't you?. Colours. Clothes. Opposite verbs.
Week 15	UNIT 14 Future plans, Revision: question words, tenses. Life's big events. A mini autobiography. Social expressions Transport. Revision.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي المخطط

	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:

Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	s Headway New Beginners By: John Soars & Liz Soars	Yes
Recommended Texts	- Raymond, Murphy. English Grammar in Use (2nd ed.). Cambridge University Press. - Quirk, R. et.al. (1972). A Comprehensive Grammar of English. London: Longman.	No
Websites	Google Books, Google Scholar, engvid.com	

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Human histology		Module Delivery
Module Type	CORE		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-211		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	3
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	10/10/2025	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 Objectives أهداف المادة الدراسية	1. To provide students with a detailed understanding of the structure and function of human tissues, including the cellular and extracellular components, and their respective roles in various physiological processes and pathological conditions. 2. To facilitate the development of skills in the use of modern histological techniques such as fixation, staining, microtomy, and microscopy, which are essential in the observation, identification, and analysis of human tissues. 3. To develop an understanding of the relationship between the structure and function of human tissues and organs, and how they contribute to overall human health and wellbeing.

	4. To provide a foundation for further study in related fields such as anatomy, physiology, pathology, and medical science. 5. To enable students to gain practical experience in laboratory settings, utilizing histological tools and techniques for the examination, interpretation, and reporting of tissue samples.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate knowledge of the basic structures and functions of human tissues, organs, and organ systems. 2. Use appropriate histological techniques to prepare, visualize, and analyze biological tissues, and identify different cell types and their characteristics. 3. Understand the mechanisms involved in the normal functioning of human tissues and organs, and the effects of disease or injury on tissue structure and function. 4. Understand and explain the relationship between the structure and function of human tissues, and their roles in overall human health and wellbeing. 5. Develop practical skills in observation, identification, and analysis of microscopic tissue samples, and interpretation of the data to provide accurate and meaningful reports. 6. Understand the principles and limitations of various histological techniques and technologies, and apply them appropriately to specific problems or research questions. 7. Work both independently and in teams to carry out lab-based histological research and communicate results effectively in written and oral formats.
Indicative Contents المحتويات الإرشادية	1. Basic tissue types and classification: epithelial, connective, nervous and muscle tissue 2. Basic cell biology: structure and function of cells, organelles and cytoplasmic inclusions 3. Extracellular matrix: structure, composition, functions, and synthesis 4. Epithelial tissue types and locations: classification, features, and functions 5. Connective tissue types and locations: classification, features, and functions 6. Muscle tissue types and locations: classification, features, and functions 7. Nervous tissue types and locations: classification, features, and functions 8. Cardiovascular system: composition and function of blood vessels, arteries, veins, heart chambers and valves 9. Respiratory system: components of the respiratory tract with emphasis on the alveoli and lung parenchyma 10. Gastrointestinal system: components and function of oral cavity, salivary glands, esophagus, stomach, small intestine, colon, gallbladder, pancreas and liver

	11. Urinary system: components and function of kidney, ureter, bladder, and urethra 12. Endocrine system: major endocrine organs and their hormones 13. Reproductive system: male and female reproductive organs 14. Integumentary system: anatomy and function of the skin and associated structures 15. Immune system: components and functions of the lymphatic system and cells of the immune system.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of human histology

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 منتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير منتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المناهج الأسبوعي النظري	
Week	Material Covered
Week 1	Tissues, cells, and organs
Week 2	Epithelial Tissue
Week 3	Connective Tissue
Week 4	Muscular Tissue

Week 5	Nervous Tissue
Week 6	Cardiovascular System
Week 7	Respiratory System
Week 8	Digestive System
Week 9	Endocrine System
Week 10	Urinary System
Week 11	Male Reproductive System
Week 12	Female Reproductive System
Week 13	Integumentary System
Week 14	Lymphoid System
Week 15	Histology Techniques
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي المخطط	
Week	Material Covered
Week 1	Lab 1: Introduction to Histology and Microscopy • Introduction to histology and its importance in studying human tissues • Microscopy techniques: light microscopy, electron microscopy • Sample preparation techniques: tissue fixation, sectioning, staining
Week 2	Lab 2: Epithelial Tissues • Identification and classification of different types of epithelial tissues • Microscopic examination of epithelial tissue sections • Structure and function of epithelial cell types
Week 3	Lab 3: Connective Tissues • Identification and classification of different types of connective tissues • Microscopic examination of connective tissue sections • Structure and function of fibroblasts, collagen fibers, and ground substance
Week 4	Lab 4: Muscle Tissues • Identification and classification of different types of muscle tissues • Microscopic examination of muscle tissue sections • Structure and function of skeletal, smooth, and cardiac muscle cells
Week 5	Lab 5: Nervous Tissues • Identification and classification of different types of nervous tissues • Microscopic examination of nervous tissue sections • Structure and function of neurons, glial cells, and neural networks
Week 6	Lab 6: Blood and Hematopoietic Tissues • Microscopic examination of blood smears and bone marrow sections • Identification of different blood cell types • Hematopoietic cell development and function
Week 7	Lab 7: Lymphoid Tissues and Immune System • Microscopic examination of lymphoid tissue sections • Structure and function of lymph nodes, spleen, and tonsils • Overview of the immune system and lymphocyte function
Week 8	Lab 8: Integumentary System • Microscopic examination of skin sections • Structure and function of epidermis, dermis, and hypodermis • Hair follicles, sweat glands, and sebaceous glands
Week 9	Lab 9: Respiratory System • Microscopic examination of lung tissue sections • Structure and function of the respiratory epithelium

	Overview of the respiratory tract and gas exchange
Week 10	Lab 10: Digestive System - Microscopic examination of gastrointestinal tissue sections - Structure and function of the gastrointestinal tract layers - Overview of the digestive system and nutrient absorption
Week 11	Lab 11: Urinary System - Microscopic examination of kidney tissue sections - Structure and function of the nephron and renal tubules - Overview of the urinary system and urine formation
Week 12	Lab 12: Reproductive System - Microscopic examination of reproductive tissue sections - Structure and function of male and female reproductive organs - Overview of gametogenesis and fertilization
Week 13	Lab 13: Endocrine System - Microscopic examination of endocrine tissue sections - Structure and function of endocrine glands and hormone-secreting cells - Overview of the endocrine system and hormonal regulation
Week 14	Lab 14: Special Senses - Microscopic examination of eye and ear tissue sections - Structure and function of the retina, lens, and cochlea - Overview of vision and hearing processes
Week 15	Lab 15: Final Assessment and Practical Examination - Comprehensive examination covering all aspects of human histology - Practical assessment of tissue identification and microscopic analysis skills

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Mescher, A. L. (2013). Junqueira's basic histology: text and atlas (13th ed.). McGraw-Hill Medical.	No
Recommended Texts	Gartner, L. P., & Hiatt, J. L. (2017). Color textbook of histology (4th ed.). Elsevier	No
Websites	http://histologyguide.com	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Medical Virology		Module Delivery	
Module Type	CORE		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PAT-213			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		3
Administering Department	PATH		College	SCI
Module Leader	Name		e-mail	E-mail
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	01/10/2025		Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-1101	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To introduce the principles and essential concepts of medical virology. 2. To impart knowledge of the structure and replication strategies of viruses. 3. To enable students to analyze viral infectious diseases in terms of symptoms, pathogenesis, and treatment options. 4. To teach students the diagnostic techniques for identification and classification of viruses. 5. To provide an understanding of emerging viral infectious diseases and their global impact. 6. To understand the principles and applications of viral control measures in the prevention and treatment of infections.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Describe the fundamental principles and mechanisms of virology. 2. Understand how viruses replicate and cause infections and diseases. 3. Analyze viral infectious diseases in terms of their symptoms, pathogenesis, and treatment options. 4. Understand the diagnostic techniques used for the identification and classification of viruses. 5. Evaluate the principles and applications of viral control measures in the prevention and treatment of infections. 6. Understand emerging viral infectious diseases and their global impact.
Indicative Contents المحتويات الإرشادية	1. Introduction to virology: history, taxonomy, and classification. 2. Viral structure, classification, and replication. 3. Pathogenesis of viral infections: pathogenicity factors, virulence, and host responses. 4. Laboratory diagnosis of viral infections: culture, staining, serology, and molecular techniques. 5. Antiviral agents and their mechanisms: drugs and vaccines. 6. Principles and applications of viral control measures: disinfection, sterilization, and vaccination. 7. Emerging viral infectious diseases: examples and global impact.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of Medical virology

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
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					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #4, #6
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #5, #6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #3, #5 and #6
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
Week	Material Covered
Week 1	Introduction to Virology:
Week 2	Structure of Viruses:
Week 3	Virus-Host Cell Interactions:
Week 4	Viral Pathogenesis:
Week 5	Emerging and Re-Emerging Viral Diseases:
Week 6	DNA Viruses:
Week 7	RNA Viruses:
Week 8	Retroviruses:
Week 9	Hepatitis Viruses:
Week 10	Oncogenic Viruses:
Week 11	Virus Detection and Diagnosis:
Week 12	Antiviral Drugs:
Week 13	Vaccines for Viral Infections:
Week 14	Global and Local Health Issues Associated with Viral Diseases:
Week 15	Viral Genome editing:
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي المخطط	
Week	Material Covered
Week 1	Lab 1: Introduction to Virology and Laboratory Safety - Introduction to medical virology and its significance in healthcare - Lab safety guidelines and protocols specific to virology - Basic virological techniques: aseptic handling, biosafety level requirements
Week 2	Lab 2: Viral Structure and Classification - Study of viral structure: capsid, envelope, nucleic acid - Classification of viruses based on genome type, morphology, and replication strategy - Visualization of viral structure using electron microscopy
Week 3	Lab 3: Cell Culture Techniques for Virus Isolation Introduction to cell culture and viral growth requirements

	- Preparation of cell culture media and maintenance of cell lines - Techniques for viral isolation and propagation in cell cultures
Week 4	Lab 4: Viral Replication and Life Cycle - Study of viral replication steps: attachment, entry, genome replication, assembly, and release - Analysis of viral life cycles using molecular and biochemical techniques - Viral growth curve analysis and determination of viral titer
Week 5	Lab 5: Serological Methods for Viral Detection - Serological assays for detecting viral antigens and antibodies - Enzyme-linked immunosorbent assay (ELISA) and indirect immunofluorescence assays - Interpretation of serological test results and clinical correlation
Week 6	Lab 6: Polymerase Chain Reaction (PCR) for Viral Diagnosis - Principles and applications of PCR in viral diagnostics - Designing and optimizing PCR primers for viral detection - Analysis of PCR products using gel electrophoresis
Week 7	Lab 7: Viral Pathogenesis and Host Interactions - Study of viral pathogenesis: viral entry, tissue tropism, immune evasion - Analysis of host-virus interactions using cell culture models - Mechanisms of viral-induced diseases and immune responses
Week 8	Lab 8: Viral Epidemiology and Outbreak Investigation - Understanding viral epidemiology: transmission routes, reservoirs, and risk factors - Surveillance methods for monitoring viral outbreaks - Outbreak investigation techniques and public health interventions
Week 9	Lab 9: Diagnostic Challenges and Case Studies - Review of challenging viral diagnosis cases - Discussion of diagnostic approaches and problem-solving strategies - Analysis of clinical scenarios involving viral infections
Week 10	Lab 10: Antiviral Therapeutics and Drug Resistance - Overview of antiviral drugs and their mechanisms of action - Principles of drug resistance in viral infections - Techniques for evaluating antiviral drug efficacy
Week 11	Lab 11: Viral Vaccines and Vaccine Development - Introduction to viral vaccines and vaccine types - Principles of vaccine development and testing - Current trends in viral vaccine research
Week 12	Lab 12: Emerging and Reemerging Viral Infections - Overview of emerging and reemerging viral pathogens - Diagnosis, management, and prevention of newly discovered viruses - Public health implications and surveillance strategies
Week 13	Lab 13: Research Project or Data Analysis - Conducting a small-scale research project in medical virology - Data analysis, interpretation, and presentation
Week 14	Lab 14: Review of Virology Concepts and Techniques - Comprehensive review of key virology concepts and laboratory techniques - Practice quizzes and interactive review sessions
Week 15	Lab 15: Final Assessment and Practical Examination - Comprehensive examination covering all aspects of medical virology - Practical assessment of laboratory techniques and data analysis skills

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Knipe, D. M., & Howley, P. M. (2013). Fields virology. Lippincott Williams & Wilkins.	No
Recommended Texts	Flint, S. J., et al. (2015). Principles of virology (4th ed.). American Society for Microbiology Press.	No
Websites	https://virology.ws	

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.				

MODULE DESCRIPTION FORM

نموذج 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	PAT-214				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		2	Semester of Delivery		3
Administering Department		PATH	College	SCI	
Module Leader	Name		e-mail	E-mail	
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		10/10/2025	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 Objectives أهداف المادة الدراسية	1. -To understand the basic principles of physiology 2. -To be able to explain the mechanisms of human homeostasis 3. -To be able to identify common human physiological issues and their treatments
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. -Develop an understanding of the basic principles of physiology and apply them to various contexts 2. -Explain the mechanisms underlying human homeostasis 3. -Analyze common human physiological issues and apply appropriate treatments
Indicative Contents المحتويات الإرشادية	A. Introduction to Physiology: Definition and scope of physiology Levels of organization in the human body Homeostasis and its significance

	B. Cell Physiology: Structure and function of cell membranes Cellular transport mechanisms (diffusion, osmosis, active transport) Cell signaling and communication Metabolism and cellular respiration C. Nervous System: Structure and function of neurons Generation and propagation of action potentials Synaptic transmission and neurotransmitters Organization and functions of the central and peripheral nervous systems D. Endocrine System: Structure and function of endocrine glands Hormones and their modes of action Regulation of hormone secretion and feedback mechanisms Role of hormones in physiological processes (e.g., growth, metabolism, reproduction)
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of physiology

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المناهج الأسبوع النظري	
Week	Material Covered
Week 1	Introduction to Physiology and Homeostasis
Week 2	Cellular Physiology
Week 3	Membrane Transport and Membrane Potential
Week 4	Action Potential and Excitable Tissues
Week 5	Skeletal Muscle Physiology
Week 6	Smooth Muscle Physiology
Week 7	Cardiac Muscle Physiology
Week 8	Endocrine System Physiology
Week 9	Respiratory System Physiology
Week 10	Cardiovascular System Physiology
Week 11	Digestive System Physiology
Week 12	Renal Physiology
Week 13	Neural Control and Integration
Week 14	Sensory Systems
Week 15	Reproductive System Physiology
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوع المخطط	
Week	Material Covered
Week 1	Lab 1: Introduction to Laboratory Techniques and Safety Procedures - Lab safety guidelines and protocols - Introduction to laboratory equipment and instruments - Measurement techniques: use of pipettes, pH meters, and spectrophotometers
Week 2	Lab 2: Nervous System Physiology - Introduction to neuron structure and function - Measurement of nerve conduction velocity - Neurotransmitter identification and analysis
Week 3	Lab 3: Cardiovascular Physiology - Measurement of blood pressure and heart rate - Determination of cardiac output - Analysis of electrocardiogram (ECG) readings
Week 4	Lab 4: Respiratory Physiology - Measurement of lung volumes and capacities - Analysis of pulmonary function tests - Determination of respiratory rate and gas exchange
Week 5	Lab 5: Renal Physiology - Measurement of urine volume and composition - Analysis of renal function tests - Determination of glomerular filtration rate (GFR)
Week 6	Lab 6: Gastrointestinal Physiology - Measurement of gastric acid secretion - Analysis of digestive enzyme activity - Determination of gastrointestinal motility
Week 7	Lab 7: Endocrine Physiology

	• Analysis of hormone levels in blood samples • Measurement of insulin secretion and glucose metabolism • Study of hormone-receptor interactions
Week 8	Lab 8: Musculoskeletal Physiology • Measurement of muscle strength and contraction • Analysis of electromyography (EMG) signals • Determination of bone density and mineral content
Week 9	Lab 9: Reproductive Physiology • Analysis of hormonal changes during the menstrual cycle • Study of sperm motility and fertility testing • Measurement of hormone levels in pregnancy
Week 10	Lab 10: Immunology and Immune System Physiology • Analysis of immune cell populations using flow cytometry • Measurement of cytokine levels in immune response • Study of antibody production and immune response pathways
Week 11	Lab 11: Metabolism and Energy Balance • Measurement of basal metabolic rate (BMR) • Determination of nutrient utilization and energy expenditure • Analysis of metabolic markers in blood samples
Week 12	Lab 12: Exercise Physiology • Measurement of heart rate and oxygen consumption during exercise • Analysis of lactate levels and anaerobic threshold • Study of physiological responses to physical exertion
Week 13	Lab 13: Sensory Physiology • Measurement of visual acuity and color vision • Analysis of auditory threshold and sound localization • Study of taste and olfaction perception
Week 14	Lab 14: Integration of Physiological Systems • Comprehensive review and integration of key physiological concepts • Case studies and problem-solving exercises • Practice quizzes and interactive review sessions
Week 15	Lab 15: Final Assessment and Practical Examination • Comprehensive examination covering all aspects of physiological principles • Practical assessment of laboratory techniques and data analysis skills

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Johnson, L. R. (2015). Essential Medical Physiology. Academic Press.	No
Recommended Texts	Guyton, A. C., & Hall, J. E. (2016). Guyton and Hall Textbook of Medical Physiology (13th ed.). Elsevier.	No
Websites	https://www.physiology.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.

MODULE DESCRIPTION FORM

نموذج 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	PAT-212		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	3
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-1101	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- To provide students with an understanding of the fundamental concepts of medical bacteriology. - To impart knowledge about the pathogenic mechanisms of medically significant bacteria. - To provide students with an understanding of the principles and mechanisms of microbial growth, metabolism, and genetics. - To enable students to analyze bacterial infectious diseases in terms of symptoms, pathogenesis, and treatment options. - To teach students the diagnostic techniques for identification and classification of bacteria. - To provide students with a comprehensive understanding of bacterial control measures in the prevention and treatment of infections. - To enable students to evaluate emerging bacterial infectious diseases and their global impact.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to: 1. Describe the fundamental principles and mechanisms of bacteriology. 2. Understand how pathogenic bacteria cause infections and diseases. 3. Analyze bacterial infectious diseases in terms of their symptoms, pathogenesis, and treatment options. 4. Understand the diagnostic techniques used for the identification and classification of bacteria. 5. Evaluate the principles and applications of bacterial control measures in the prevention and treatment of infections. 6. - Understand emerging bacterial infectious diseases and their global impact.
Indicative Contents المحتويات الإرشادية	- Introduction to bacteriology: history, taxonomy, and classification. - Microbial growth, metabolism, and genetics. - Pathogenesis of bacterial infections: pathogenicity factors, virulence, and host responses. - Laboratory diagnosis of bacterial infections: culture, staining, serology, and molecular techniques. - Antimicrobial agents and their mechanisms: antibiotics, antivirals, and antibacterials. - Principles and applications of bacterial control measures: disinfection, sterilization, and vaccination. - Bacterial infections of the respiratory, gastrointestinal, urinary, and nervous systems. - Emerging bacterial infectious diseases: examples and global impact.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of Medical bacteriology biotechnology

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

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

	Report	1	10% (10)	13	LO #3, #5 and #6
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المناهج الأسبوعي النظري	
Week	Material Covered
Week 1	Principles of Bacteriology
Week 2	Bacterial Cell Structure and Function
Week 3	Bacterial Genetics
Week 4	Bacterial Classification and Identification
Week 5	Antibacterial Agents
Week 6	Host-Pathogen Interactions
Week 7	Epidemiology and Disease Transmission
Week 8	Staphylococcus aureus
Week 9	Streptococcus pyogenes
Week 10	Enteric Bacteria
Week 11	Mycobacterium tuberculosis
Week 12	Vibrio cholerae
Week 13	Pseudomonas aeruginosa
Week 14	Helicobacter pylori
Week 15	Emerging and Re-Emerging Bacterial Pathogens
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوعي المنظم	
Week	Material Covered
Week 1	Lab 1: Introduction to Bacteriology and Laboratory Techniques - Introduction to medical bacteriology and its significance in healthcare - Lab safety guidelines and protocols specific to bacteriology - Basic microbiological techniques: aseptic handling, streak plate method
Week 2	Lab 2: Bacterial Morphology and Staining Techniques - Microscopic examination of bacterial cells: size, shape, arrangement - Simple and differential staining techniques: Gram staining, acid-fast staining - Interpretation of stained bacterial morphology
Week 3	Lab 3: Culture Media and Growth Conditions - Preparation and sterilization of different culture media - Selective and differential media for bacterial identification - Optimization of growth conditions: temperature, pH, oxygen requirements
Week 4	Lab 4: Isolation and Identification of Common Bacterial Pathogens - Isolation techniques: streak plate method, pour plate method - Identification of common bacterial species based on colony morphology - Biochemical tests for bacterial identification
Week 5	Lab 5: Antibiotic Sensitivity Testing - Kirby-Bauer disk diffusion method for antibiotic susceptibility testing - Interpretation of zone of inhibition and determination of drug resistance

	Clinical relevance of antibiotic susceptibility testing
Week 6	Lab 6: Molecular Methods in Bacteriology - Polymerase chain reaction (PCR) for bacterial DNA amplification - DNA sequencing and sequence analysis for bacterial identification - Applications of molecular techniques in bacterial diagnostics
Week 7	Lab 7: Bacterial Virulence Factors and Pathogenesis - Overview of bacterial virulence factors and their roles in disease - Mechanisms of bacterial pathogenesis: adhesion, invasion, toxin production - Laboratory methods for studying virulence factors
Week 8	Lab 8: Hospital-Acquired Infections and Infection Control - Nosocomial infections and their significance in healthcare settings - Surveillance methods for monitoring hospital-acquired infections - Infection control measures and strategies
Week 9	Lab 9: Bacterial Toxin Detection and Analysis - Detection and characterization of bacterial toxins - Assays for quantifying toxin production: ELISA, bioassays - Clinical implications of bacterial toxins
Week 10	Lab 10: Identification of Fastidious Bacteria - Techniques for isolating and identifying fastidious bacteria - Enrichment and selective media for cultivation of fastidious organisms - Specialized tests for differentiating fastidious bacteria
Week 11	Lab 11: Diagnostic Challenges and Case Studies - Review of challenging bacterial diagnosis cases - Discussion of diagnostic approaches and problem-solving strategies - Analysis of clinical scenarios involving bacterial infections
Week 12	Lab 12: Bacterial Resistance Mechanisms and Surveillance - Mechanisms of bacterial resistance to antibiotics - Methods for detecting and monitoring antibiotic resistance - Strategies for combating antibiotic resistance
Week 13	Lab 13: Research Project or Data Analysis - Conducting a small-scale research project in medical bacteriology - Data analysis, interpretation, and presentation
Week 14	Lab 14: Review of Bacterial Classification and Identification - Comprehensive review of key bacterial species and their characteristics - Identification of bacterial pathogens based on biochemical tests - Practice quizzes and interactive review sessions
Week 15	Lab 15: Final Assessment and Practical Examination - Comprehensive examination covering all aspects of medical bacteriology - Practical assessment of laboratory techniques and bacterial identification skills

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Street, T. P., et al. (2010). Topley & Wilson's microbiology and microbial infections: Bacteriology (Volume 2). Hodder Arnold.	No
Recommended Texts	Murray, P. R., Rosenthal, K. S., & Pfaller, M. A. (2014). Medical microbiology. Elsevier	No
Websites	https://microbiologysociety.org	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Parasitic protozoa		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-215		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-1101	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Understand the classification and life cycle of parasitic Protozoa. 2. Identify the major genera and species of parasitic Protozoa. 3. Comprehend the pathogenesis and clinical manifestations caused by parasitic Protozoa. 4. Explore the diagnosis, treatment, and prevention strategies for parasitic Protozoa infections. 5. Analyze the impact of parasitic Protozoa on public health and society.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students will be able to: 1. Differentiate between various classes and species of parasitic Protozoa. 2. Describe the life cycles and transmission modes of common parasitic Protozoa. 3. Recognize the clinical symptoms and diseases associated with parasitic Protozoa infections. 4. Apply appropriate diagnostic techniques for the detection of parasitic Protozoa. 5. Evaluate treatment options and prevention strategies for parasitic Protozoa infections.

	6. Discuss the socioeconomic and public health implications of parasitic Protozoa infections.
Indicative Contents المحتويات الإرشادية	1. Introduction to Parasitic Protozoa: • Definition of parasitic Protozoa • Importance and impact on human health • Overview of major parasitic Protozoa species 2. Taxonomy and Classification of Parasitic Protozoa: • Classification systems for Protozoa • Different classes of parasitic Protozoa (e.g., Amoeboae, Flagellates, Ciliates, Sporozoans) • Key genera and species within each class 3. Life Cycles and Transmission Dynamics of Parasitic Protozoa: • Life cycle stages of parasitic Protozoa • Modes of transmission (e.g., vector-borne, fecal-oral, sexual) • Host-parasite interactions and adaptations 4. Pathogenesis and Clinical Manifestations of Parasitic Protozoa Infections: • Mechanisms of pathogenicity • Common clinical symptoms and diseases caused by parasitic Protozoa • Tissue tropism and organ-specific manifestations 5. Diagnostic Methods for Detecting Parasitic Protozoa: • Microscopic examination of specimens (e.g., stool, blood, tissue) • Serological and immunological tests • Molecular techniques (e.g., PCR, DNA sequencing) 6. Treatment Options for Parasitic Protozoa Infections: • Antiparasitic drugs and their mechanisms of action • Drug resistance and challenges in treatment • Combination therapies and novel treatment approaches 7. Prevention and Control Measures for Parasitic Protozoa: • Public health interventions (e.g., vector control, sanitation) • Health education and awareness campaigns • Vaccines and immunization strategies (if applicable) 8. Socioeconomic and Public Health Aspects of Parasitic Protozoa Infections: • Impact on global health and development • Economic burden and social implications • Strategies for control, surveillance, and elimination efforts

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of parasitic Protozoa

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4

Unstructured SWL (h/sem) الحمل الدراسي غرت المنتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غرت المنتظم للطلاب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المناهج الأسبوعي النظري	
Week	Material Covered
Week 1	Introduction to parasitic protozoa
Week 2	Histomonas meleagridis
Week 3	Trichomonad parasites
Week 4	Theileria parva
Week 5	Cryptosporidium spp.
Week 6	Plasmodium spp.
Week 7	Pneumocystis carinii:
Week 8	Leishmania spp.
Week 9	Babesia spp.
Week 10	Giardia spp.
Week 11	Trypanosoma spp.
Week 12	Entamoeba spp.
Week 13	Toxoplasma gondii
Week 14	Balantidium coli:
Week 15	Emerging parasitic protozoa
Week 16	Preparatory week before the final Exam
Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوعي المنظم	
Week	Material Covered
Week 1	Lab 1: Introduction to Parasitic Protozoa and Laboratory Techniques
	- Introduction to parasitic protozoa and their classification - Basic laboratory safety procedures and guidelines - Microscopy techniques for observing and identifying protozoan parasites

Week 2	Lab 2: Sample Collection and Processing - Techniques for collecting various types of clinical specimens - Sample processing and preparation for protozoa detection - Preservation and transportation of samples for laboratory analysis
Week 3	Lab 3: Direct Microscopic Examination - Wet mount preparation and microscopic examination of clinical specimens - Identification of protozoan parasites based on morphological characteristics - Differentiation between trophozoite and cyst stages
Week 4	Lab 4: Staining Techniques for Protozoa - Staining methods for enhancing protozoa visualization - Giemsa staining for blood and tissue protozoa - Modified acid-fast staining for intestinal protozoa
Week 5	Lab 5: Culture and In vitro Maintenance of Protozoa - Culture media and conditions for growing protozoan parasites - Subculturing and maintaining protozoa in the laboratory - Observation of growth and life cycle stages
Week 6	Lab 6: Antigen Detection Techniques - Immunological assays for detecting protozoan antigens - Enzyme-linked immunosorbent assay (ELISA) for protozoa diagnosis - Interpretation of antigen detection test results
Week 7	Lab 7: Molecular Methods for Protozoa Identification - Polymerase chain reaction (PCR) for detecting protozoan DNA - Sequence-based identification and phylogenetic analysis - Comparison of different molecular techniques used in protozoa research
Week 8	Lab 8: Serological Testing for Protozoa - Serological assays for detecting protozoan antibodies - Indirect fluorescent antibody (IFA) test for protozoa diagnosis - Interpretation of serological test results and clinical correlation
Week 9	Lab 9: Drug Susceptibility Testing - In vitro drug susceptibility testing for protozoan parasites - Techniques for assessing the effectiveness of antiprotozoal drugs - Interpretation of drug susceptibility results
Week 10	Lab 10: Diagnostic Challenges and Case Studies - Review of challenging protozoa diagnosis cases - Discussion of diagnostic approaches and problem-solving strategies - Analysis of clinical scenarios involving protozoan infections
Week 11	Lab 11: Molecular Mechanisms of Protozoan Pathogenesis - Overview of protozoan virulence factors and host interactions - Molecular basis of protozoan pathogenesis and immune evasion - Research advances in understanding protozoan infection mechanisms
Week 12	Lab 12: Emerging Protozoan Infections - Overview of emerging protozoan pathogens - Diagnosis and management of newly discovered protozoa - Public health implications and surveillance strategies
Week 13	Lab 13: Research Project or Data Analysis - Conducting a small-scale research project in parasitic protozoa - Data analysis, interpretation, and presentation
Week 14	Lab 14: Review of Protozoan Life Cycles and Morphology - Comprehensive review of key protozoa life cycles and stages - Morphological identification of protozoan parasites - Practice quizzes and interactive review sessions

Week 15	Lab 15: Final Assessment and Practical Examination - Comprehensive examination covering all aspects of parasitic protozoa - Practical assessment of microscopy skills and protozoa identification
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Garcia, L. S. (2016). Diagnostic medical parasitology. ASM Press.	No
Recommended Texts	Heymann, D. L. (Ed.). (2017). Control of communicable diseases manual. American Public Health Association.	No
Websites	https://parasiteswithoutborders.com	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدًا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Computer		Module Delivery	
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	Uni -103			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	2	Semester of Delivery		3
Administering Department	PATH		College	SCI
Module Leader			e-mail	
Module Leader's Acad. Title	Assis. Lect.		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	01/10/2025		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 Objectives أهداف المادة الدراسية	The main objectives of the course are to: - PowerPoint gives you the ability to share your presentation with others in real time on the web. You would supply the user with a link to the presentation. After selecting the link, the user(s) will be able to follow you and your presentation online. Custom animation, Add photos, videos and sound effects, ave as a webpage, rint presentations as handouts, Embed YouTube videos - This course aims to provide new Excel users with a foundation knowledge of Excel's core features such as formulas, formatting, navigation, printing and creating charts. - This course aims to provide more experienced users with proficient skills in Excel's three major strands: formulas, list management and charts, as well as providing tips to assist efficiency. - This course aims to provide experienced Excel users with proficient skills in developing more complex formulas, list analysis using a variety of tools and creating simple macros as well as features and tips to assist efficiency.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completion of the course students are expected to be able to: MS Power Point work with the basic features of PowerPoint create a new presentation

	work with presentations insert text into a slide and apply basic formatting work with the various slide layouts create and work with SmartArt graphics draw and format shapes navigate a slide show in PowerPoint use a range of printing techniques follow the procedures for using various forms of Help create brilliant presentations. create and work effectively with themes view and modify slide masters create and use custom templates create and work with tables create and work with charts insert and edit images edit inserted images insert and work with different types of media create animations in a presentation set up a presentation for the required presentation mode save and share your presentations in other formats. 2. MS Excel navigate your way around Excel create and work with a new workbook open and navigate within workbooks and worksheets understand and work with ranges in a worksheet understand, create and work with formulas and functions used to perform calculations copy and paste data understand and use formula cell referencing use font formatting techniques align the contents of cells in a number of ways format rows and columns in a worksheet understand and use the number formatting features print workbook data create effective charts. modify Excel options import data into Excel and export data from Excel use data linking to create more efficient workbooks group cells and use outlines to manipulate the worksheet create summaries in your spreadsheets using subtotals use a range of lookup and reference functions use the Data Consolidation feature to combine data from several workbooks into one create, use and modify data tables create and work with scenarios and the Scenario Manager construct and operate PivotTables using some of the more advanced techniques create and edit a PivotChart use a variety of data validation techniques create and use a range of controls in a worksheet create recorded macros in Excel.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – MS PowerPoint.</u>

	This Microsoft PowerPoint training course aims to provide new PowerPoint users with the essentials skills needed to create, edit and present professional looking presentations using text, tables, diagrams, charts and pictures as well as providing presentations tips. This Microsoft PowerPoint training course aims to provide experienced PowerPoint users with the skills to work with PowerPoints more advanced features such as masters, creating templates and themes, and using media such as video <u>Part A – MS Excel.</u> This Microsoft Excel short course will help you improve the way you manage and present information, and take the legwork out of calculations and data manipulation. It provides the skills and knowledge necessary to create and manage workbooks and covers topics including adding data, editing data, working with formulas, printing and charting It is an ideal introductory course before progressing onto Part B of MS Excel. This short course will extend your knowledge of Excel part A and provide you with the skills and knowledge to produce more effective and productive workbooks. Learn essential functions as well as how to manage list data, cover formulas and function techniques, PivotTables, intricate formatting, setting complex printing options and using intricate charting features. This short course focuses on more advanced features beyond part B. Advanced analysis tools including data linking, data consolidation and outlining and summarising are covered, as are PivotTables, Lookup Functions and some key automation features such as macros. Learn how to import data, create Data Tables and Scenarios for What If analysis, techniques to validate data, and create form controls such as List and Combo Boxes to make data entry easier.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Determine Your Document Readability Statistics Generate Lorem Ipsum Random Text to Your Document Highlight a Sentence With a Click Microsoft Word Tricks and Tips-Show Hidden Character Replace Invisible Characters and Formatting Insert Complex Math equations This avoids lost time with students inputting data, facilitates focusing on creating a solution, and provides a template for students to learn how to develop a practical approach to solve problems. Keep it simple, in my introduction classes my students only have to be able to add, subtract, divide, multiply, copy, paste, save, and use absolute references.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير منتظم للطلاب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير منتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
Week	Material Covered
Week 1	Getting to know PowerPoint, Your first presentation
Week 2	Working with presentations and Working with text, Slide layouts
Week 3	SmartArt and Shapes, Preparing for presentations, Brilliant presentations
Week 4	Themes
Week 5	Slide masters, Templates, and Tables
Week 6	Charts, Images, Enhancing images, and Media and action buttons
Week 7	Animations and transitions
Week 8	Getting to know Excel, Creating a new workbook
Week 9	Working with workbooks, Editing in a workbook
Week 10	Selecting ranges and Copying data, Formulas and functions and Formula referencing
Week 11	Number formatting and Row and column formatting
Week 12	Working with a worksheet and Sorting data
Week 13	Worksheet Techniques and protecting data
Week 14	Essential Functions
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي المخطط	
Week	Material Covered
Week 1	Lab 1: Home, Insert, Theme ribbons
Week 2	Lab 2: Layout, view, mailing ribbons
Week 3	Lab 3: Animations and transitions
Week 4	Lab 4: Formula ribbon
Week 5	Lab 5: Chart Data
Week 6	Lab 6: Functions Part 1
Week 7	Lab 7: Functions Part 2

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	MS Power Point MS Excel	No
Recommended Texts	MS Power Point 2019 MS Excel 2019	Yes

Websites	https://nou.edu.ng/coursewarecontent/CIT%20210%20-%20Computer%20Hardware.pdf
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مخطط الدرجات Grading Scheme				
Group	Grade	التصنيف	Marks %	Definition
Success Group (50 - 100)	A - Excellent	أفئزر	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Tissue Culture		Module Delivery
Module Type	C		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-221		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	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 Objectives أهداف المادة الدراسية	1. Understand the principles and techniques of tissue culture. 2. Develop skills in aseptic laboratory practices for tissue culture. 3. Gain knowledge of the various types of tissue culture media and their formulations. 4. Learn different methods of tissue culture initiation and maintenance. 5. Explore the applications and importance of tissue culture in various fields.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students will be able to: 1. Explain the basic principles and theories underlying tissue culture. 2. Perform aseptic techniques and maintain sterile conditions in a tissue culture laboratory. 3. Prepare tissue culture media and understand their compositions. 4. Initiate and maintain different types of tissue cultures.

	5. Evaluate the applications and significance of tissue culture in research and industry.
Indicative Contents المحتويات الإرشادية	1. Introduction to Tissue Culture: - Definition and historical background - Importance and applications of tissue culture 2. Aseptic Techniques and Laboratory Practices: - Sterilization methods and equipment - Handling of sterile materials and tools - Cleanroom requirements and maintenance 3. Tissue Culture Media: - Composition and preparation of basal media - Nutrient supplements and growth regulators - pH adjustment and sterilization of media 4. Tissue Culture Initiation: - Explant selection and preparation - Callus induction and organogenesis - Somatic embryogenesis and micropropagation 5. Tissue Culture Maintenance: - Subculturing and passaging techniques - Media replenishment and adjustments - Contamination detection and control 6. Applications of Tissue Culture: - Plant tissue culture and crop improvement - Animal cell culture and biomedical research - Industrial applications (e.g., production of pharmaceuticals, secondary metabolites)

Learning and Teaching Strategies أساليب التدريس والتدريس	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of Tissue culture

Student Workload (SWL) الحمل الدرايس للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدرايس المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدرايس المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدرايس غير منتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدرايس غير منتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدرايس الكلي للطلاب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
Week	Material Covered
Week 1	Introduction to Tissue Culture
Week 2	Laboratory Safety and Sterilization
Week 3	Media Preparation
Week 4	Aseptic Techniques
Week 5	Plant Tissue Culture
Week 6	Animal Cell Culture
Week 7	Cell Proliferation and Differentiation
Week 8	Genetic Transformation
Week 9	Cell Imaging
Week 10	Cell Cryopreservation
Week 11	Tissue Engineering
Week 12	Regenerative Medicine
Week 13	Quality Control
Week 14	Ethics in Tissue Culture
Week 15	Future Directions in Tissue Culture
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي المخطط	
Week	Material Covered
Week 1	Lab 1: Introduction to Tissue Culture Techniques and Safety Procedures - Lab safety guidelines and protocols specific to tissue culture - Introduction to aseptic techniques and sterile handling of cell cultures - Overview of laboratory equipment and materials used in tissue culture
Week 2	Lab 2: Cell Culture Basics - Cell culture media and supplements: preparation and sterilization - Cell line selection and maintenance - Cell counting and viability assessment methods
Week 3	Lab 3: Sterile Techniques and Good Cell Culture Practices - Aseptic techniques for working in a laminar flow hood - Handling and passaging cells without contamination - Documentation and record-keeping in tissue culture
Week 4	Lab 4: Cell Culture Seeding and Subculturing Seeding cells in culture vessels: plates, flasks, and multiwell plates

	- Techniques for subculturing and scaling up cell cultures - Optimization of cell density and confluency
Week 5	Lab 5: Primary Cell Culture - Isolation and establishment of primary cell cultures from tissues - Optimization of culture conditions for primary cells - Characterization and maintenance of primary cell lines
Week 6	Lab 6: Cryopreservation and Cell Banking - Techniques for cryopreservation of cell cultures - Preparation and storage of cryoprotective agents - Thawing and recovery of cryopreserved cells
Week 7	Lab 7: Contamination Control and Mycoplasma Testing - Detection and prevention of microbial contamination in cell cultures - Mycoplasma testing methods: PCR, enzymatic assays, and staining - Troubleshooting common contamination issues
Week 8	Lab 8: Cell Differentiation and Induction - Induction of cellular differentiation using specific growth factors and chemicals - Evaluation of cell differentiation markers and morphology - Assessment of functional changes upon differentiation
Week 9	Lab 9: 3D Cell Culture Techniques - Introduction to three-dimensional (3D) cell culture systems - Scaffold-based and scaffold-free 3D culture methods - Analysis of cell behavior and interactions in 3D cultures
Week 10	Lab 10: Cell Transfection and Gene Expression Studies - Transient and stable transfection techniques for introducing foreign genes - Reporter gene assays and analysis of transgene expression - Assessment of gene knockdown or overexpression using RNA interference or viral vectors
Week 11	Lab 11: Co-culture and Cell-Cell Interactions - Techniques for establishing co-culture systems - Analysis of cell-cell interactions and communication - Assessment of paracrine signaling and cell behavior in co-cultures
Week 12	Lab 12: Cell Viability and Cytotoxicity Assays - Cell viability assays: MTT, MTS, and trypan blue exclusion - Cytotoxicity assays: LDH release and ATP measurement - Assessment of cell response to drug treatments and environmental factors
Week 13	Lab 13: Tissue Engineering and Scaffold Design - Introduction to tissue engineering principles and applications - Scaffold materials and fabrication techniques - Evaluation of scaffold properties and biocompatibility
Week 14	Lab 14: Stem Cell Culture and Differentiation - Maintenance and expansion of stem cell lines - Induction of stem cell differentiation into specific lineages - Analysis of stem cell markers and differentiation outcomes
Week 15	Lab 15: Research Project or Data Analysis - Conducting a small-scale research project in tissue culture - Data analysis, interpretation, and presentation

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Freshney, R. I. (2018). Culture of animal cells: A manual of basic technique and specialized applications. Wiley-Blackwell.	Yes

Recommended Texts	George, E. F., Hall, M. A., & De Klerk, G.-J. (Eds.). (2008). Plant propagation by tissue culture. Springer.	No
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	استثنى	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Medical Mycology		Module Delivery
Module Type	CORE		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-222		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	4
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	10/10/2025	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-1101	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Understand the basic concepts and principles of medical mycology. 2. Identify the major fungal pathogens and their associated diseases. 3. Develop skills in the laboratory diagnosis of fungal infections. 4. Gain knowledge of antifungal agents and their mechanisms of action. 5. Explore the prevention and management strategies for fungal infections.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students will be able to: 1. Explain the fundamental concepts and characteristics of medical mycology. 2. Recognize the clinical presentations and associated diseases caused by fungal pathogens. 3. Perform laboratory techniques for the detection and identification of fungal infections. 4. Evaluate the mechanisms of action and appropriate use of antifungal agents. 5. Analyze preventive measures and treatment options for fungal infections.
Indicative Contents المحتويات الإرشادية	1. Introduction to Medical Mycology: • Definition and scope of medical mycology

	• Classification and characteristics of medically important fungi • Overview of fungal infections and their significance in healthcare settings 2. Fungal Pathogens and Associated Diseases: • Candida species and candidiasis • Aspergillus species and aspergillosis • Dermatophytes and superficial mycoses • Systemic fungal infections (e.g., cryptococcosis, histoplasmosis) 3. Laboratory Diagnosis of Fungal Infections: • Specimen collection and processing techniques • Microscopic examination and staining methods • Culture-based methods for fungal isolation and identification • Molecular techniques for fungal identification (e.g., PCR, DNA sequencing) 4. Antifungal Agents and Mechanisms of Action: • Classes of antifungal drugs (e.g., polyenes, azoles, echinocandins) • Modes of action and resistance mechanisms • Antifungal susceptibility testing methods 5. Prevention and Management of Fungal Infections: • Infection control practices in healthcare settings • Antifungal prophylaxis and treatment guidelines • Immunocompromised patient management • Public health strategies for fungal disease prevention
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lectures: Conduct interactive lectures to introduce and explain key concepts, principles, and theories related to pathological analysis. Use multimedia tools, visual aids, and case studies to enhance understanding and engagement. 2. Laboratory Sessions: Organize laboratory sessions where students can practice various techniques used in pathological analysis, such as staining, microscopy, and specimen handling. Provide hands-on experience to develop practical skills and reinforce theoretical knowledge. 3. Case Studies: Present real-life case studies to students, allowing them to apply their knowledge and analytical skills in diagnosing and interpreting pathological findings. Encourage group discussions and problem-solving exercises to enhance critical thinking and decision-making abilities. 4. Group Projects: Assign group projects that require students to conduct in-depth research on specific pathological conditions or techniques. This encourages teamwork, independent learning, and presentation skills. 5. Clinical Observations: Arrange visits to pathology laboratories or clinical settings where students can observe and interact with pathologists and laboratory personnel. This provides a practical understanding of the workflow, equipment, and teamwork involved in pathological analysis.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4

Unstructured SWL (h/sem) الحمل الدراسي غرت المنتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غرت المنتظم للطلاب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المناهج الأسبوعي النظري	
Week	Material Covered
Week 1	Fundamentals of Medical Mycology
Week 2	Fungal Structure and Reproduction
Week 3	Fungal Physiology
Week 4	Fungal Identification Methods
Week 5	Systemic Fungal Infections
Week 6	Cutaneous Fungal Infections
Week 7	Opportunistic Fungal Infections
Week 8	Antifungal Agents
Week 9	Fungal Pathogenesis
Week 10	Fungi and the Immune System
Week 11	Epidemiology of Fungal Infections
Week 12	Fungal Toxins
Week 13	Laboratory Diagnosis of Fungal Infections
Week 14	Clinical Management of Fungal Infections
Week 15	Emerging Fungal Infections
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوعي المختبر	
Week	Material Covered
Week 1	Lab 1: Introduction to Laboratory Techniques and Safety Procedures - Lab safety guidelines and protocols specific to mycology - Introduction to laboratory equipment and instrumentation

	• Aseptic techniques and sterile handling of fungal samples
Week 2	Lab 2: Fungal Culture and Identification • Fungal isolation techniques: agar plate culture and liquid media • Macroscopic and microscopic examination of fungal colonies • Identification of common pathogenic fungi based on colony morphology and staining
Week 3	Lab 3: Microscopic Examination of Fungal Structures • Preparation of fungal slide mounts • Staining techniques for fungal structures: lactophenol cotton blue, calcofluor white • Observation and identification of fungal spores, hyphae, and reproductive structures
Week 4	Week 4: Identification of Yeast and Yeast-like Fungi • Identification of common yeast and yeast-like fungi • Rapid identification methods, such as MALDI-TOF MS • Special focus on Candida and Cryptococcus species
Week 5	Lab 5: Dermatophyte Identification and Culture • Diagnosis of dermatophyte infections using direct microscopy and culture • Macroscopic and microscopic examination of dermatophyte colonies • Identification of common dermatophyte species based on morphological characteristics
Week 6	Week 6: Identification of Dimorphic Fungi • Understanding dimorphic fungi and their clinical significance • Lab techniques to differentiate dimorphic fungi • Emphasis on Histoplasma, Blastomyces, and Coccidioides species
Week 7	Week 7: Identification of Molds • Introduction to mold identification • Techniques for identifying common mold species • Lab exercises on mold identification
Week 8	Week 8: Antifungal Susceptibility Testing • Principles of antifungal susceptibility testing • Broth dilution and disk diffusion methods • Interpretation of antifungal susceptibility results
Week 9	Week 9: Mycotoxins and Allergens • Overview of mycotoxins and their health effects • Identification of fungi producing mycotoxins • Fungal allergens and their clinical implications
Week 10	Week 10: Systemic Mycoses • In-depth study of systemic fungal infections • Focus on Aspergillus, Zygomycetes, and other invasive fungi • Diagnostic challenges and laboratory approaches
Week 11	Week 11: Opportunistic Fungal Infections • Understanding opportunistic fungal pathogens • Candidiasis, Aspergillosis, and other opportunistic infections • Identification and management of these infections
Week 12	Week 12: Mycology in Immunocompromised Patients • The role of fungi in immunocompromised patients • Fungal infections in HIV/AIDS, transplant, and cancer patients • Diagnostic strategies for detecting fungal infections in immunocompromised individuals
Week 13	Week 13: Fungal Serology • Introduction to serological tests for fungal infections • ELISA, Immunodiffusion, and Western blot techniques • Interpretation of serological test results
Week 14	Week 14: Molecular Diagnostics in Medical Mycology

	• PCR, qPCR, and other molecular methods for fungal identification • Applications of molecular techniques in the diagnosis of fungal infections
Week 15	Week 15: Review and Final Assessment • Comprehensive review of the course topics • Final exam or project presentation • Course wrap-up and feedback

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Richardson, M. D., & Warnock, D. W. (Eds.). (2019). Fungal infection: Diagnosis and management (4th ed.). Wiley-Blackwell.	No
Recommended Texts	Larone, D. H. (2017). Medically important fungi: A guide to identification (5th ed.). ASM Press.	No
Websites	https://msafungi.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.				

MODULE DESCRIPTION FORM

نموذج 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	PAT-223		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	4
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	10/10/2025	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 Objectives أهداف المادة الدراسية	1. Understand the basic principles and concepts of immunology. 2. Identify the components and functions of the immune system. 3. Comprehend the mechanisms of immune responses and immune regulation. 4. Gain knowledge of immunological techniques and their applications. 5. Explore the role of immunology in health and disease.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students will be able to: 1. Explain the fundamental principles and theories of immunology. 2. Describe the components and functions of the innate and adaptive immune systems. 3. Understand the mechanisms of immune responses, including cellular and humoral immunity. 4. Apply immunological techniques for laboratory investigations and diagnostics.

	5. Analyze the contributions of immunology to human health, disease, and therapeutics.
Indicative Contents المحتويات الإرشادية	1. Introduction to Immunology: - Definition and historical background of immunology - Major branches and areas of immunology research - Importance of immunology in health and disease 2. Components of the Immune System: - Cells of the innate immune system (e.g., phagocytes, natural killer cells) - Cells of the adaptive immune system (e.g., T cells, B cells) - Organs and tissues involved in immune responses (e.g., lymph nodes, spleen) 3. Immune Responses and Mechanisms: - Recognition and processing of antigens - Major histocompatibility complex (MHC) and antigen presentation - Cellular immunity: T cell activation and effector functions - Humoral immunity: Antibody production and effector mechanisms 4. Immune Regulation and Tolerance: - Self-tolerance and mechanisms to prevent autoimmunity - Immune checkpoints and regulation of immune responses - Immunoregulatory cells and their functions (e.g., regulatory T cells) 5. Immunological Techniques and Applications: - Antibody-based techniques (e.g., ELISA, flow cytometry) - Cellular assays and functional analysis of immune cells - Immunohistochemistry and immunofluorescence - Immunological diagnostics and serological tests 6. Immunology in Health and Disease: - Immunodeficiencies and immune system disorders - Vaccines and immunization strategies - Immunotherapy and therapeutic applications - Immune responses in infectious diseases and cancer

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of principles of immunology

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

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
Week	Material Covered
Week 1	Introduction to Immunology
Week 2	Innate Immunity
Week 3	Adaptive Immunity
Week 4	Antigens and Antibodies
Week 5	T-Cell Receptors and MHC Proteins:
Week 6	B-Cell Development and Antibody Production
Week 7	Cytokines and Chemokines
Week 8	Autoimmunity
Week 9	Immunodeficiencies.
Week 10	Immune Responses to Infectious Agents
Week 11	Immunological Techniques
Week 12	Vaccines and Immunization
Week 13	Transplant Immunology:
Week 14	Cancer Immunology
Week 15	Future of Immunology
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي المخطط	
Week	Material Covered
Week 1	Lab 1: Introduction to Laboratory Techniques and Safety Procedures - Lab safety guidelines and protocols specific to immunology - Introduction to laboratory equipment and instrumentation - Aseptic techniques and sterile handling of samples
Week 2	Lab 2: Cell Isolation and Culture Techniques - Isolation of immune cells from peripheral blood - Cell counting and viability assessment - Cell culture techniques for maintaining and expanding immune cells
Week 3	Lab 3: Flow Cytometry Basics

	• Introduction to flow cytometry instrumentation and principles • Sample preparation for flow cytometric analysis • Identification and characterization of immune cell populations using flow cytometry
Week 4	Lab 4: Antibody-Based Techniques • Enzyme-linked immunosorbent assay (ELISA) for antigen detection and quantification • Immunofluorescence staining and microscopy for visualizing immune cell markers • Western blotting for protein analysis in immunology
Week 5	Lab 5: Immunohistochemistry and Immunocytochemistry • Tissue section preparation and fixation for immunohistochemical analysis • Immunostaining and visualization of immune cell markers in tissues • Immunocytochemistry for identifying immune cells in cultured samples
Week 6	Lab 6: Cellular Immunology Techniques • Proliferation assays for assessing lymphocyte response to antigens • Cytokine profiling using enzyme-linked immunospot (ELISPOT) assays • Cytotoxicity assays to measure immune cell-mediated killing
Week 7	Lab 7: Molecular Techniques in Immunology • Polymerase chain reaction (PCR) for amplifying and detecting specific immune-related genes • Gene expression analysis using quantitative real-time PCR (qPCR) • DNA sequencing for studying immune receptor diversity
Week 8	Lab 8: Immunoassays and Serology • Serological tests for antibody detection, such as enzyme immunoassay (EIA) • Neutralization assays for assessing antibody-mediated viral or toxin inhibition • Complement fixation and hemagglutination tests in immunology
Week 9	Lab 9: Tumor Immunology Techniques • Tumor cell culture and maintenance • Cytotoxicity assays to assess immune cell-mediated tumor killing • Analysis of immune checkpoint molecules using flow cytometry or immunohistochemistry
Week 10	Lab 10: Autoimmunity Laboratory Techniques • Detection of autoantibodies in patient samples using immunofluorescence or ELISA • T-cell proliferation assays for studying autoreactive T cells • Detection of autoimmune markers in tissues by immunohistochemistry
Week 11	Lab 11: Allergy and Hypersensitivity Testing • Skin prick testing for assessing allergic reactions • Measurement of specific IgE antibodies using immunoassays • Basophil activation tests to evaluate hypersensitivity responses
Week 12	Lab 12: Vaccine Development and Evaluation • Design and development of vaccines in immunology • Immunization techniques and assessment of immune responses • Evaluation of vaccine efficacy using serological and cellular assays
Week 13	Lab 13: Immune System Disorders Laboratory • Investigation of immune deficiencies and primary immunodeficiencies • Diagnosis and monitoring of autoimmune diseases using immunological assays • Analysis of immune responses in infectious diseases
Week 14	Lab 14: Research Project or Data Analysis • Conducting a small-scale research project in a specific area of immunology • Data analysis, interpretation, and presentation
Week 15	Lab 15: Review and Final Assessment • Comprehensive review of key immunology concepts covered in the course • Practice quizzes and interactive review sessions

- Final examination covering all aspects of principles of immunology

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Abbas, A. K., Lichtman, A. H., & Pillai, S. (2020). Cellular and molecular immunology (9th ed.). Elsevier.	Yes
Recommended Texts	Male, D., Brostoff, J., Roth, D. B., & Roitt, I. (2013). Immunology (8th ed.). Mosby.	No
Websites	https://www.immunology.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.				

MODULE DESCRIPTION FORM

نموذج 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	PAT-224		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	4
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-23016	Semester	3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Understand the fundamental principles of human physiology. 2. Identify and explain the physiological processes that occur within the human body. 3. Analyze the integration and regulation of various physiological systems. 4. Apply knowledge of medical physiology to interpret and solve clinical scenarios. 5. Develop critical thinking skills to evaluate research findings in the field of medical physiology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be able to: 1. Describe the normal structure and function of major organ systems in the human body. 2. Explain the physiological mechanisms underlying homeostasis and their significance in health and disease. 3. Analyze the integration and interplay of different physiological systems in maintaining overall body function. 4. Apply knowledge of medical physiology to interpret and evaluate clinical data and make appropriate diagnoses.

	5. Communicate effectively about medical physiology concepts and their relevance to healthcare professionals and patients.
Indicative Contents المحتويات الإرشادية	1. Cell and Membrane Physiology: Covers the structure and function of cells, including cell membrane transport mechanisms, cell signaling, and cellular homeostasis. 2. Nervous System and Neurophysiology: Explores the structure and function of the nervous system, including neuroanatomy, neuronal communication, sensory and motor systems, and higher brain functions. 3. Musculoskeletal Physiology: Focuses on the musculoskeletal system, covering muscle physiology, skeletal system function, and the integration of muscle and bone in movement and posture. 4. Cardiovascular Physiology: Examines the cardiovascular system, including the anatomy and physiology of the heart, blood vessels, and blood circulation, as well as cardiac output regulation, blood pressure control, and cardiovascular adaptations. 5. Respiratory Physiology: Discusses the respiratory system, covering the mechanics of breathing, gas exchange in the lungs, control of respiration, and the transport and exchange of gases in the blood. 6. Renal and Fluid-Electrolyte Physiology: Explores the structure and function of the kidneys, including renal blood flow, filtration, reabsorption, and secretion, as well as fluid and electrolyte balance and acid-base regulation. 7. Gastrointestinal Physiology: Focuses on the digestive system, including the anatomy and physiology of the gastrointestinal tract, digestion and absorption of nutrients, regulation of gastrointestinal functions, and energy balance. 8. Endocrine Physiology: Covers the endocrine system, including hormone synthesis and regulation, endocrine glands and their functions, and the role of hormones in maintaining homeostasis and coordinating physiological processes. 9. Reproductive Physiology: Examines the male and female reproductive systems, including reproductive anatomy, gametogenesis, hormonal regulation of reproduction, and the physiology of pregnancy and childbirth.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of Medical physiology

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

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

Delivery Plan (Weekly Syllabus) المناهج الأسبوعي النظري	
Week	Material Covered
Week 1	Introduction to Medical Physiology
Week 2	Neural Physiology
Week 3	Endocrine Physiology
Week 4	Cardiovascular Physiology
Week 5	Respiratory Physiology
Week 6	Renal Physiology
Week 7	Gastrointestinal Physiology
Week 8	Musculoskeletal Physiology
Week 9	Immune Physiology
Week 10	Sensory Physiology
Week 11	Reproductive Physiology
Week 12	Exercise Physiology
Week 13	Environmental Physiology
Week 14	Aging and Physiology
Week 15	Clinical Physiology
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوعي المخطط	
Week	Material Covered
Week 1	Lab 1: Introduction to Laboratory Techniques and Safety Procedures - Lab safety guidelines and protocols - Introduction to laboratory equipment and instrumentation - Measurement of vital signs: heart rate, blood pressure, and respiratory rate
Week 2	Lab 2: Cardiovascular Physiology - ECG (electrocardiography) interpretation and analysis - Blood pressure measurement and assessment - Cardiac output measurement using non-invasive techniques
Week 3	Lab 3: Respiratory Physiology - Spirometry: measurement of lung volumes and capacities - Pulmonary function tests: FEV1, FVC, and peak expiratory flow rate

	Analysis of respiratory gas exchange
Week 4	Lab 4: Nervous System Physiology - Electroencephalography (EEG) recording and interpretation - Nerve conduction studies: measurement of nerve conduction velocity - Reflex testing: deep tendon reflexes and sensory testing
Week 5	Lab 5: Renal Physiology - Measurement of urinary output and analysis - Assessment of renal function: creatinine clearance and blood urea nitrogen (BUN) - Acid-base balance: pH measurement and interpretation
Week 6	Lab 6: Gastrointestinal Physiology - Gastric acid secretion: measurement and analysis - Intestinal motility studies: peristaltic contractions and transit time - Absorption studies: measurement of nutrient uptake
Week 7	Lab 7: Endocrine System Physiology - Glucose tolerance test: evaluation of insulin sensitivity - Hormone assays: measurement of hormone levels in blood or urine - Thyroid function tests: TSH, T3, and T4 measurements
Week 8	Lab 8: Reproductive System Physiology - Male reproductive function: semen analysis and sperm motility assessment - Female reproductive function: hormonal profile analysis - Menstrual cycle monitoring: hormone levels and ovulation prediction
Week 9	Lab 9: Musculoskeletal Physiology - Muscle strength and endurance testing - Range of motion assessment - Bone density measurement techniques
Week 10	Lab 10: Exercise Physiology - Cardiorespiratory fitness assessment: VO2 max measurement - Exercise stress testing: ECG monitoring during exercise - Metabolic response to exercise: lactate threshold and energy expenditure
Week 11	Lab 11: Neurophysiology - Electromyography (EMG) recording and interpretation - Sensory perception testing: touch, temperature, and pain thresholds - Motor function assessment: coordination and balance tests
Week 12	Lab 12: Integration of Body Systems - Case studies on homeostatic regulation and feedback mechanisms - Laboratory simulations of physiological responses to various stimuli - Analysis of data collected throughout the course
Week 13	Lab 13: Research Project or Data Analysis - Conducting a small-scale research project in a specific area of medical physiology - Data analysis, presentation, and discussion
Week 14	Lab 14: Review and Review - Recap of key physiological concepts covered in the course - Review sessions and practice quizzes
Week 15	Lab 15: Review and Final Assessment - Comprehensive review of key physiological concepts covered in the course - Practice quizzes and interactive review sessions - Final examination covering all aspects of medical physiology to assess understanding and knowledge acquisition

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

Required Texts	Guyton, A. C., & Hall, J. E. (2015). Textbook of medical physiology. Saunders.	No
Recommended Texts	Boron, W. F., & Boulpaep, E. L. (2016). Medical physiology. Elsevier.	No
Websites	https://www.nlm.nih.gov/research/visible/visible_human.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 جداً	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Parasitic Helminths		Module Delivery
Module Type	CORE		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-225		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	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 Objectives أهداف المادة الدراسية	1. Understand the taxonomy, morphology, and life cycles of parasitic helminths. 2. Identify and describe the major types of parasitic helminths and their associated diseases. 3. Explain the mechanisms of transmission, host-parasite interactions, and the pathogenesis of helminthic infections. 4. Recognize the clinical manifestations, diagnosis, and treatment options for helminthiasis. 5. Explore strategies for the prevention and control of parasitic helminth infections.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be able to: 1. Classify and differentiate different types of parasitic helminths based on their morphological and biological characteristics. 2. Explain the life cycles and modes of transmission of major helminth parasites.

	3. Analyze the pathogenic mechanisms employed by helminths and their impact on the host's immune response. 4. Evaluate the clinical presentations, diagnostic methods, and treatment options for helminthic infections. 5. Apply knowledge of parasitic helminths to develop preventive measures and control strategies for helminthiasis.
Indicative Contents المحتويات الإرشادية	1. Introduction to Parasitic Helminths: Provides an overview of helminthology, including the classification and general characteristics of parasitic helminths. Introduces the significance of helminthic infections in global health. 2. Morphology, Anatomy, and Life Cycles of Major Helminth Parasites: Explores the morphological features, anatomical structures, and life cycles of different types of helminths, including nematodes (roundworms), trematodes (flukes), and cestodes (tapeworms). 3. Transmission Dynamics and Epidemiology of Helminthic Infections: Examines the modes of transmission and factors influencing the spread of helminthiasis, such as environmental factors, socioeconomic conditions, and host-parasite interactions. Discusses the epidemiology and geographic distribution of common helminth infections. 4. Host-Parasite Interactions and Immune Response to Helminths: Investigates the complex interactions between helminths and their hosts, including the immune response elicited by helminthic infections. Explores the mechanisms employed by helminths to evade or modulate the host immune system. 5. Clinical Manifestations and Diagnosis of Helminthiasis: Describes the clinical presentations and symptoms associated with different helminthic infections. Discusses the diagnostic methods, such as microscopy, serological tests, and molecular techniques, used for the detection and identification of helminths. 6. Treatment Options and Management Strategies for Helminthic Infections: Examines the pharmacological interventions available for treating helminthiasis, including anthelmintic drugs. Discusses the principles of treatment, drug resistance issues, and the importance of appropriate dosing and treatment regimens. 7. Prevention and Control Measures for Parasitic Helminth Infections: Explores strategies for the prevention and control of helminthic infections, including health education, sanitation, vector control, and mass drug administration (MDA) programs. Discusses the challenges and approaches to sustainable control and elimination of helminthiasis. 8. Emerging Issues and Research Advancements in Helminthology: Highlights current research trends, emerging topics, and technological advancements in the field of helminthology. Explores areas such as immunomodulation, vaccine development, and novel control strategies.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1-Theoretical lectures and discussion dialogues. 2. Preparing research studies and reports on the practical applications of the good term 3. Holding seminars and scientific seminars on the importance of parasitic helminths

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعاً

Structured SWL (h/sem) الحمل الدراس المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراس المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراس غرت المنتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراس غرت المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراس الكل للطلاب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus) المناهج الأسبوعي النظري	
Week	Material Covered
Week 1	Introduction to Helminths
Week 2	Epidemiology of Helminths
Week 3	Immunology of Helminths
Week 4	Diagnosis of Helminths
Week 5	Treatment and Control of Helminths
Week 6	Nematodes (Roundworms)
Week 7	Cestodes (Tapeworms)
Week 8	Trematodes (Flukes)
Week 9	Geohelminths
Week 10	Vector-borne Helminths
Week 11	Helminths and the Immune Response
Week 12	Helminth-induced Pathologies
Week 13	Zoonotic Helminths
Week 14	Emerging and Re-emerging Helminthic Infections
Week 15	Helminth Control and Elimination Campaigns
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوعي المنخطط	
Week	Material Covered
Week 1	Lab 1: Introduction to Parasitic Helminths

	• Overview of helminth parasites • Classification and life cycles of helminths • Introduction to diagnostic techniques for helminth infections
Week 2	Lab 2: Identification of Helminth Eggs and Larvae • Microscopic examination of helminth eggs • Differentiation of parasite species through egg morphology • Techniques for detecting and identifying helminth larvae
Week 3	Lab 3: Collection and Preservation of Helminth Specimens • Methods for collecting helminth specimens from hosts • Preservation techniques for long-term storage and study • Documentation of collection data and specimen labeling
Week 4	Lab 4: Helminth Morphology and Anatomy • Dissection of helminth specimens • Identification and examination of morphological features • Study of internal anatomy and organ systems
Week 5	Lab 5: Helminth Life Cycles • Investigation of helminth life cycles through experimental infections • Understanding intermediate and definitive hosts • Environmental factors affecting helminth transmission
Week 6	Lab 6: Helminth Pathogenesis and Host-Parasite Interactions • Study of host immune responses to helminth infections • Pathogenesis and clinical manifestations of helminth diseases • Host-parasite interactions and immune evasion mechanisms
Week 7	Lab 7: Diagnostic Techniques for Helminth Infections • Stool examination for helminth detection • Serological assays for helminth antibodies • Molecular methods for helminth identification
Week 8	Lab 8: Helminth Treatment and Control Strategies • Pharmacological agents for helminth treatment • Development and implementation of control programs • Prevention and management of helminth infections
Week 9	Lab 9: Zoonotic Helminths • Study of helminths with zoonotic potential • Transmission dynamics between animals and humans • Public health implications and control measures
Week 10	Lab 10: Helminth Epidemiology and Surveillance • Epidemiological methods for studying helminth infections • Surveillance systems and data collection techniques • Global distribution and burden of helminthiasis
Week 11	Lab 11: Molecular Biology Techniques in Helminth Research • PCR-based detection and genotyping of helminths • Next-generation sequencing for helminth genomic analysis • RNA interference (RNAi) and functional genomics in helminths
Week 12	Lab 12: Drug Resistance in Helminths • Mechanisms of drug resistance in helminth parasites • Phenotypic and genotypic methods for assessing drug resistance • Strategies to combat drug resistance in helminth control programs
Week 13	Lab 13: Immunodiagnostic Methods for Helminth Infections • Serological assays for helminth antigen detection • Point-of-care tests for rapid helminth diagnosis • Emerging immunodiagnostic technologies
Week 14	Lab 14: Research Project or Case Studies

	- Conducting a research project on a specific helminth topic - Case studies on notable helminth infections and outbreaks - Data analysis, presentation, and discussion
Week 15	Lab 15: Review and Final Assessment - Recap of key concepts and techniques covered in the course - Final examination or assessment on helminthology

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Crompton, D. W. T. (Ed.). (2001). Biology of human helminths. International Journal for Parasitology.	No
Recommended Texts	Bundy, D. A., & Golden, M. H. N. (Eds.). (1997). The value of helminth infections in protection against allergic and autoimmune diseases. Springer Science & Business Media.	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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Biochemistry		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-226		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader			e-mail
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	01/10/2025	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 Objectives أهداف المادة الدراسية	31. 1.To develop problem solving skills and understanding of Biochemical reactions through the application of mechanism of reaction such as their effect on human body . 32. 2.To understand carbocation carbanion and Free radical from a given reaction . 33. 3.This course deals with the basic concept of organic reactions. 34. 4.This is the basic subject for all organic and inorganic reactions. 35. 5.To understand Marovinkovs Rule and AntiMarkovinkov rules. 36. 6.To perform Quantitative and Qualitives Organic analysis.
Module Learning Outcomes	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1.Recognize how organic reaction works in peroxide and gaseous media .

مخرجات التعلم للمادة الدراسية	2. List the various terms associated with organic reactions. 3. Summarize what is meant by a Free radical . 4. Discuss the reaction and involvement of atoms in organic reactions . 5. Describe melting point , boiling point, sublimation . 6. Define Saytzeff Rule . 7. Identify the Organic reaction of Alkane and their applications. 8. Discuss the operations of fermentation in alcohols . 9. Discuss the various physical properties of alkane , alkene , and alkyne. 10. Explain the Markovnikov Rule and Saytzeff Rule laws used in Organic reaction . 2. 11. Identify the Tautomerism and effect relationship with respect to acid and base.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Atomic Theory Molecular Orbitals – Electron and Quantum numbers definitions, anions and cations and Free radical, Combining resistive reactions in different rule and law , Introduction to organic synthesis and analysis. [15 hrs] Structure of Organic Molecules Nomenclature of Organic Compound Alkanes Cycloalkanes Alkenes Dienes Alkynes and Alkyl Halides . [15 hrs] Alcohols Poly hydric alcohols Ethers and Epoxides . [10 hrs] Ethers and Epoxides Thiols and Thioethers Organic Reaction Mechanisms Isomerism and Stereochemistry . [15 hrs] Revision problem classes [6 hrs] <u>Part B - Analogue Electronics</u>

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 types of simple experiments involving some sampling activities that are interesting to the students.

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

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
Week	Material Covered
Week 1	Introduction , Biochemical methods
Week 2	General Aspect on the chemistry of the cell , Molecular Genetics
Week 3	Proteins , Chemistry of amino acids and Peptides
Week 4	Structural Organisation
Week 5	Function of Proteins
Week 6	Carbohydrate , Classification , Reaction
Week 7	Lipids , Classification , Reaction
Week 8	Vitamins , Classification
Week 9	Nucleic Acids , Bases , Nucleosides and Nucleotide of nucleic acids
Week 10	Structural Organisation of DNA , RNA
Week 11	Role of Nucleic acids in protein Synthesis
Week 12	Enzymes , Structure and Functions
Week 13	Kinetic of Enzyme , Coenzymes
Week 14	Bioenergetics , Production and Transfer of chemical energy
Week 15	Compound of high energy , coupled reactions and Biological Oxidation
Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي المختبري	
Week	Material Covered
Week 1	Lab 1: Identification and classification of carbohydrate
Week 2	Lab 2: Colorimetric determination of carbohydrates
Week 3	Lab 3: Optical properties of carbohydrates
Week 4	Lab 4: Structural elucidation for carbohydrates
Week 5	Lab 5: carbohydrates Periodate oxidation
Week 6	Lab 6: carbohydrates methylation
Week 7	Lab 7: carbohydrates acetylation
Week 8	Lab 8: carbohydrates reduction , hydrolysis
Week 9	Lab 9: Isolation and chromatographic separation of carbohydrate (Lactose /Milk)
Week 10	Lab 10: Starch /Patato , Glycogen /Liver
Week 11	Lab 11: galactose /brain , Fructose /Grape
Week 12	Lab 12: Identification and classification of proteins
Week 13	Lab 13: physical and chemical properties of lipids

Week 14	Lab 14: Sequence determination (N and C) terminals identification
Week 15	Lab 15: effect of PH , Ttration , Hydrolysis and heavy metals on proteins

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Principles of Biochemistry by Lehninger 2002 1- Biochemistry by By Stryer 2002 3- Principles of Biochemistry by LIPPENCOTT 2002 4- Principles of Biochemistry by Mathews 2020 5- Biochemical calucalation by segal 1976	Yes
Recommended Texts	Biochemistry by Delvin 2020	Yes
Websites	https://download-scientific-pdf-ebooks.com/993-1-library-books	

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

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

Module Information				
معلومات المادة الدراسية				
Module Title	Occupational laboratory		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	PAT-114			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	Semester of Delivery		2
Administering Department	PATH	College	SCI	
Module Leader	Name	e-mail	E-mail	
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	01/10/2025	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 Objectives

أهداف المادة الدراسية

18. Develop an understanding of occupational health and safety principles: Students will gain a comprehensive understanding of the fundamental principles and concepts related to occupational health and safety in laboratory settings. This includes recognizing and identifying hazards, assessing risks, and implementing appropriate control measures.
19. Acquire practical skills in laboratory safety practices: Students will learn and apply practical skills and techniques related to laboratory safety. This includes proper handling and use of personal protective equipment (PPE), safe storage and disposal of chemicals, and adherence to standard operating procedures (SOPs) for various laboratory activities.
20. Familiarize with laboratory equipment and instruments: Students will become familiar with commonly used laboratory equipment and instruments, their operation, and maintenance. This includes understanding calibration procedures, troubleshooting techniques, and ensuring the safe operation of equipment.
21. Develop emergency response and preparedness skills: Students will learn how to develop and implement emergency response plans specific to laboratory incidents. This includes fire safety, evacuation procedures, and first aid basics. Students will also be trained in recognizing and responding to chemical spills or accidents.
22. Cultivate ethical and professional practices: Students will understand the importance of ethical conduct in laboratory research and experimentation. They will learn about responsible data management, research integrity, and the significance of professional communication and teamwork skills in laboratory settings.
23. Apply acquired laboratory skills and knowledge: Students will have the opportunity to apply their acquired laboratory skills and knowledge through practical exercises, experiments, and a final project. This will allow them to

	demonstrate their ability to collect, analyze, and interpret data while adhering to safety protocols and best practices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	46. Demonstrate a thorough understanding of occupational health and safety principles and their application in laboratory settings. 47. Identify and assess potential hazards in laboratory environments, and effectively implement appropriate risk control measures. 48. Apply proper techniques for the handling, storage, and disposal of chemicals, biological materials, and hazardous substances. 49. Utilize personal protective equipment (PPE) correctly and effectively to ensure personal safety and minimize risks in laboratory activities. 50. Operate and maintain laboratory equipment and instruments in accordance with safety guidelines and manufacturer instructions. 51. Respond appropriately to laboratory incidents and emergencies, including implementing evacuation procedures, using fire extinguishers, and providing basic first aid. 52. Analyze and interpret safety data sheets (SDS) and chemical labels to understand the hazards associated with different substances. 53. Demonstrate knowledge of ethical considerations and responsible conduct of research in laboratory settings. 54. Communicate effectively within a laboratory team, demonstrating professionalism, active participation, and respect for others. 55. Apply acquired laboratory skills to conduct experiments, collect data, and analyze results, while adhering to safety protocols and following good laboratory practices.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1- An overview of the concepts and rules governing occupational health and safety. 2- Employers', workers', and supervisors' roles and duties in maintaining workplace safety. 3- The significance of danger detection, risk assessment, and control strategies. 4. Recognition of typical workplace dangers in diverse professions and settings. 5. Methodologies and approaches for risk assessment. 6. Evaluation of potential health impacts and exposure concerns.

Learning and Teaching Strategies

مخرجات التعلم والتعليم

Strategies	1- Lectures: In-class lectures can be used to deliver foundational knowledge and concepts related to occupational health and safety, hazard identification, control measures, and relevant regulations. Lectures can provide an overview of the topics and establish a theoretical framework.
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	- Case Studies: Presenting case studies related to real-world workplace incidents or hazards can engage students in critical thinking and problem-solving. Students can analyze the scenarios, identify potential hazards, assess risks, and propose appropriate control measures. - Group Discussions and Debates: Engaging students in group discussions and debates can promote active learning and enhance understanding of complex occupational health and safety issues. Students can exchange ideas, share experiences, and develop their communication and teamwork skills.
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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي للطلاب خلال الفصل	100		

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

Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Introduction to Occupational Health and Safety
Week 2	Introduction to risk assessment methodologies and techniques
Week 3	Case studies on implementing control measures
Week 4	Personal Protective Equipment (PPE)
Week 5	Laboratory Chemical Safety
Week 6	Laboratory Biological Safety
Week 7	Introduction to common laboratory equipment and instruments
Week 8	Review of key concepts and topics covered in the first half of the module
Week 9	Occupational Hygiene and Exposure Monitoring.
Week 10	Ergonomics and Musculoskeletal Disorders.
Week 11	Emergency Preparedness and Response:
Week 12	Overview of safety management systems and their components
Week 13	Laboratory Accidents and Incident Investigation
Week 14	Ethical principles in laboratory research and practice
Week 15	Revision of key concepts and topics covered in the module
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الأسبوعي المختبري

	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	Fundamental Principles Of Occupational Health And Safety, Benjamin O. Alli, International Labour Office • Geneva. 2008	Yes
Recommended Texts	"Occupational Health and Safety" by Sharon Clarke and Ronald J. Burke, 1 st ed. 2011.	No
Websites	https://labwrite.ncsu.edu/	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Infectious Diseases		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	PAT-311		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	05/10/2025	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 Objectives أهداف المادة الدراسية	37. Infectious disease epidemiology studies the occurrence of infectious diseases; factors leading to infection by an organism.
	38. Factors affecting transmission of an organism; and factors associated with clinically recognizable disease among those who are infected. 39. It requires the use of traditional epidemiologic methods as well as methods unique to infectious disease epidemiology, such as mathematical modeling. 40. In addition to knowing epidemiologic methods, infectious disease epidemiologists need to be familiar with the biological features and clinical manifestations of important pathogens as well as laboratory techniques for the identification and quantification of infectious organisms. 41. This course is designed to provide an introduction to infectious disease epidemiology. 42. It will focus on the tools and methods used in identifying, preventing, and controlling infectious diseases to improve public health. 43. Case studies based on the literature and the work of faculty members will be used to illustrate the real-world application of these tools and methods to address public health problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define Infectious disease epidemiology. 2. Discuss the key concepts of infectious disease transmission and control, and the differences with non-infectious diseases. 3. Apply biological principles to development and implementation of disease prevention, control or management programs. 4. Specify the role of the immune system in population health Identify Liver & Gastrointestinal Diseases. 5. Apply epidemiologic tools and methodologies to understand the transmission dynamics and control of infectious diseases. 6. Critically appraise and interpret the findings of infectious disease epidemiology papers.
Indicative Contents المحتويات الإرشادية	1. Self-assessments. 2. Questionnaires and surveys. 3. Clinical/field experiences.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Theoretical lectures with Lab. 2. Experiments and Case Studies. 3. Holding seminars and scientific seminars on the importance of Latin expressions

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

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

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Introduction to Infectious Disease Epidemiology.
Week 2	Mathematical Modeling: Introduction to Concepts in Transmission and Dynamics.
Week 3	Host-Pathogen Interactions
Week 4	Epidemiology of Infectious Diseases. -Principles of disease surveillance, outbreak investigation, and epidemiological studies. -Analysis of disease patterns and factors influencing disease transmission. -Introduction to basic epidemiological measures and concepts.
Week 5	Bacterial Infections, Viral Infections, Parasitic Infections and Fungal Infections.

Week 6	Measuring the Effectiveness of HIV Prevention Interventions in Generalized and Concentrated Epidemics.
Week 7	Epidemiologic Methods for Measuring Transmission and Control of Respiratory Infections: Influenza.
Week 8	Assessing the Epidemiological Burden of TB and the Impact of TB Control: Population-based TB Prevalence Surveys.
Week 9	Epidemiology and Control of Sexually Transmitted Infections and Viral Hepatitis.
Week 10	Surveillance and control of healthcare-associated infections.
Week 11	Epidemiology and Control of Vector borne Diseases.
Week 12	Epidemiologic Methods in Vaccinology.
Week 13	Epidemiologic Methods for Foodborne and Waterborne Diseases.
Week 14	Travel Medicine and Imported Diseases.
Week 15	Public Health Interventions for Infectious Diseases.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Explain the natural history of infectious diseases.
Week 2	Lab 2: Explain the concept of and calculate an « epidemic threshold ». Describe the effect of vaccination on the spreading of a disease in a population.
Week 3	Lab 3: Describe the biological mechanisms of HIV treatment as prevention. Apply criteria for causality to determine whether a biomedical intervention prevents acquisition of an infectious disease.
Week 4	Lab 4: Describe available influenza mitigation strategies, and how they affect transmission. Describe how complexity can be added to basic SIR models for evaluating pandemic policy strategies.
Week 5	Lab 5: Describe the natural history and epidemiology of TB. Describe the role of inventory studies, capture-recapture methods, and population-based TB prevalence surveys in estimating TB incidence.
Week 6	Lab 6: Interpret findings from population-based TB prevalence surveys, to inform the development of strategies that could increase the proportion of TB cases that are diagnosed, and improve the proportion of cases being captured by routine surveillance data.
Week 7	Lab 7: Describe the epidemiology and natural history of STIs and Hepatitis B and C. Describe STI and hepatitis control approaches.

Week 8	Lab 8: Critically assess the epidemiological methods used to evaluate the efficacy of partner treatment and notification strategies for gonorrhea and chlamydial infection.
Week 9	Lab 9: Describe the epidemiology of healthcare-associated infections (HCAI). Compare different surveillance methods for HCAI.
Week 10	Lab 10: Describe the lifecycle of select vector borne infections.
Week 11	Lab 11: Discuss strengths and limitations of various study designs used to assess the effectiveness of bed net distribution campaigns at the community level. Discuss strengths and limitations of various outcome and process measures used to evaluate community-level interventions to lower malaria morbidity and mortality.
Week 12	Lab 12 Describe study designs for evaluation of vaccines and vaccination strategies.
Week 13	Lab 13: Describe pre-and post-licensure surveillance approaches.
Week 14	Lab 14: Describe the epidemiology of foodborne and waterborne disease. Describe the steps involved in detecting and investigating foodborne and waterborne outbreaks.
Week 15	Lab 15: Describe the advantages and disadvantages of using measures of infection based on laboratory tests, clinical criteria, and participant recall. Summarize and interpret surveillance data.
Week 16	Preparatory week before the final exam.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Groseclose SL, Buckeridge DL. Public Health Surveillance Systems: Recent Advances in Their Use and Evaluation. Annu Rev Public Health 2017;38:57-79.	Yes
Recommended Texts	Riley RW, Blanton RE. Advances in Molecular Epidemiology of Infectious Diseases: Definitions, Approaches, and Scope of the Field. Microbiol Spectr 2018;6. doi: 10.1128/microbiolspec.AME-0001-2018.	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	(قيد المعالجة) راسب	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Clinical Immunology		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	PAT-312		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	5
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	11/10/2025	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-24021	Semester	4
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	44. Teaching clinical immunology aims to introduce students to clinical immunology, its uses, modern divisions, and some common diseases.

	45. The student should be able to define clinical immunology. 46. To identify the immune mechanism responsible for the pathogenesis of common immune diseases. 47. To distinguish the different diagnostic methods as well as the important differential examinations for each disease. 48. Study Circulating immune Complexes.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define clinical immunology. 2. Identify the principles and mechanisms for autoimmune disease. 3. Identify Rheumatic Diseases and Rheumatoid Arthritis, Systemic Lupus Erythematosus and its symptoms. 4. Identify INFLAMMATORY BOWEL DISEASES 5. Identify Liver & Gastrointestinal Diseases. 6. Identify Renal Diseases. 7. Identify and Autoimmune Blood Disorders. 8. Study Circulating immune Complexes. 9. Identify Occupational & Environmental lung Diseases.
Indicative Contents المحتويات الإرشادية	1. Self-assessments. 2. Questionnaires and surveys. 3. Clinical/field experiences.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Theoretical lectures with Lab. 2. Experiments and Case Studies. 3. Holding seminars and scientific seminars on the importance of Latin expressions

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

Module Evaluation تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Rheumatic Diseases and Rheumatoid Arthritis.
Week 2	Systemic Lupus Erythematosus.
Week 3	Ankylosing Spondylitis.
Week 4	Sjogren's Syndrome.
Week 5	Behcet's Disease.
Week 6	Gluten sensitive entero-pathy, Pernicious Anemia and Diabetes mellitus.
Week 7	Ulcerative Colitis and Crohn's Disease
Week 8	Autoimmune Hepatitis liver diseases and Primary Biliary Cirrhosis and Primary Sclerosing Cholangitis.
Week 9	Kidney disease: immune mechanisms of renal injury and Mechanisms assigned to antibody. Circulating immune Complex. situ immune complex Formation. (ANCA) and Ant neutrophil Cytoplasmic Autoantibodies and associated diseases.
Week 10	Primary glomerulonephritis. Membranous glomerulonephritis (Nephrotic Syndrome). Lupus Nephritis. Henoch-Schonlein Purpura. Vasculitis-Associated Glomerular Lesion. Anti-Glomerular Basement Membrane Disease.
Week 11	Eosinophilic Pneumonias. Occupational & Environmental lung Diseases. Asthma. Non-Allergic Bronchitis.
Week 12	Hypersensitivity Diseases and Eczema and contact dermatitis.
Week 13	Red blood cells hemolysis , hemolytic anemia, and white blood cell degeneration.
Week 14	Tumours and Tumour Markers
Week 15	Graft versus host rejection and Transplantation.

Week 16	Preparatory week before the final Exam
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Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Rheumatoid Arthritis: RF Test & Anti-CCP Test.
Week 2	Lab 2: Systemic Lupus Erythematosus: ANA & ds-DNA.
Week 3	Lab 3: Bechet's Disease: Pathergy Test & HLA-B51 typing.
Week 4	Lab 4: Gluten sensitive Enteropathy: IgA Anti-Gliadin Ab, Anti-Endomesial Ab & Anti-tTG Ab Test.
Week 5	Lab 5: Ulcerative Colitis: ANCA Ab Test and Crohn's Disease: ASCA Ab Test.
Week 6	Lab 6: Autoimmune Chronic Active hepatitis (AIH): Anti-Smooth Muscle Test, Anti-Liver/ Kidney Microsome Test & Anti-Soluble Liver Antigen.
Week 7	Lab 7: Primary Biliary Cirrhosis: Anti-Mitochondrial Ab and Primary Sclerosing Cholangitis: p-ANCA.
Week 8	Lab 8: Serum Sickness: Ig Electrophoresis, Lupus Nephritis: Anti-ds-DNA.
Week 9	Lab 9: C3 Estimation & GUE ASO Test, Anti-DNAse, Anti-Hase.
Week 10	Lab 10: Kidney Function Test (i.e. Blood Urea & Serum Creatinine), Serum Albumin.
Week 11	Lab 11: Lipid Profile , test for anti-glomerular basement membrane antibody (GBM), (which is positive in Good pasture's syndrome) is negative.
Week 12	Lab 12: Hypersensitivity Diseases: Asthma: Total serum IgE Estimation, Skin Test, Eosinophilia Detection.
Week 13	Lab 13: Autoimmune Hemolytic Anemia: CBC, Reticulocyte's Count, LDH, Hepatoglobulin Test, Direct antiglobulin test (DAT).
Week 14	Lab 14: Urine free hemoglobin test & Urine hemosiderin test.
Week 15	Lab 15: Lymphoid & Myeloid leukemia: CBC with differential, Peripheral blood smear, Bone marrow analysis.
Week 16	Preparatory week before the final exam.

Learning and Teaching Resources مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Goldspy RA, Kindit TJ, Osborne BA. & Kuby J. (2021) Kuby Immunology	Yes
Recommended Texts	Stites DP, Terr AI, Parslow TG (2011) Medical Immunology; 7th Middle East Edition; By Appleton & Lange	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	(قيد المعالجة) راسب	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Medical Molecular Biology		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar		
Module Code	PAT-313				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		3	Semester of Delivery		5
Administering Department		PATH	College	SCI	
Module Leader	Name		e-mail	E-mail	
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		01/10/2025	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 Objectives أهداف المادة الدراسية	

	49. Introducing the student to the components of the molecular structure of the different somatic cells to enable the student to be prepared to practice his work in the future. 50. Introduce the student to the genetic components present in the body. 51. Methods of the genetic components and their replication and gene expression. 52. Introducing the student to the repair methods used by cells to protect them from mutagens and mutations that may occur. 53. Introduce the student to the causes that lead to the occurrence of cancer in the body.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define Molecular Biology. 2. Identify the principles and mechanisms of DNA& RNA. 3. Identify DNA replication and transcription. 4. Identify Gene expression and regulation 5. Identify transcriptional modification. 6. Identify Repair of DNA. 7. Identify types of damages, repair. 8. Gene mutation. 9. Identify chromosomal aberrations.
Indicative Contents المحتويات الإرشادية	1. Self-assessments. 2. Questionnaires and surveys. 3. Clinical/field experiences.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Theoretical lectures with Lab. 2. Experiments and Case Studies. 3. Holding seminars and scientific seminars on the importance of Latin expressions

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	10% (10)	5 and 10	LO #1, #2 and #7, #9
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #9
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #9
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction in Molecular Biology
Week 2	Structure of DNA& RNA
Week 3	DNA as the vehicle of inheritance
Week 4	DNA replication and transcription
Week 5	Gene expression and regulation
Week 6	Post transcriptional modification
Week 7	Translation and protein synthesis
Week 8	Post translation modifications. Inhibitors of translation
Week 9	Repair of DNA – types of damages, repair
Week 10	Gene mutation and chromosomal aberrations
Week 11	Cause of mutation-chemical and physical agents.
Week 12	Recombinant- DNA technology
Week 13	Role of restriction endonucleases, plasmid and cosmid cloning vectors
Week 14	Brief outline of molecular cloning.Applications or recombinant DNA technology
Week 15	Disorders of Cell growth & carcinogenesis
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction.
Week 2	Lab 2: Instruments & materials used in molecular biology lab.
Week 3	Lab 3: DNA isolation.
Week 4	Lab 4: Restriction enzymes.
Week 5	Lab 5: Electrophoresis.
Week 6	Lab 6: Repair of DNA.
Week 7	Lab 7: types of DNA damages.
Week 8	Lab 8: repair of DNA.
Week 9	Lab 9: Gene mutation and chromosomal aberrations.
Week 10	Lab 10: Cause of mutation-chemical and physical agents.
Week 11	Lab 11: Hybridization techniques.
Week 12	Lab 12: Southern blotting.
Week 13	Lab 13: Western blotting.
Week 14	Lab 14: Northern blotting.
Week 15	Lab 15: Genetic engineering.
Week 16	Preparatory week before the final exam.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Human Genetics (Biomedical Sciences Explained). Rodney T. Howell, Anne Gardner, Teresa Davies. ISBN 10: 0340766144 / ISBN 13: 9780340766142 Published by Scion Pub Ltd.	Yes
Recommended Texts	Daniel L. Hartl, D.L. and Jones , E.W. (2010). Genetics: Principles and Analysis, Fourth Edition. Jones and Bartlett Publishers International ,UK	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	(قيد المعالجة) راسب	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Pathological Analysis		Module Delivery		
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar		
Module Code	PAT-314				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		3	Semester of Delivery		5
Administering Department		PATH	College	SCI	
Module Leader	Name		e-mail	E-mail	
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		11/10/2025	Version Number		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-1207	Semester	2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	54. Identify the most important pathological diseases. 55. Study how to diagnose diseases.

	56. The student's knowledge of how to conduct laboratory analyzes and methods of using them. 57. Identify the most important pathogens and the diseases they cause. 58. Familiarity with everything related to pathological analyzes.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define Pathological Analyses. 2. Identify the Basic concepts of clinical laboratory. 3. Diagnosis of infectious diseases. 4. Study Clinical Pathology.
Indicative Contents المحتويات الإرشادية	1. Self-assessments. 2. Questionnaires and surveys. 3. Clinical/field experiences.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Theoretical lectures with Lab. 2. Experiments and Case Studies. 3. Holding seminars and scientific seminars on the importance of Latin expressions

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Basic concepts of clinical laboratory.
Week 2	Clinical analysis diagnosis of infectious diseases.
Week 3	-Procedures of taking laboratory samples for culture. -Procedures of accepting/rejecting samples for culture. -Procedures of reporting results
Week 4	Laboratory Diagnosis of Sexually Transmitted Infections (STDs). Genital infections and STDs in women.
Week 5	Laboratory Diagnosis of Sexually Transmitted Infections (STDs). Genital infections and STDs in men.
Week 6	Leptospirosis.
Week 7	Bacteremia.
Week 8	Meningitis.
Week 9	Enteric Gram negative rods: E. coli, Klebsiella, Proteus, Pseudomonas.
Week 10	Methods of sensitivity tests for anti-microbial agents.
Week 11	Mycology Diseases in humans.
Week 12	Clinical Pathology.
Week 13	Serological tests of some infections.
Week 14	Aim of the tests performed at the clinical biochemistry/ hematology and coagulation laboratory.
Week 15	Criteria used for cytopathological diagnosis of cancer.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Sample collection.
Week 2	Lab 2: General urine examination. - Physical examination
	- Chemical examination

Week 3	Lab 3: -Microscopic examination. -Urine culture
Week 4	Lab 4: General stool examination. - Physical examination - Direct smear/concentration teq./RBC/pus/monilia and candida /parasite. -Ova /Indigestive food/others/ fibers,bubble,glass fragment
Week 5	Lab 5: -Occult blood(FOBT) /Helicobacter pylori detection. -Bacteriological examination.
Week 6	Lab 6: Haematology. -CBC machine. -Blood hemolysis / blood preservation
Week 7	Lab 7: -Blood collection/blood tests/ blood group/ CBP(Hb)/PCV. -ESR/ blood film. -Bleeding time/clotting time
Week 8	Lab 8: -WBC count /RBC count/ platelet count/ -PT /PTT/ INR. --Blood culture
Week 9	Lab 9: CSF test.
Week 10	Lab 10: Serology y tests.
Week 11	Lab 11: Seminal fluid analysis.
Week 12	Lab 12: Clinical biochemistry.
Week 13	Lab 13: hormone and Tumor marker.
Week 14	Lab 14: Different tests -Electrolytes. -Ferretin/iron. -Vit D test.
Week 15	Lab 15: HISTOPATHOLOGY.
Week 16	Preparatory week before the final exam.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Laboratory test handbook : concise, with disease index by David S. Jacobs, co-editor-in-chief. Call Number: REF RB38.2 .L327 1254 ISBN: 9781591950806.	Yes
Recommended Texts	Mosby's diagnostic and laboratory test reference by Kathleen Deska Pagana Call Number: REF RB38.2 .P337 1257 ISBN: 0323053459. Pocket Guide to Diagnostic Tests by Nicoll, Diana Call Number: Main Stacks RB38.2 .P62 1258 ISBN: 9780071489683.	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	(فقد المعالجة) راسب	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Microbial Diagnosis		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	PAT-315		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	5
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	07/10/2025	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 Objectives أهداف المادة الدراسية	59. At the end of this course, the student will be able to diagnose bacteria in an acceptable manner.

	60. As well as be able to manage bacteriological laboratories. 61. Diagnosis of microorganisms using all available methods stipulated in the brochures of the World Health Organization. 62. To distinguish the different diagnostic methods as well as the important differential examinations for each disease.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define Diagnostic Microbiology. 2. Identify the purpose and philosophy. 3. Identify clinical microbiology laboratory. 4. Identify Selection, collection, and transport of specimens for microbiological 5. Identify Cultivation and isolation of viable pathogens. 6. Identify Microbiological methods for identification of microorganisms.
Indicative Contents المحتويات الإرشادية	1. Self-assessments. 2. Questionnaires and surveys. 3. Clinical/field experiences.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Theoretical lectures with Lab. 2. Experiments and Case Studies. 3. Holding seminars and scientific seminars on the importance of Latin expressions

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

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #4, #6
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #5, #6

Summative assessment	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #4, #5 and #6
	Midterm Exam	2hr	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	Diagnostic Microbiology: purpose and philosophy. Laboratory safety.
Week 2	Selection, collection, and transport of specimens for microbiological examination.
Week 3	Optical methods for laboratory diagnosis of infectious diseases.
Week 4	Cultivation and isolation of viable pathogens.
Week 5	Microbiological methods for identification of microorganisms.
Week 6	Nontraditional methods for identification of pathogens or their products. Antibiotic susceptibility tests.
Week 7	Methods for identification of etiological agents of infectious disease.
Week 8	Diagnosis by organ system. Blood stream infections.
Week 9	Meningitis and other infections of the central nervous system.
Week 10	Infection of the respiratory tract.
Week 11	Infection of the urinary tract.
Week 12	Genital tract infections.
Week 13	Gastrointestinal tract infections
Week 14	Infections of the eyes, ears and sinuses. Skin, Soft tissue and wound infections.
Week 15	Normal sterile body fluids, bone and bone 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: Microbiology Special precautions for specific areas of clinical microbiology.
Week 2	Lab 2: Strategies for choosing methods -Education. -Limitation on testing

	-VITIC 2 -ELISA -RIA -HPLC -PCR Noncommercial methods -Decreasing analysis time for identification results -Anaerobic collection procedures -Anaerobic specimen transport.
Week 3	Lab 3: Direct examination of clinical specimens -Slightly modified direct preparations of clinical materials -Preparation of a smear -Gram stain -Acid-fast stain.
Week 4	Lab 4: Differential stains for blood smear and tissue sections.
Week 5	Lab 5: Intravascular infections, Extravascular infections. -Culture techniques Handling positive blood culture
Week 6	Lab 6: Collection and transport- of specimens -Direct visual examination- -Culture- Nonculture methodsPCR, RIA
Week 7	Lab 7: General considerations -Anatomy -Resident microorganisms of the urinary tract 20-21 Infection of the urinary tract Etiological agents -Pathogenesis -Routes of infection
Week 8	Lab 8: General urine examination Urine culture -Inoculation and incubation -Interpretation of urine culture
Week 9	Lab 9: Blood agar, Chocolate agar....etc -Preparation and characteristics of certain frequently used media.
Week 10	Lab 10: Particle agglutination, ELISA, PCR, etc. Important properties.
Week 11	Lab 11: Laboratory diagnosis. Staphylococci, Streptococci, Neisseria.
Week 12	Lab 12: Enterobacteriaceae, Pseudomonas and Other bacteria.

Week 13	Lab 13: Culture techniques and Handling positive blood culture.
Week 14	Lab 14: Laboratory diagnosis Meningitis-Specimen collection and transport. -CSF findings Leukocytes, protein and glucose -Visual detection of etiological agents -Staining -Wet preparation.
Week 15	Lab 15: Laboratory diagnosis of gastrointestinal tract infections Specimen collection and transport Direct detection of agents.
Week 16	Preparatory week before the final exam.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Textbook of Diagnostic Microbiology 2021. Connie R. Mahon •Donald C. Lehman • ISBN: 9780323832717	Yes
Recommended Texts	Bailey & Scott's Diagnostic Microbiology 2021. Patricia M. Tille. ISBN: 9780323681056	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
	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	(فقد المعالجة) راسب	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Antibiotics		Module Delivery
Module Type	Core		☒ Theory
Module Code	PAT-324		☒ Lecture
ECTS Credits	5		☒ Lab
SWL (hr/sem)	125		☐ Tutorial
			☒ Practical
			☐ Seminar
Module Level	3	Semester of Delivery	6
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	11/10/2025	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 Objectives	

أهداف المادة الدراسية	78. What are the benefits of an antibiotic? 79. What is the mechanism of action of antibiotics? 80. Improving infection surveillance for infections caused by antibiotic resistance. 81. Promote policies and programs and implement infection prevention and control measures. 82. Regulating and promoting the proper use and disposal of good quality medicines.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define Antibiotics. 2. Identify the Antibiotic classes. 3. Classification of antibiotics. 4. Antibiotics and their mechanisms of action. 5. Identify Antibiotic resistance. 6. Study Pharmacology.
Indicative Contents المحتويات الإرشادية	1. Self-assessments. 2. Questionnaires and surveys. 3. Clinical/field experiences.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1- Theoretical lectures with Lab. 2. Experiments and Case Studies. 3. Holding seminars and scientific seminars on the importance of Latin expressions
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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
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Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #3, #4
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #5, #6
	Projects / Lab. Report	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #3, #5 and #6
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction
Week 2	Antibiotic classes
Week 3	Classification
Week 4	The Cephalosporins
Week 5	Other beta lactams
Week 6	Tetracyclines
Week 7	Aminoglycosides
Week 8	Antibiotics and their mechanisms of action: -Inhibition of bacterial protein synthesis. -Inhibition of Bacterial Nucleic Acid Synthesis.
Week 9	Antibiotics and their mechanisms of action: - Inhibition of folate metabolism
Week 10	Antibiotics and their mechanisms of action: -Miscellaneous mechanisms.
Week 11	Antibiotic resistance.
Week 12	The acquisition and spread of antibiotic resistance in bacteria:
Week 13	Glycopeptide antibiotics: Polyene antimycotics
Week 14	Amphotericin B, Nystatin and Flucytosine
Week 15	Pharmacology
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to antimicrobial agents.
Week 2	Lab 2: Antibiotics.
Week 3	Lab 3 Evaluation of Disinfectants or comparison of antiseptics used against microorganisms.
Week 4	Lab 4: Test of antibiotic susceptibility (sensitivity).
Week 5	Lab 5: Factors affecting the results of diffusion tests.
Week 6	Lab 6: Ideal sensitivity testing medium.
Week 7	Lab 7: A). The theory of zone formation.
Week 8	Lab 8: (B). the gradient plate test.
Week 9	Lab 9: (C). well method or the agar cup method.
Week 10	Lab 10: (D). Dilution method.
Week 11	Lab 11: Epsilometer test (E test).
Week 12	Lab 12: Antimicrobial Drugs Used in Combination.
Week 13	Lab 13: Detection of B-lactamases.
Week 14	Lab 14: Classification of B-lactamase according to staining of productive bacteria.
Week 15	Lab 15: The Vitek System.
Week 16	Preparatory week before the final exam.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Antibiotics: Targets, Mechanisms and Resistance. By Claudio O. Gualerzi, Letizia Brandi, Attilio Fabbretti, Cynthia L. Pon. ISBN:9783527333059.	Yes
Recommended Texts	Antibiotic Basics for Clinicians: The ABCs of Choosing the Right Antibacterial Agent 2nd Edition by Alan R. Hauser . ISBN-13: 978-1451112214	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	قيد المعالجة (راسب)	(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.

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	hematology		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	PAT-325		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	4	Semester of Delivery	7
Administering Department	PATH	College	SCI
Module Leader	Name	e-mail	E-mail
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	01/10/2025	Version Number	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	PAT-35030	Semester	5
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
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Module Objectives أهداف المادة الدراسية	- Qualifying students to obtain knowledge and understanding of the intellectual framework , foundations and applications - Qualifying students to obtain knowledge and understanding of industrial about hematopoiesis definition . - Qualifying students to obtain knowledge and understanding the formation of blood cellular components from hematopoietic stem cells . - Qualifying students to obtain knowledge and understanding of hematopoiesis .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the course, students should be able to: . Identify and describe different types of blood diseases, including their etiology and pathophysiology. . Perform appropriate diagnostic tests and interpret the results for the diagnosis of blood diseases. . Understand the principles and mechanisms of various treatment modalities for blood diseases. . Analyze and evaluate laboratory and clinical data to assess the progression and prognosis of blood diseases. . Recognize the ethical and social issues related to blood diseases and demonstrate empathy towards patients and their families.
Indicative Contents المحتويات الإرشادية	1- Introduction to Blood Diseases • Overview of blood disorders and their classification • Hematopoiesis and normal blood cell development 2- Anemias • Iron deficiency anemia • Megaloblastic anemias • Hemolytic anemias 3- Leukemias and Lymphomas • Acute lymphoblastic leukemia • Chronic lymphocytic leukemia • Hodgkin’s lymphoma • Non-Hodgkin’s lymphoma 4- Hemostatic Disorders • Hemophilia • Von Willebrand disease • Disseminated intravascular coagulation (DIC) 5- Thrombocytopenia and Thrombocytosis • Immune thrombocytopenic purpura (ITP) • Thrombotic thrombocytopenic purpura (TTP) • Essential thrombocythemia 6- Hemoglobinopathies • Sickle cell disease • Thalassemias 7- Myeloproliferative Disorders • Polycythemia vera • Essential thrombocythemia

	• Primary myelofibrosis 8- Transfusion Medicine • Blood transfusion principles and practices • Blood typing and cross-matching • Complications and adverse reactions of transfusions 9- Ethical and Social Implications • Psychological and social impact of blood diseases • Ethical considerations in the management of blood diseases
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Providing students with the basics and additional topics related to the previous education outcomes of skills to solve problems Scientific . Solve a set of practical examples by the academic staff Students' participation during the lecture to solve some scientific issues . Evaluation modalities : - Daily exams with multiple-choice questions that require scientific skills . - Daily exams with scientific and practical questions Participation scores for competition questions for academic subjects - Setting grades for homework Assigning students to conduct and discuss scientific seminars
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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 and 10	LO #1, #2 and #7, #10
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #9
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوي النظري

	Material Covered
Week 1	Introduction to blood diseases: types, causes, and classifications , Red blood cell disorders: anemia , hemolytic disorders .
Week 2	White blood cell disorders: leukemia, lymphoma , Platelet disorders: thrombocytopenia, thrombocytosis
Week 3	Coagulation disorders: hemophilia, von Willebrand disease , Bleeding disorders: disseminated intravascular coagulation (DIC)
Week 4	Hemoglobinopathies: sickle cell disease, thalassemia , Bone marrow disorders: myelodysplastic syndrome (MDS), aplastic anemia
Week 5	Hematological malignancies: multiple myeloma, myeloproliferative neoplasms , Etiology, pathophysiology, and diagnostic methods
Week 6	Treatment options for blood diseases: chemotherapy, targeted therapy, immunotherapy . Supportive care: blood transfusions, stem cell transplantation .
Week 7	Inherited blood disorders: inherited hemolytic anemias, coagulation disorders , Genetic testing and counseling .
Week 8	Transfusion medicine: blood banking, blood products, compatibility testing Transfusion reactions and complications
Week 9	Hematopoiesis: development and regulation of blood cells , Myeloid and lymphoid differentiation pathways .

Week 10	Infections in patients with blood diseases: opportunistic infections, management Hematological emergencies: tumor lysis syndrome, neutropenic sepsis.
Week 11	Immunodeficiency disorders: primary and secondary immunodeficiency's Autoimmune hematological disorders: autoimmune hemolytic anemia, immune thrombocytopenia (ITP) .
Week 12	Hematological manifestations of systemic diseases : lupus , rheumatoid arthritis Hematological changes in malignancies .
Week 13	Pediatric blood disorders: hemophilia in children, pediatric leukemia , Developmental considerations and management .
Week 14	Geriatric considerations in blood diseases: age-related changes, treatment challenges Palliative care and end-of-life considerations .
Week 15	Review of key concepts and principles , Case studies and discussions , Course evaluation and wrap-up
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	• Introduction to laboratory safety, equipment, and protocols • Blood sample collection and handling techniques
Week 2	• Complete Blood Count (CBC) analysis: principles and interpretation • Practical exercises on CBC analysis using automated hematology analyzers
Week 3	• Blood smear preparation and examination: morphology of red and white blood cells • Identification of abnormal blood cells and their significance
Week 4	• Coagulation studies: clotting time, prothrombin time (PT), activated partial thromboplastin time (aPTT) • Laboratory investigations for bleeding disorders
Week 5	• Bone marrow aspiration and biopsy: techniques and interpretation • Examination of bone marrow samples for hematological disorders

Week 6	• Flow cytometry: principles and applications in hematological analysis • Immunophenotyping of leukemias and lymphomas using flow cytometry
Week 7	• Molecular diagnostics in blood diseases: polymerase chain reaction (PCR), gene sequencing • Practical exercises on molecular testing for genetic blood disorders
Week 8	• Blood banking and transfusion medicine: compatibility testing, blood typing, cross- matching • Hands-on exercises on blood typing and cross-matching techniques
Week 9	• Coagulation assays: fibrinogen assay, thrombin time, factor assays • Practical exercises on coagulation assays and interpretation of results
Week 10	• Cytogenetic analysis: karyotyping and fluorescent in situ hybridization (FISH) • Detection of chromosomal abnormalities in hematological malignancies
Week 11	• Hemoglobin electrophoresis: techniques and interpretation • Identification of abnormal hemoglobin variants
Week 12	• Microbiological testing : identification of blood-borne pathogens Laboratory diagnosis of infections in patients with blood diseases
Week 13	• Specialized techniques: immunohistochemistry, immunofluorescence • Practical exercises on immunohistochemical staining for hematological disorders
Week 14	• Laboratory management and quality assurance in hematology labs • Introduction to accreditation and proficiency testing
Week 15	• Recap of key laboratory techniques and concepts • Presentation of lab projects or case studies • Course evaluation and wrap-up

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Dacie and Lewis Practical Haematology, 12th edition - Hematology: Basic Principles and Practice (8th ed.). Elsevier	Yes
Recommended Texts	Kaushansky K., Lichtman M.A., Prchal J.T., Levi M.M., Press O.W., Burns L.J., Caligiuri M.A. (Eds.). (2019). Williams Hematology (10th ed.). McGraw-Hill Education. Hoffman R., Benz Jr. E.J., Silberstein L.E., Heslop H.E., Weitz J.I., Anastasi J. (Eds.). (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	(فقد المعالجة) راسب	(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.

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Enzymology		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	PAT-323			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	4	Semester of Delivery		8
Administering Department	PATH	College	SCI	
Module Leader	Name	e-mail	E-mail	
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	11/10/2025	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 Objectives	

أهداف المادة الدراسية	88. Understand the fundamental principles and mechanisms of enzymatic reactions. 89. Explore enzyme kinetics, including the Michaelis-Menten equation and factors affecting enzyme activity. 90. Investigate enzyme regulation and inhibition, including allosteric regulation and modes of enzyme inhibition. 91. Gain practical knowledge of enzyme assays and measurement techniques used to analyze enzyme activity. 92. Recognize the diverse applications of enzymes in biotechnology and medicine.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the fundamental principles of enzymology and the role of enzymes in biological systems. 2. Demonstrate knowledge of enzyme kinetics, including the Michaelis-Menten equation and factors affecting enzyme activity. 3. Explain the mechanisms of enzyme catalysis and different types of enzyme reactions. 4. Understand the regulation of enzyme activity, including allosteric regulation and feedback inhibition. 5. Analyze and interpret enzyme assays and calculate enzyme kinetic parameters. 6. Identify and classify different types of enzyme inhibitors and understand their modes of action. 7. Recognize the applications of enzymes in biotechnology, such as in industrial processes and pharmaceutical development. 8. Apply critical thinking skills to evaluate scientific literature and propose hypotheses related to enzymology.
Indicative Contents المحتويات الإرشادية	1. Self-assessments. 2. Questionnaires and surveys. 3. Clinical/field experiences.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Theoretical lectures with Lab. 2. Experiments and Case Studies. 3. Holding seminars and scientific seminars.

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	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Enzymology: Overview of enzymes and their biological significance.
Week 2	Enzyme Classification and Nomenclature: Understanding the classification and naming systems of enzymes.
Week 3	Enzyme Kinetics: Studying enzyme-substrate interactions and the Michaelis-Menten equation.
Week 4	Enzyme Inhibition: Exploring competitive, non-competitive, and uncompetitive inhibition.
Week 5	Enzyme Regulation: Understanding allosteric regulation and feedback inhibition.
Week 6	Enzyme Assays: Learning various techniques for measuring enzyme activity.
Week 7	Enzyme Characterization: Examining factors affecting enzyme stability and specificity.
Week 8	Enzyme Catalysis Mechanisms: Investigating acid-base, covalent, and metal ion catalysis.
Week 9	Enzymes in Biotechnology: Exploring enzyme applications in industrial processes and biocatalysis.
Week 10	Enzyme Engineering: Studying methods for modifying and optimizing enzyme properties.
Week 11	Enzymes in Medicine: Understanding the role of enzymes in diagnostics and therapeutic applications.
Week 12	Enzymes in Drug Development: Exploring enzyme targets and drug design strategies.
Week 13	Enzymes in Metabolic Diseases: Investigating enzyme deficiencies and their impact on metabolism.
Week 14	Emerging Trends in Enzymology: Examining recent advancements in enzyme research and technology.
Week 15	Review and Assessment: Revision of key concepts and final assessment.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Enzymology and Enzyme Kinetics: Basic concepts and principles of enzymology, enzyme-substrate interactions, and enzyme kinetics.
Week 2	Enzyme Assays and Measurement Techniques: Hands-on experience in designing and performing enzyme assays, utilizing various measurement techniques.
Week 3	Enzyme Inhibition: Study of different types of enzyme inhibitors and their mechanisms of action.
Week 4	Enzyme Regulation: Exploration of mechanisms and factors that regulate enzyme activity, including allosteric regulation and post-translational modifications.
Week 5	Enzyme Reaction Mechanisms: In-depth analysis of various reaction mechanisms involved in enzymatic catalysis.
Week 6	Enzyme Engineering and Biocatalysis: Understanding enzyme engineering techniques and their applications in biocatalysis and industrial processes.
Week 7	Enzymes in Biotechnology: Examining the role of enzymes in biotechnological applications, such as recombinant DNA technology and enzyme-based biosensors.
Week 8	Enzymes in Medicine and Diagnostics: Investigating the use of enzymes in medical diagnostics, therapeutic interventions, and drug development.
Week 9	Enzymes in Metabolic Pathways: Study of enzymes involved in key metabolic pathways and their regulation.
Week 10	Enzyme Kinetics and Data Analysis: Hands-on practice in analyzing enzyme kinetics data and determining kinetic parameters.
Week 11	Enzyme Structure-Function Relationship: Understanding the relationship between enzyme structure and its catalytic function.
Week 12	Enzymes in Drug Metabolism: Exploring the role of enzymes in drug metabolism, including pharmacokinetics and drug-drug interactions.
Week 13	Enzymes in Genetic Disorders: Examining the involvement of enzymes in genetic disorders and the use of enzyme replacement therapy.
Week 14	Emerging Topics in Enzymology: Discussion on emerging areas such as enzyme nanotechnology, synthetic biology, and computational enzyme design.
Week 15	Review and Assessment: Review of key concepts, laboratory techniques, and preparation for final assessments.
Week 16	Preparatory week before the final exam.

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

Required Texts	"Lehninger Principles of Biochemistry" by David L. Nelson and Michael M. Cox - This widely used textbook provides a comprehensive overview of biochemistry, including a dedicated section on enzymology. It covers enzyme structure, function, kinetics, and regulation in detail, providing a solid foundation in enzymology principles.	no
Recommended Texts	"Enzymes: Biochemistry, Biotechnology, Clinical Chemistry" by Trevor Palmer - This book offers a comprehensive and accessible introduction to enzymology. It covers the basics of enzyme structure and function, enzyme kinetics, enzyme regulation, and practical applications in biotechnology and clinical chemistry.	No
Websites	(https://www.enzyme-database.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	(قيد المعالجة) راسب	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Module Information

معلومات المادة الدراسية

Module Title	Research methodology		Module Delivery		
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☐ Seminar		
Module Code	PAT-321				
ECTS Credits	3				
SWL (hr/sem)	75				
Module Level		4	Semester of Delivery		7
Administering Department		PATH	College	SCI	
Module Leader	Name		e-mail	E-mail	
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		11/10/2025	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 Objectives أهداف المادة الدراسية	Develop Research Skills: The research project aims to enhance students' skills in conducting independent research, including literature review, data collection, analysis, and interpretation. It provides an opportunity for students to gain hands-on experience in various research methodologies. Foster Critical Thinking: The objective is to promote critical thinking and analytical skills among students. They are encouraged to evaluate and synthesize information

	from diverse sources, identify research gaps, and propose innovative solutions or hypotheses. Enhance Problem-Solving Abilities: The research project aims to enhance students' problem-solving abilities by providing them with a real-world problem or research question to investigate. Students develop strategies to address the research problem, design experiments, and troubleshoot challenges encountered during the research process. Encourage Collaboration and Communication: The project encourages students to collaborate with peers, mentors, or research advisors. It fosters effective communication skills through regular project updates, presentations, and discussions, enabling students to articulate their research findings and engage in scientific dialogue. Apply Theoretical Knowledge: The objective is to provide students with an opportunity to apply the theoretical knowledge gained in their academic coursework to a practical research setting. It allows them to bridge the gap between theory and practice and see how concepts and principles are applied in real-world scenarios. Promote Self-Learning and Personal Development: The research project encourages students to take ownership of their learning, work independently, and develop self-directed learning skills. It fosters personal growth, resilience, and adaptability, as students navigate challenges, seek guidance when needed, and reflect on their research experiences to refine their skills and knowledge.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150
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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	قيد المعالجة (راسب	(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.				