MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Bioinformatics**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MBT-48039**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	**4**		**Semester of Delivery**	**8**	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	**Dr. Mohmand Jawad Kadhim**		**e-mail**	**dr.mohanad@biotech.uoqasim.edu.iq**	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	**Prof. Dr. Rajaa Abdulrazzaq Al Anbagi**		**e-mail**	**Ralanbagi@biotech.uoqasim.edu.iq**	
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- This module introduces the students to concepts in bioinformatics. 2- Increase understanding the normal biological processes of molecular molecules and tools available for molecular biology and genetic information processing. 3- Give an overview on the biological databases, navigate through some databases and retrieval biological data. 4- Provide students with means to explain the failure results in these processes leading to diseases and methods to improving drug discovery. 5- Endeavor to visualize the different structures of molecular macromolecules such as primary, secondary, tertiary and quaternary structures based on algorithms 6- Process, analyze and interpret molecular sequences for species identification and visualization, and gene sequences for regulatory regions and functions based on available web-based tools and databases. 7- Read, discus and evaluate some references that are applied bioinformatics for their biological data analyses. 8- Improve some personality skills for future academic and career responsibilities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The students will be able to 1- Apply basic principles of biology, computer science and mathematics to address complex biological problems. 2- Relate bioinformatics to modern molecular technologies and its role in disease diagnostics and therapy. 3- Understand normal biological processes, failure results in these processes leading to diseases and methods to improving drug discovery. 4- Analyze nucleotide and protein sequences from nucleotide and protein databases. 5- Navigating through databases for retrieval molecular biology data 6- Understand genome mapping and sequencing with sequence assembly. 7- Analyze protein expression.
Indicative Contents المحتويات الإرشادية	Based on SSWL (h/sem.) In lecture lab #1-3 they will need (15 hr). In lecture lab #4- 6 they will need (10 hr). In lecture lab #8-10 they will need (15hr). In lecture lab #11-14 they will need (15hr). In lecture lab #15 they will need (5hr).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Lectures using different references, PowerPoints and videos.

	2- Questions and writing answers and other activities in online section. 3- Questioning and dialogue in the classroom. 4- Practical Labs and writing reports 5- Problem based learning.

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	4.27
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**61**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.07
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to bioinformatics, applications and limitations**
Week 2	**Biological databases and its types**
Week 3	**Sequence Alignment and Database Similarity Searching**

Week 4	**Multiple sequence alignment**
Week 5	**Gene and promoter prediction**
Week 6	**Phylogenetic analyses: Tree construction methods and programs for DNA and proteins**
Week 7	**Mid-term Exam**
Week 8	**Protein prediction: Protein Structure Basics, prediction of secondary structure, motifs, tertiary structures and functional prediction**
Week 9	**Protein Structure: Visualization, Comparison, and Classification**
Week 10	**RNA structure prediction: RNA primary and secondary structures, prediction methods**
Week 11	**Genome mapping**
Week 12	**Genome sequencing and sequence assembly**
Week 13	**Genome Annotation and comparative genomics**
Week 14	**Functional Genomics: Sequence-based approaches and microarray-based approaches**
Week 15	**Proteomics: technology of protein expression analysis**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Introduction to bioinformatics and Introduction to NCBI**
Week 2	**Navigating the NCBI website and other databases.**
Week 3	**Blast and its programs in NCBI databases: introduction, input and output formats, process for sequence searching**
Week 4	**Blast Web: Using nucleotide blast (Blastn) and search and retrieval**
Week 5	**Blast Web: Protein blast (Blastp)**
Week 6	**Blast Web: Translate blast (blastx) search protein databases, translated blast (tblastn), and translated blast (tblastx), search translated nucleotide databases.**
Week 7	**Mid-term Exam**
Week 8	**Specialized searches in BLAST: i.g., Primer Blast, SmartBlast, CD-Search**

Week 9	**Sequence Alignment and Database Similarity Searching**
Week 10	**Multiple sequence alignment**
Week 11	**Phylogenetic analyses: Maximum Parsimony and Maximum likelihood**
Week 12	**Gene and promoter prediction**
Week 13	**Protein Databases and protein structure prediction**
Week 14	**Analysis of whole genomes**
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Essential bioinformatics. First edition by Jin Xiong. Cambridge University Press (2006). isbn-13 978-0-511-16815-4. - Practical Bioinformatics. First edition by Michael Agostino. (2012). ISBN: 9780815344568	
Recommended Texts	- The Phylogenetic Handbook: A Practical Approach to Phylogenetic Analysis and Hypothesis Testing. Second edition. Edited by Philippe Lemey, Marco Salemi and Anne-Mieke Vandamme. Cambridge University Press (2009) ISBN: 978-0521730716	
Websites	https://www.ncbi.nlm.nih.gov http://www.rasmol.org/software/RasMol_Latest_Manual.html https://proteopedia.org/wiki/index.php/Tutorial:Ramachandran_principle_and_phi_psi_angles https://www.uniprot.org https://www.wwpdb.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.

Republic of Iraq
Ministry of Higher Education
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AL-Qasim Green University
College of Biotechnology
Department of medical
Biotechnology

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة القاسم الخضراء
كلية التقانات الاحيائية
قسم التقانات الاحيائية الطبية

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Genetic engineering**			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MBT-35120				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	3		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Nadhim mushtaq hashim		**e-mail**	Naz1988@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Assistance 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			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-24018	**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The goal of this course is to introduce students principles, tools and methodology of genetic engineering
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of the course, the student will be able to: 1- Define relevant terms, tools and concepts of genetic engineering 2- Explain the methodologies of gene isolation and manipulation 3- Identify the elements of cloning procedure and discuss their implementation for various conditions 4- Describe the methods of screening and analysis of recombinant DNA and its product 5- Design cloning strategies for recombinant DNA and implement associated bioinformatics tools.
Indicative Contents المحتويات الإرشادية	Student responsibilities: 1. Study of course materials as specified by the instructor 2. Timely submission of given class assignment

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lecturing. Problem solving. Classroom discussions

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	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10	4, 6, 10	#1 and#2, #3-#5, #9
	Assignments	2	10	13 and 14	#1 and #12
	Projects / Lab.	1	10	continuous	all
	Report	1	10	15	#14
Summative	**Midterm**	2h	10	7	#1-#6, #8-#14

assessment	**Exam**				
	Final Exam	3h	50	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction**
Week 2	**Recombinant DNA: Historical perspective and early experiment**
Week 3	**In vivo gene construction, Gene transfer in nature; interspecies gene transfer.**
Week 4	**Restriction Enzymes and polymerases**
Week 5	**Types of plasmids**
Week6	**Bacteriophage as cloning vector**
Week 7	**Host cells and vectors**
Week 8	**Mid-term Exam**
Week 9	**Cloning Strategies**
Week 10	**Selection Screening and Analysis of recombinants-1**
Week 11	**Selection Screening and Analysis of recombinants-2**
Week 12	**Genetic Engineering in action: Human genome**
Week 13	**Genetic engineering and biotechnology**
Week 14	**CRISPR Technology**
Week 15	**Transgenic plant**
Week 16	**Transgenic animal**
Week 17	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Introduction**
Week 2	**Isolation of Genomic DNA from Plant**
Week 3	**Isolation of Genomic DNA from microorganisms**
Week 4	**Isolation and Visualization of Plasmids**
Week 5	**Agarose Gel Electrophoresis**
Week 6	**Mid-term Exam**

Week 7	**Restriction Digestion of Plasmid DNA**
Week 8	**Preparation of competent cells (*E.coli*)**
Week 9	**PCR**
Week 10	**RFLP technique -1**
Week 11	**RFLP technique -2**
Week 12	**Review**
Week 13	**Final exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Gene Cloning - An introduction, T.A. Brown. Van Reinhold, 1988. 2. Recombinant DNA - Watson JD, Gilman M, Witkowski J and Zoller M, 1992. Second Ed. Scientific American Books. 3. DNA Cloning I and II, D.M. Glover and B.D. Hames, 1995. IRL press. 4. Genetic Engineering - An introduction, D.S.T. Nicholl. 5. Principles of Gene Manipulation, R.N.Old and S.B. Primrose, l994. Blackwell Publishers, New York.	
Recommended Texts	• **Gene Cloning and DNA Analysis: An Introduction.** • **Biotechnology: Applying the Genetic Revolution.** • **Principles of Gene Manipulation and Genomics.** • **Molecular Cloning: A Laboratory Manual.** • **Prescott/Harley/Klein's Microbiology.** • **Genomes 3**	
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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كلية التقانات الاحيائية
قسم التقانات الاحيائية الطبية

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Molecular genetic techniques**			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MBT-48137				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Nadhim mushtaq hashim		**e-mail**	Naz1988@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Assistance 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			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-35020	**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- To identify the fundamental aspects of molecular bioengineering techniques relevant for design in diagnosing, understanding and regulating biological systems. 2- To apply the principles of molecular methods in a design to sense, study or control a biological system 3- To analyze peer-reviewed current research articles in some of the course topic areas. 4- To report on a thorough analysis of a design involving a quantitative molecular application used in a research, biotechnology or healthcare setting.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of the course, the student will be able to: 1- Apply basic molecular biology methods for the study of nucleic acids and proteins 2- State and interprate the result and data produced by the methods. 3- Comprehends modern methods in molecular biology, understanding the principle of the methods. 4- Summarize what they have done during laboratory exercises 5- Raise awareness regarding disposal of toxic chemical wastes used in the lab
Indicative Contents المحتويات الإرشادية	The module is expected to cover the following topics: • Description and integration of the biochemistry of nucleic acids; • Genetic diversity; • Gene expression; • Basic methods used in molecular biology; • How molecular biology relates to other fields of science.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	A grounding of molecular biology technique is provided through a combination of recorded lectures (screencasts) and demonstrations. These will cover various aspects of basic molecular biology including nucleic acids and proteins; gene expression; DNA analysis; gene cloning; molecular evolution; typing and diagnostics. A summative assessment will be carried out via a timed Quizstyle test on Moodle at the end of the module. This assessment does not count toward the grade.

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
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Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Techniques in Molecular Biology - Biosafety rules - Syllabus review
Week 2	DNA/RNA isolation methods and Quantification and Electrophoresis Techniques
Week 3	Blotting, Probing, structural analysis
Week 4	Electrophoresis Techniques.
Week 5	Polymerase chain reaction (PCR / qRT-PCR).
Week 6	Vector, molecular cloning
Week 7	Mid-term Exam
Week 8	Probes, hybridization.
Week 9	Microarray analysis and Omics technology
Week 10	Protein isolation and purification 1
Week 11	Protein isolation and purification 2
Week 12	Protein and nucleic acid detection methods
Week 13	Protein-protein interaction assays: ELISA, Western blot
Week 14	Restriction enzymes and DNA sequencing
Week 15	Modern methods in Molecular biology
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	DNA isolation from plant cells using traditional methods
Week 2	DNA isolation from bacterial cells traditional methods
Week 3	DNA isolation from blood cells
Week 4	Electrophoresis of DNA
Week 5	RNA isolation by TRIzol-Chloroform
Week 6	Mid-term Exam
Week 7	Protein purification
Week 8	Measurement of protein concentration
Week 9	Measurement of protein activity
Week 10	Restriction enzyme 1
Week 11	Restriction enzyme 1
Week 12	Conventional PCR technique
Week 13	qPCR technique
Week 14	Review
Week 15	Final exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Bartlett J.M.S. & Stirling D., 2003. PCR Protocols, 2nd Ed., Humana Press, New Jersey. Hartl D. & Jones E.W., 2009. Genetics. Analysis of genes and genomes, 9th Ed., Jones and Bartlett Publishers, Boston. Lima N. & Mota M. (Ed), 2003. Biotecnologia: fundamentos e aplicações. Lidel – Edições Técnicas, Lda., Lisboa. Ausubel F. M., et. al. (Ed), 2002. Short protocols in molecular biology: a compendium of methods from current protocols in molecular biology, 5th Ed. (2 volumes), John Wiley & Sons, Inc., New Jersey. Tagu D. & Moussard C., 2006. Techniques for molecular biology. Taylor and Francis Group, Science Publishers, New Hampshire. Watson J.D., Baker T.A., Bell S.P. & Gann A., 2008. Molecular Biology of the gene, 5th Ed., Pearson Benjamin Cummings. Winfrey M.R., Rott M.A. & Wortman A.T., 1997. Unraveling DNA: molecular biology for the laboratory. Prentice Hall, Inc., New Jersey.	

Recommended Texts	• **Gene Cloning and DNA Analysis: An Introduction.** • **Biotechnology: Applying the Genetic Revolution.** • **Principles of Gene Manipulation and Genomics.** • **Molecular Cloning: A Laboratory Manual.** • **Prescott/Harley/Klein's Microbiology.** **Genomes 3**	
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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Department of medical Biotechnology

نموذج وصف المادة الدراسية

معلومات المادة الدراسية				
عنوان الوحدة	اللغة العربية		تسليم الوحدة	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☒ Seminar
نوع الوحدة	ساندة			
كود الوحدة	MBT-24116			
ائتمانات ECTS	3			
SWL (hr/sem)	75			
مستوى الوحدة		فصل دراسي من التسليم	1	
إدارة القسم	اكتب رمز القسم	كلية	Type College Code	
قائد الوحدة	عبدالله سلام منصور	e-mail	abd.alsafi@yshoo.com	
عنوان زعيم الوحدة	مدرس مساعد `	تأهيل قائد الوحدة	ماجستير	
حدة المعلم		e-mail	E-mail	
اسم المرجع الزميل	Name	e-mail	E-mail	
موافقة اللجنة الزميل تاريخ		رقم الإصدار	1.0	

العلاقة مع المواد الدراسية الأخرى			
وحدة المتطلبات المسبقة	لا يوجد	Semester	

	Semester	لا يوجد	وحدة المتطلبات المشتركة

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
1- زيادة الثروة اللغوية عند الطلبة 2- المحافظ على اللغة العربية الفصحى فهي عماد القومية العربية 3- تقويم اللسان بالنطق الصحيح للكلمات 4- الاطلاع على التراث العربي من شعر ونثر 5 – تعلم كتابة الكلمات الصعبة تعلم صحيح وحسب قواعد الاملاء 6 –ان يتعلم الطالب الفرق بين تقسيمات الكلام (االاسم ، الفعل ، الحرف)	**أهداف المادة الدراسية**
1-ان يتحدث اللغة العربية الفصحى . **2- يوسع مخزونه اللغوي وذلك من خلال قراءة النصوص الأدبية** **3- يتعلم الطالب كيف يستخدم المعجم في معرفة معاني المفردات** **4- يتقن لفظ الكلمات ، ويتدرب على لفظها لفظاً صحيحاً** **5- تحسين مستوى الخط لدى الطلبة وتعليمهم رسم الحروف رسما صحيح .** **6- التركيز على الاملاء الصحيح للكلمات وذلك بالتمارين المستمر.** **7- تعليم الطلبة قراءة القرآن الكريم وتعليمهم احكام التلاوة**	**مخرجات التعلم للمادة الدراسية**
في مجمل المحاضرات رقم 1_ 5 سيحتاجون (10 ساعات) **في مجمل المحاضرات رقم 7- 13 سيحتاجون (50 ساعات)** **في مجمل المحاضرات رقم 15 سيحتاجون (10 ساعات)**	**المحتويات الإرشادية**

استراتيجيات التعلم والتعليم

1- يستخدم استراتيجية التعلم التعاوني في تعلم اللفظ الصحيح 2-استراتيجية التعلم التنافسي تكون ذات نتائج جيدة في تعليم اقسام الكلام 3- استراتيجيات التعلم النشط تناسب موضوعات اقسام المعارف 4- استراتيجية التعلم بالاقران تستخدم في تعليم النصوص الأدبية 5- استراتيجية التعلم البنائي مثمرة في تعلم كتابة الكلمات الصعبة	الاستراتيجيات

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
SWL (h/w) منظم الحمل الدراسي المنتظم للطالب أسبوعيا	5	79	**SWL (**ساعة / نصف**)** منظم الحمل الدراسي المنتظم للطالب خلال الفصل
SWL (h/w) غير منظم الحمل الدراسي غير المنتظم للطالب أسبوعيا	3	50	ساعة / نصف **SWL** غير منظم الحمل الدراسي غير المنتظم للطالب خلال الفصل
75			ساعة / نصف **SWL** الاجمالي الحمل الدراسي الكلي للطالب خلال الفصل

تقييم الوحدة تقييم المادة الدراسية					
		الوقت / الرقم	الوزن (علامات)	أسبوع الاختبار	مناسب حصيلة
التكويني تقدير	الاختبارات	2	10	4, 6, 10	#1and#2, #3-#5, #9
	واجبات	2	10	12 and 13	#1 and #12
	المشاريع المعمل				
	تقرير	1	10	15	#14
تلخيص التقدير	اختبار نصف السنة	2h	10	7	#1-#6, #8-#14
	امتحان نهائي	3h	50	15	All

		(درجة 100) 100%	تقييم اجمالي

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
محتوى المادة الدراسية	
المبتدأ ، جواز الابتداء بالنكرة ، صور المبتدأ ، حذف المبتدأ وجوباً .	الأسبوع الأول
الفاعل ، صور الفاعل ، احكام الفاعل	الأسبوع الثاني
كان واخواتها	الأسبوع الثالث
خطبة الرسول صلى الله عليه واله وسلم	الأسبوع الرابع
معلقة طرفه بن العبد مع الشرح	الأسبوع الخامس
همزة الوصل وهمزة القطع	الأسبوع السادس
ان واخواتها	الأسبوع السابع
قصيدة حسان بن ثابت الهمزية في مدح الرسول مع شرحها	الأسبوع الثامن
المفعول المطلق ، ما ينوب عن المفعول المطلق	الأسبوع التاسع
علامات الترقيم ، البدل	الأسبوع العاشر
المفعول لاجله ، صور المفعول لاجله ، شروط المفعول لاجله	الأسبوع الحادي عشر
المفعول به ، العطف	الأسبوع الثاني عشر
التوكيد ، انواع التوكيد ، خصائص كل نوع	الأسبوع الثالث عشر
امتحان منتصف العام	الأسبوع الرابع عشر
أسبوع تحضيري قبل الامتحان النهائي	الأسبوع الخامس عشر

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	
النصوص المطلوبة	**- خطبة الرسول صلى الله عليه واله وسلم** **-حفظ النصوص الشعرية** -	
النصوص المستحسنة	شرح ابن عقيل على الفية ابن مالك شرح الرضي على الكافية الرضي الاسترابادي	
موقع الويب		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	تعريف
مجموعة النجاح **(50 - 100)**	**A** - Excellent	امتياز	90 - 100	أداء مذهل
	B - Very Good	جيد جدا	80 - 89	فوق المتوسط مع بعض الأخطاء
	C - Good	جيد	70 - 79	العمل السليم مع أخطاء ملحوظة
	D - Satisfactory	متوسط	60 - 69	عادل ولكن مع نواقص كبيرة
	E - Sufficient	مقبول	50 - 59	العمل يلبي الحد الأدنى من المعايير
مجموعة فاشلة **(0 – 49)**	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	مطلوب المزيد من العمل ولكن تم منح الانتماء
	F – Fail	راسب	(0-44)	قدر كبير من العمل مطلوب

ملاحظـــــــــــة : سيتم تقريب الدرجات العشرية **أعلى اواقل** 0.5 الى الدرجة الكاملة الأعلى او الأدنى (مثال ذلك : سيتم تقريب درجة 54.5 الى 55 ، في حين سيتم تقريب علامة 45.4 الى 54 . لدى الجامعة سياسة التغاضي عن فشل التمرير القريب ، لذا فان التعديل الوحيد للدرجة الممنوحة بواسطة الدرجة الاصلية سيكون تلقائياً .

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Stem Cell & Gene Therapy**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MBT-36029**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	3		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Salih Abdul Mahdi		**e-mail**	drsalih@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Assistance 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			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-2317	**Semester**	2
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- To understand the nature and properties of Stem Cell and Gene therapy. 2- To provide scientific understanding of Stem Cell and Gene therapy. and Their applications related with human, and animals
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of the course, the student will be able to: 1. Familiarity with working principles, tools and techniques in the field of stem cell and gene therapy. 2. Understanding of the strengths, limitations and potential uses of stem cells and how to use of gene therapy.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Classroom lectures and discussions. 2. Case studies and examples from original research articles.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**64**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**5**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**61**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**0**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to Stem Cell biology and development**
Week 2	**Fundamental Human Embryology & Developmental Biology**
Week 3	**Types of stem cells**
Week 4	**Adult Stem Cells and Regeneration.**
Week 5	**Animal model for stem cells research**
Week 6	**Mesenchymal stem cells in regenerative medicine**
Week 7	**Clinical application of stem cells**
Week 8	**Ethical issues in stem cell research**
Week 9	**Med Exam.**
Week 10	**Cancer Stem cells**
Week 11	**Hematopoietic stem cell transplantation**
Week 12	**Stem cell and tissue engineering**
Week 13	**T Cell Immunotherapies**
Week 14	**Techniques in stem cell research and Regulation and ethics of stem cel**
Week 15	**Preparatory week before final exam.**
Week 16	**Final Exam.**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Introduction to stem cell lab equipment**
Week 2	**Basic methods in stem cell culture : Basic Cell Culture Growth Conditions**
Week 3	**Stem cell separation methods: Density gradient centrifugation**
Week 4	**Stem cell separation methods** : Density gradient centrifugation-negative selection
Week 5	**Stem cell separation methods: Pre-plating and Conditioned expansion media**
Week 6	Med Exam.
Week 7	**Stem cell separation methods: Aqueous two-phase system using temperature responsive polymer**
Week 8	**Identification of stem cell : Cell surface pluripotency markers -1**
Week 9	**Identification of stem cell : Cell surface pluripotency markers -1**
Week 10	**Stem Cell transcription factors**
Week 11	**Identification and Isolation of Cancer Stem Cells 1**
Week 12	**Cell surface markers for cancer stem cells**
Week 13	**Preparatory week before final exam.**
Week 14	**Final exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Frontiers in Pluripotent Stem Cells Research and Therapeutic Potentials Bench-To-Bedside, 2018, • by Kuldip S. Sidhu. • Patient-Specific Induced Pluripotent Stem Cell Models: Generation and Characterization (Methods in • Molecular Biology) 1st ed. by Andras Nagy (Editor) and Kursad Turksen (Editor) • Stem Cell and Gene-Based Therapy: Frontiers in Regenerative Medicine, Alexander Battler, • Jonathan Leo, Springer.	
Recommended Texts	• Stem Cells Handbook: Stewart Sell, Humana Press; Totowa NJ, USA; Oct. 2020. • Frontiers in Pluripotent Stem Cells Research and Therapeutic Potentials Bench-To-Bedside, 2018, by Kuldip S. Sidhu.	
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	**cytogenetics and human genetic diseases**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MBT-36125**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	**3**		**Semester of Delivery**	**2**	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Salih Abdul Mahdi		**e-mail**	drsalih@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Assistance 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			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-2309	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- This module is a major (Mandatory) Departmental course for the Third Year and taught by Technology-based labs. This module deals mainly with human Chromosomal analysis Karyotyping.
Module Learning Outcomes	After successful completion of the course, the student will be able to: See what Human chromosomes look like under the light microscope -Distinguish

مخرجات التعلم للمادة الدراسية	chromosomes on the basis of reproducible banding patterns that are accentuated with the use of various staining protocols using a mild trypsin treatment followed by staining with the dye Giemsa and other techniques that allow for increased resolution of chromosome banding patterns. - permitting differentiation of a greater number of Chromosomal abnormalities - Chromosome nomenclature
Indicative Contents المحتويات الإرشادية	Student responsibilities: 1. Study of course materials as specified by the instructor 2. Timely submission of given class assignment

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Classroom lectures and discussions. 2. Case studies and examples from original research articles.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**64**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**5**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**61**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**1**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Overview of Genetics**
Week 2	**Cells and Differentiation Meiosis and Development**
Week 3	**Pedigree Analysis Family Genome Analysis**
Week 4	**Mendelian Genetics Sex Chromosomes and Sex-Linkage**
Week 5	**Multifactorial Traits Behavioral Genetics (midterm)**
Week 6	**DNA Structure Gene Expressions and Mutations**
Week 7	**Med Exam.**
Week 8	**Cancer genetic**
Week 9	**Genetic diseases** : **Down syndrome (Trisomy 21) and Fragile X syndrome.**
Week 10	**Genetic diseases** : **Trisomy 18, Trisomy 13, and Klinefelter syndrome**.
Week 11	**Genetic diseases : Thalassemia, Sickle cell anemia. Hemochromatosis , Achondroplasia**
Week 12	**Genetic diseases** : **X- linked genetic : Hemophilia B, Fetal hemoglobin quantitative trait locus 3.**
Week 13	**Genetic Autoimmune diseases : Myasthenia gravis, Rheumatoid arthritis**
Week 14	**Genetic Autoimmune diseases : Celiac disease - sprue (gluten-sensitive enteropathy)**
Week 15	**Preparatory week before final exam.**
Week 16	**Final Exam.**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**General Lab Rules for Cytogenetics**
Week 2	**Device, Equipment, and tools of Cytogenetic Lab**
Week 3	**Mitosis of Vicia faba**
Week 4	**Karyotype of Hordeum vulgare (2n=14)**
Week 5	**Mitotic Aberrations**
Week 6	**Meiosis of Normal Diploids**

Week 7	**Med Exam.**
Week 8	**Cytogenetic Analysis of Peripheral Blood G-Banding (Using trypsin)**
Week 9	**The standard karyotype Chromosome number and banding patterns Idiograms**
Week 10	**Cytogenetic Analysis of Peripheral Blood C-Banding constitutive Heterochromatin banding**
Week 11	**Continuous: Molecular Cytogenetic Fluorescence In Situ Hybridization (FISH Test) -1**
Week 12	**Continuous: Molecular Cytogenetic Fluorescence In Situ Hybridization (FISH Test) -2**
Week 13	**Continuous: Molecular Cytogenetic Fluorescence In Situ Hybridization (FISH Test) -3**
Week 14	**Final exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Books Title: Cell Biology-A laboratory Handbook,2006. Author(s)/Editor(s):Celis,Julio E. (ed.) Publisher: Amsterdam: Elsevier Academic Press ISBN: 0-12-164731-5 0-12-164732-3 0-12-164733-1 0-12-164734-X	
Recommended Texts	Title: Analyzing Chromosomes(basics from background to bench),2018 Author(s)/Editor(s):B. Czepulkowski Publisher: Springer	
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
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Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
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Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Environmental Biotechnology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MBT-35023**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	**3**		**Semester of Delivery**		**1**
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Salih Abdul Mahdi		**e-mail**	drsalih@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Assistance 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			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-1101, MBT-1206	**Semester**	1,2
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- Objectives. Understand the microbiological and ecological foundations that explain the participation of microorganisms in ecosystems and the great power existing in their biotechnological use.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of the course, the student will be able to: 1. Familiarity with working principles, tools and techniques in the field of Environmental Biotechnology and Sustainability 2. Understanding of the strengths, limitations and potential dealing Environmental Biotechnology and Sustainability.
Indicative Contents	Student responsibilities:

المحتويات الإرشادية	1. Study of course materials as specified by the instructor 2. Timely submission of given class assignment

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Classroom lectures and discussions. 2. Case studies and examples from original research articles.

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	**61**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**1**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Environmental Biotechnology and Sustainability:** Scope and applications of the subject. Basics of ecosystem structure and function
Week 2	**Microbial Ecology and Environmental Biotechnology:** Concepts and importance of microbial ecology in Environmental Biotechnology
Week 3	**Microbiology of Environmental Engineering System:** Microbial diversity, growth and decay. Stoichiometry of microbial energetics and kinetics.
Week 4	**Resource Exploitation by Microorganisms:** Functions of various microbial groups relevant to environmental systems, including waste treatment and resource recovery, implications in biogeochemistry.
Week 5	**Methods in Microbial Ecology with relevant to Environmental Biotechnology**: Culture

	dependent and - independent analyses of microbial communities; PCR based methods, Microarray, Environmental genomics
Week 6	**Microbial Principles of Biodegradation, Biodetoxification and other processes relevant for Environmental Applications:** Microbial engines, (metabolism), Requirements for biodegradation, acclimation, Common biotransformation mechanisms; Effect of organic contaminant structure on biodegradability; Cooperation between different microbial species for enhanced biodegradation; Applying biodegradation kinetics to fate and transport modeling
Week 7	**Common biotransformation mechanisms:** Effect of organic contaminant structure on biodegradability; Cooperation between different microbial species for enhanced biodegradation; Applying biodegradation kinetics to fate and transport modeling
Week 8	Med Exam.
Week 9	**Bioremediation Technologies:** Concepts, methods and applications of natural attenuation and engineered bioremediation (e.g bioaugmentation and biostimulation).
Week 10	**Microbial Interactions with Heavy Metals and Metalloids**: Bioremediation, Biohydrometallurgy and other aspects of Environmental Biotechnology
Week 11	**Aerobic and Anaerobic Degradation of Aliphatic and Aromatic Compounds:** Microbial interaction with plastics, antibiotics and others emerging pollutants.
Week 12	Microbially Enhanced Phosphorus and Nitrogen Removal
Week 13	**Microbially Enhanced Oil Recovery:** Microbial role in Carbon Storage and Capture (sequestration, conversion to useful biopolymers, etc.).
Week 14	**Case studies :** Bioremediation, Carbon Storage and Capture, Bioenergy.
Week 15	Preparatory week before final exam.
Week 16	**Final exam.**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Pollution, types and ways for renovate
Week 2	Bio remediation : An Environmentally Friendly Strategy for the Remediation of a Wide Range of Heavy Metals, Methods, Principles and Application
Week 3	Natural Attenuation, Bioaugmentation, Biostimulation, Bioleaching
Week 4	Phytoremediation mechanisms
Week 5	Methods for phytoremediation research Approaches to experimental design
Week 6	Method of plant digestion for heavy metal analysis
Week 7	Med Exam.
Week 8	Choice of ornamental plant in phytoremediation : calculation pollutant content and determination of plant remediated mechanism
Week 9	Phytoextraction of Heavy Metals by Fast- Growing Trees
Week 10	Enzymes Transferring Biomolecules to Organic Foreign Compounds: A Role for Glucosyltransferase and Glutathione S-transferase in phytoremediation
Week 11	Phytoremediation of Polychlorinated
Week 12	Active and sterile soil (baked) spiked with molecule to be determined (extraction solvent, efficiency, methods development, and identification) -
Week 13	Water extractions (difficult) – molecule to be determine –
Week 14	Physical and chemical environmental remediation
Week 15	Final Exam.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Books and references 1.Environmental Biotechnology, Principles and Applications by Bruce E Rittman and Perry L McCarty, McGrawhill Higher education. 2. Environmental Biotechnology Edited by Hans-Joachim Jördening and J Winter, WILEY-VCH Verlag Gmbh & Co.	
Recommended Texts	Bioremediation and Natural Attenuation by Pedro J J Alvarage and Walter A Illman, Wiley Interscience. 4.Environmental Biotechnology, Vol 10 Handbook of Environmental Engineering, Edited by L K Wang et al, Humana Press.	
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	**Pharmaceutical biotechnology and toxicology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**MBT-48040**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Mohammed AbdulGaffar Aboktifa		**e-mail**	mohammed.aboktifa@vet.uoqasim.edu.iq	
Module Leader's Acad. Title	Asist. 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			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-48039	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	To study the basic science and the applications of biotechnology derived pharmaceuticals, with special emphasis on their production, formulation delivery and clinical use.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Acquire knowledge in basic principles of genetic engineering and enzyme technology 2. Apply the principles of biosensors and protein engineering in Pharmaceutical Industry 3. Explain the concepts of rDNA technology and its applications 4. Describe the concept of immunity and production of vaccine 5. Define hybridoma technology and understand hypersensitivity reaction 6. Knowledge on genetic multiplication and biotransformation 7. Discuss the principles of fermentation its design and production of pharmaceutical products 8. Describe various blood products, plasma collection and processing of it.
Indicative Contents	In lecture lab #1-#5 they will need (10hr).

المحتويات الإرشادية	In lecture lab #7- #13 they will need (50 hr). In lecture lab 14 #15 they will need (10hr).

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 للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**94**	**Structured SWL (h/w)** **الحمل الدراسي المنتظم للطالب أسبوعيا**	**6**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**56**	**Unstructured SWL (h/w)** **الحمل الدراسي غير المنتظم للطالب أسبوعيا**	**2**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Overview of Pharmaceutical biotechnology
Week 2	Formulation of Biotechnology products
Week 3	Excipients Used in Parenteral Formulations of Biotech Product
Week 4	Shelf life of protein based pharmaceuticals
Week 5	Molecular Biotechnology: From DNA Sequence to Therapeutic Protein
Week 6	Biophysical and Biochemical Analysis of Recombinant Proteins
Week 7	Pharmacokinetics and Pharmacodynamics of Peptide and Protein Therapeutics
Week 8	Mid exam
Week 9	Pharmacokinetics and Pharmacodynamics of Peptide and Protein Therapeutics (part 2)
Week 10	Immunogenicity of Therapeutic Proteins
Week 11	Monoclonal Antibodies: From Structure to Therapeutic Application
Week 12	Interferons and Interleukins
Week 13	Insulin
Week 14	Vaccines
Week 15	Final exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Isolation and secondary screening of industrially important microorganisms**
Week 2	**Strain improvement (for increased yield) by stress inducers**
Week 3	**Preparation, calibration, and standardization of a bioreactor Construction of growth curve and determination of specific growth rate and doubling time.**
Week 4	**Biomass estimation by monitoring protein synthesis and sugar depletion.**
Week 5	**Protein separation by aqueous two-phase partitioning**
Week 6	**Fermentation and production process of alcohol**
Week 7	**Exam**
Week 8	**Introduction to microbial toxin, types, risks, and occurrences**
Week 9	**Routine method for microbial toxin detection**
Week 10	**EPA detection methods – compound to be determined – Merck Index**
Week 11	**Unknown molecule methods development – Molecular characteristics To be determined**
Week 12	**GC-FID (resolution, peak separation, and efficiency)**
Week 13	**HPLC separation of unknown molecule**
Week 14	**GC- ECD of molecule yet to be defined**
Week 15	**exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Pharmaceutical Biotechnology: Fundamentals and Applications.Fourth Edition (2013).By crommelin et.al.	

Recommended Texts		
Websites	related scientific papers	

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	**Pharmaceutical biotechnology and toxicology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**MBT-48040**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Mohammed AbdulGaffar Aboktifa		**e-mail**	mohammed.aboktifa@vet.uoqasim.edu.iq	
Module Leader's Acad. Title	Asist. 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			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-48039	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	To study the basic science and the applications of biotechnology derived pharmaceuticals, with special emphasis on their production, formulation delivery and clinical use.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Acquire knowledge in basic principles of genetic engineering and enzyme technology 2. Apply the principles of biosensors and protein engineering in Pharmaceutical Industry 3. Explain the concepts of rDNA technology and its applications 4. Describe the concept of immunity and production of vaccine 5. Define hybridoma technology and understand hypersensitivity reaction 6. Knowledge on genetic multiplication and biotransformation 7. Discuss the principles of fermentation its design and production of pharmaceutical products 8. Describe various blood products, plasma collection and processing of it.
Indicative Contents	In lecture lab #1-#5 they will need (10hr).

المحتويات الإرشادية	In lecture lab #7- #13 they will need (50 hr). In lecture lab 14 #15 they will need (10hr).

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 للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**94**	**Structured SWL (h/w)** **الحمل الدراسي المنتظم للطالب أسبوعيا**	**6**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**56**	**Unstructured SWL (h/w)** **الحمل الدراسي غير المنتظم للطالب أسبوعيا**	**2**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Overview of Pharmaceutical biotechnology
Week 2	Formulation of Biotechnology products
Week 3	Excipients Used in Parenteral Formulations of Biotech Product
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Week 10	Immunogenicity of Therapeutic Proteins
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Week 12	Interferons and Interleukins
Week 13	Insulin
Week 14	Vaccines
Week 15	Final exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Isolation and secondary screening of industrially important microorganisms**
Week 2	**Strain improvement (for increased yield) by stress inducers**
Week 3	**Preparation, calibration, and standardization of a bioreactor Construction of growth curve and determination of specific growth rate and doubling time.**
Week 4	**Biomass estimation by monitoring protein synthesis and sugar depletion.**
Week 5	**Protein separation by aqueous two-phase partitioning**
Week 6	**Fermentation and production process of alcohol**
Week 7	**Exam**
Week 8	**Introduction to microbial toxin, types, risks, and occurrences**
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Week 11	**Unknown molecule methods development – Molecular characteristics To be determined**
Week 12	**GC-FID (resolution, peak separation, and efficiency)**
Week 13	**HPLC separation of unknown molecule**
Week 14	**GC- ECD of molecule yet to be defined**
Week 15	**exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Pharmaceutical Biotechnology: Fundamentals and Applications.Fourth Edition (2013).By crommelin et.al.	

Recommended Texts		
Websites	related scientific papers	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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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.

Republic of Iraq
Ministry of Higher Education
and Scientific Research
AL-Qasim Green University
College of Biotechnology

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة القاسم الخضراء
كلية التقانات الاحيائية
قسم التقانات الاحيائية الطبية

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Animal Physiology			**Module Delivery**	
Module Type	Core learning activity			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MBT-24113				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Prof. Dr. Ahmed Obaid Hossain		e-mail	Ahmed.e@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Prof. Dr. Nada Saad Naji Al-Taee		**e-mail**	nada-naji@biotech.uoqasim.edu.iq	
Peer Reviewer Name	Dr. Shaymaa Abd Al-jasim Al Shukri		**e-mail**	shaimaa_alshukry@biotech.uoqasim.edu.iq	
Scientific Committee Approval Date	13/6/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-1205	**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	**1.** Learn the basics and concepts of physiology. **2.** The student discusses the branches of physiology. **3.** To understand the physiology of body system.

	4. To address the levels of cellular organization. 5. To provide students with a basic understanding of the fundamental processes and mechanisms that serves and controls the various functions of the body. 6. To recognize the concept of homeostatic and the role of it's functional in some system. 7. To distinguish the functions of different body systems. 8. To learn to properly and safely use animals sample, human sample, and modern laboratory equipment to conduct research.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Describe the basic principles underlying physiology and describe basic structure function relationships. 2. Understand structure function relationships, homeostasis and feedback regulation. 3. Describe the physiological and its function to fuelling and maintaining homeostasis in tissues. 4. Demonstrate the relationship behind influential environmental factors and the function of animals or humans in their environment. 5. Student explains the concepts of homeostasis. 6. Work effectively, normally as part of a team, to produce an oral presentation. 7. The student uses the appropriate practical methods to test the systems of the human or animal body. 8. Student analyzes and interprets the results of conducted experiments and formulates conclusions.
Indicative Contents المحتويات الإرشادية	1. Definition of physiology, physiologists, specialties, organization levels. 2. Homeostasis, parts, feedback, its pathways change. 3. Blood, composition, blood groups, hematopoiesis. 4. Hemostasis of blood: vascular constriction, formation of a platelet plug, blood coagulation. 5. Circulatory system, functions, circulations (pulmonary and systemic). 6. Cardiac output, control (heart rate and stroke volume), effect of exercise on cardiac output. 7. Respiration, pulmonary ventilation, external and internal respiration, respiratory and conducting zone, bulk flow, non-respiratory functions of the lungs. 8. The digestive system, function (digestion, secretion, absorption, and motility), Functions of the GI organs. 9. The muscular system, properties of muscular tissues (electrical excitability, contractility, extensibility and elasticity), classified, major features of the three types of muscular tissue, contraction. 10. The nervous system, central nervous system, classification, structure of neuron, properties of nerve fibers (excitability, conductivity, refractory period, summation, adaptation, infatigability, All-or-None law), supporting cells, A synapse (neuron synapses, electrical synapses, chemical synapses). 11. The urinary systems, nephrology, urology, urologist, functions of the kidneys, basic renal processes, renal corpuscles and the glomerular filter, glomerular filtration rate, micturition, renin−angiotensin−aldosterone mechanism. 12. The endocrine system, endocrine glands, hormone activity, mechanisms of hormone action, homeostatic control of hormone secretion, hypothalamus and pituitary gland, thyroid gland, parathyroid glands, pancreatic islets, The stress response, development and aging of the endocrine system. 13. Sexual reproduction, gametes, fertilization, gynecology, spermatogenesis, sex hormones, oogenesis, ovarian cycle, aging and the reproductive systems, the reproductive systems and homeostasis. 14. The sense of hearing, eye: vision, The chemical senses-taste and smell.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	To encourage students to participate in exercises, answer questions, theoretical and practical reports, seminars, conduct collective and individual skill tests, and theoretical, laboratory and field brainstorming. At the same time refine and expand critical thinking skills. This will be achieved through quizzes, interactive tutorials, and by thinking about the type of simple experiments that include some sampling activities that are of interest to the students.

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Physiology, animal physiologists, specialties in physiology, the levels of organization.
Week 2	Homeostasis, parts or mechanisms of homeostasis, feedback, pathways that alter homeostasis.
Week 3	Blood, composition of the blood (cellular portion and fluid portion), blood groups, hematopoiesis.
Week 4	Blood and hemostasis (vascular constriction, formation of a platelet plug, blood coagulation).
Week 5	Circulatory system, functions, major components, pulmonary and systemic circulations.
Week 6	Cardiac output, introduction, control of heart rate and stroke volume, effect of exercise on output.

Week 7	Mid-term Exam +Respiratory system, ventilation, steps of respiration, mechanics of breathing, nonrespiratory functions.
Week 8	The digestive system, functions, functions of the gastrointestinal organs.
Week 9	The muscular system, properties, classified, skeletal muscles, contraction and relaxation of skeletal.
Week 10	The nervous system, central of N.S., classification, properties of nerve fibers, the synapse.
Week 11	The urinary system, functions, basic renal processes, filtration rate, urination, angiotensin.
Week 12	The endocrine system, hormone activity and mechanisms, homeostatic control, gland, development.
Week 13	Male reproductive system, spermatogenesis, sex hormones, abnormalities of male sexual function.
Week 14	Female reproductive system, oogenesis, reproductive cycle, female hormonal, aging and systems.
Week 15	Ear, eye, olfaction and taste, smell or olfaction.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Some terms and technical in physiology laboratory, Blood collection.
Week 2	Homological test (prepare blood smear, blood group, and PCV).
Week 3	Bleeding time and clotting time.
Week 4	Leukocytes count (WBC) and Erythrocytes count (RBC).
Week 5	Inflammatory marker (CRP, ESR, and PCT).
Week 6	Cardiovascular system (CK and Troponin).
Week 7	Lipid profile (cholesterol, triglycerides), HDL, LDL, and VLDL.
Week 8	Liver lab test: Serum bilirubin, AST, ALT and ALP.
Week 9	Renal system and urine analysis (creatinine and blood urea nitrogen)
Week 10	Endocrine system (thyroid gland, diabetes, and vitamin d disorder).
Week 11	GIT lab test.
Week 12	Reproductive system male and female.
Week 13	Amphibian experiments.
Week 14	Mammalian experiments.
Week 15	Human experiments.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Guyton and Hall. (2011). Textbook of Medical Physiology, 13th EDITION, Hall, John E. (John Edward). • Gerard J. Tortora. (2014). Principles of ANATOMY and PHYSIOLOGY., Bergen Community College,	no

	Bryan Derrickson, Valencia College, 14th Edition. • Edition K Sembulingam, and Prema Sembulingam. (2012). Essentials of Medical Physiology, Sixth Edition. • CL Ghai, (2013). A Textbook of Practical Physiology, Eighth Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi • Panama City • London• • M Chandrasekar and Nitesh Mishra. (2014). Practical Physiology Book. Second Edition, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi -Panama City - London.	
Recommended Texts	• Vander's Human Physiology: The Mechanisms of body Function, Thirteenth Edition, 2014. • Kim E. Barrett, Scott Boitano, et.al.(2012).Ganong's Review of Medical Physiology. New York Chicago San Francisco Lisbon London Madrid Mexico City. • OpenStax College. (2013). Anatomy and Physiology, human physiology. Wikibooks.	no
Websites	Not found	

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.

Republic of Iraq
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جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة القاسم الخضراء
كلية التقانات الاحيائية
قسم التقانات الاحيائية الطبية

نموذج وصف المادة الدراسية
MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	General Biology- Zoology			**Module Delivery**	
Module Type	Core learning activity			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MBT-1205				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Prof. Dr. Ahmed Obaid Hossain		**e-mail**	Ahmed.e@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Prof. Dr. Nada Saad Al-Taee		**e-mail**	nada-naji@biotech.uoqasim.edu.iq	
Peer Reviewer Name	Dr. Shaymaa Abd Al-jasim Al Shukri		**e-mail**	shaimaa_alshukry@biotech.uoqasim.edu.iq	
Scientific Committee Approval Date	13/6/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	At the end of the semester, the students are expected to have: **1.** Understand the interrelationship of all life forms through the knowledge of common life processes;

	2. Recognize the diversity of animal life and the role played by each animal in its environment; **3.** Appreciate the Maker for placing every living thing in its proper order and for the balance of nature. **4.** Describe the characteristics of each phylum under Kingdom Animalia. **5.** Develop an understanding of the animal kingdom and a facility with the techniques used in the biological investigation of animals at a depth appropriate for the college level. **6.** Describe the role of taxonomy and systematics in animal studies. **7.** Describe the major environmental characteristics and limiting factors associated with the earth's major ecosystems. **8.** Describe the origin and early evolution of the animal kingdom. **9.** Describe the distinguishing characteristics of the major animal phyla. **10.** Develop a facility with microscopes and dissecting microscopes, their specific uses, and the advantages and disadvantages of each. **11.** Develop the ability to perform directed dissections of animal's representative of major phyla or classes. **12.** Be able to collect, properly preserve, identify and display representative animal species (optional) and appreciate the biological value of such activities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1.** Have developed an understanding of the diversity of animal life and an appreciation of the significance of various taxa. **2.** Have developed a basic understanding of the evolutionary history of the animal kingdom. **3.** Develop an understanding of the form and function of some animal systems. **4.** Develop laboratory skills necessary for zoological study. **5.** Work effectively, normally as part of a team, to produce an oral presentation.
Indicative Contents المحتويات الإرشادية	1. The animal kingdom, animal records: A. Largest animal, smallest animal, longest lived animal. Cold blooded vertebrates, warm blooded vertebrates. 2. What exactly is an animal?: multicellular organisms, motile, most animals have true tissues, organs and organ systems, heterotrophs, aerobic respiration, fats or oils, a head, outgrowths, sexually and asexually, complex development, behavior is an important tool for animal survival, venoms, adapt, natural selection. 3. Animal cells: eukaryotic, animal (including human) organ systems: skin, skeletal system, the respiratory system, circulatory system, the senses, the endocrine system. 4. Taxonomy and classification: taxonomy, what characteristics are used, common vs scientific name, history of classification, biological species concept: systematics, phylogeny, primitive vs advanced, generalized vs specialized, homologous vs analogous. 5. Introduction to ecology: biosphere, ecosystems: marine ecosystems and freshwater ecosystems, general kinds of ecosystems: aquatic ecosystems and terrestrial ecosystems, community interactions. symbiosis: mutualism, commensalism and parasitism. 6. Introduction to evolution, evolution, nature selects. adaptation vs evolution, the theory of evolution by: much older. Additional evidence supporting evolutionary. 7. Origin and evolution of animals, multicellular life, advantages and disadvantages of multicellular life, the cambrian explosion: What caused the Cambrian 'Explosion'?. History of animal life: fossils. classification of animals. 8. Protists – General, the animal-like Protists: Protozoa, reproduction and life Cycles: Life cycles, reproduction: asexual: sexual, some major kinds of Protozoa: Amoebas, Flagellates, and Ciliates. Human Impacts.

	9. Animal reproduction: Asexual reproduction and sexual reproduction, examples of asexual reproduction: Budding, fragmentation, polyembryony and regeneration. Sexual reproduction: Hermaphrodites, Dioecious animals, Protandry, sexual dimorphism and parthenogenesis. 10. Phylum Placozoa: *Trichoplax adhaerens,* Phylum Porifera (Sponges): Body plan, support, feeding and digestion, no respiratory or excretory systems, no Nervous System or Sense Organs, Reproduction and Development, Phylogeny of sponges, ecological interactions, and human impacts of sponges. 11. Arthropods – General, distinctive characteristics of Arthropods, Arthropod body plan, body wall, Molting, feeding and digestion, respiration, circulation, nervous system, excretion, reproduction and development. Origin and evolution of Arthropods. 12. Arthropods–Chelicerates: Distinctive characteristics of chelicerates: Transition to land, body plan, feeding and digestion, Respiratory system, senses, circulation, excretion, reproduction. Classification of Chelicerates: Class Merostomata and class Arachnida. 13. Subphylum: Hexapoda: (insects). Distinctive characteristics of Hexapod: Body form: head, thorax and abdomen. Insect movement, feeding and nutrition, respiration, sense organs, communication and behavior. 14. Crustaceans, distinguishing characteristics of Crustacea, body form, movement, respiration, circulation, nervous system, sense organs, endocrine system, excretion, reproduction. Classification of Crustacea, economic importance of Crustaceans. 15. Phylum Chordata, major identifying characteristics, Vertebrata: Amphibia, Birds, Mammals, Fish, Reptilia.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	To encourage students to participate in exercises, answer questions, theoretical and practical reports, seminars, conduct collective and individual skill tests, and theoretical, laboratory and field brainstorming. At the same time refine and expand critical thinking skills. This will be achieved through quizzes, interactive tutorials, and by thinking about the type of simple experiments that include some sampling activities that are of interest to the students.

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

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10%(10)	5,10	LO: (1,2); (1,2,3)
	Assignments	2	10%(10)	7,14	LO: 5
	Projects / Lab.	1	10%(10)	Continuous	
	Report	1	10%(10)	13	LO: 4
Summative assessment	**Midterm Exam**	2h	10%(10)	7	LO: 1,2,3
	Final Exam	2h	50%(50)	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The animal kingdom, animal Records.
Week 2	What exactly is an Animal?
Week 3	Animal cells, animal (including human) organ systems.
Week 4	Taxonomy and classification: Common vs Scientific Name, history of classification, biological species concept.
Week 5	Introduction to ecology, ecosystems, community interactions.
Week 6	Introduction to evolution, adaptation vs evolution. The theory of evolution by natural selection, supporting evolutionary theory.
Week 7	**Mid-term Exam** + Origin and evolution of animals, advantages and disadvantages of multicellular life. The cambrian explosion, history of animal life.
Week 8	The Animal-like Protists: General, Protozoa, reproduction and life cycles.
Week 9	Animal reproduction. Examples of asexual and sexual reproduction.
Week 10	Phylum Placozoa. Phylum Porifera (sponges).
Week 11	Arthropods – General. Distinctive characteristics of arthropods. Origin and evolution of arthropods.
Week 12	Arthropods – Chelicerates: Distinctive characteristics of chelicerates. Classification of Chelicerates.
Week 13	Subphylum: Hexapoda: (insects). Distinctive characteristics of Hexapoda.
Week 14	Crustaceans. Distinguishing characteristics of Crustacea. Classification, economic importance of Crustaceans.
Week 15	Phylum Chordata. Major identifying characteristics. Vertebrata.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Orientation. Lab safety. Animal Collection, lab skills and Microscopy.

Week 2	Study of whole mount/ culture of Amoeba and Paramecium to observe.
Week 3	Some Animal-Like Protists..
Week 4	Phylum Porifera (Sponges)
Week 5	Phylum Coelentrata.
Week 6	Phylum Mollusca.
Week 7	Phylum Echinodermata.
Week 8	Phylum Arthropoda.
Week 9	Phylum of Arthropod , Chelicerata (arachnids ,Tick and Mites), Crustacea and Myriapoda
Week 10	Phylum Arthropoda, (Hexapoda).
Week11	Order: Diptera (fly and mosquitoes).
Week 12	Order: Hemiptera (bugs).
Week 13	Phylum Chordata: Aves
Week 14	Phylum Chordata: Mammalia.
Week 15	Phylum Chordata (VI): Amphibia.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Stephen W. Ziser. (2015). General Zoology: Lab Supplement. • S. S. LAL. (2010). Practical zoology: vertebrate. INDIA. • Integrated Principles of Biology 16th Ed. By Hickman et al. 2014. McGraw Hill Higher Education. Boston. • Essentials of The Living World, 4th Edition, By George Johnso, (2013). • Biology-Concepts and Connections. N. Campbell, J. Reece, L. Mitchell, and M. Taylor, 4th Edition. Benjamin Cummings, Menlo Park.	
Recommended Texts	• Van de Graaff, K.M., and J. L. Crawley. A photographic atlas for the zoology laboratory. Morton Publishing Company, Englewood, CO.	
Websites		

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

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

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

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قسم التقانات الاحيائية الطبية

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Histology and Embryology			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MBT-2317				
ECTS Credits	5.00				
SWL (hr/sem)	125				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Prof. Dr. Ahmed Obaid Hossain		**e-mail**	Ahmed.e@biotech.uoqasim.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Prof. Dr. Nada Saad Naji Al-Taee		**e-mail**	nada-naji@biotech.uoqasim.edu.iq	
Peer Reviewer Name	Dr. Shaymaa Abd Al-jasim Al Shukri		**e-mail**	shaimaa_alshukry@biotech.uoqasim.edu.iq	
Scientific Committee Approval Date	13/6/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-1205	**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	**Histology**: **1.** Distinguish the organization and structure of cells, tissues, and organs. **2.** The student discusses the classification of tissues. **3.** To address the main characteristics of the four basic types of tissues. **4.** Identify the major epithelia, and know their locations within the body.

	5. Describe and identify the major forms of the connective tissue. 6. Describe the microscopic anatomy of compact and cancellous bone and the development stages from cartilage to bone tissue. 7. To describe the microscopic anatomy of compact and spongy bone and the histogenesis of bone and the growth of cartilage. 8. Differentiate and describe the three major muscle tissue types and identify their locations within the body. 9. Identify and describe the typical nerve cell body, and structure of both PNS and CNS. 10. Describe the microscopic structure and organization of the gastrointestinal tract. 11. The student will be able to describe the microscopic structures of the respiratory system, and the conducting and respiratory portion. 12. Describe the microscopic anatomy and functions of the urinary system. **Embryology**: 1. To acquire students with basic knowledge of embryology and stages of development of the embryo. 2. To enable students to distinguish between different stages of embryological process. 3. To enable students to determine various structures and their changes through development. 4. To enable students to understand patterns of genetic layers and their contribution in development of organs. 5. To provide students with knowledge regarding latest developments in vertebrates embryology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**Histology**: After taking this course, the students will be able to: 1. Name the anatomic structures that comprise a tissue/organ and visually locate them on a histologic section. 2. Integrate the relationship between tissue structure and its function. 3. Describe how the function of a tissue is regulated. 4. Work effectively, normally as part of a team, to produce an oral presentation. 5. Recognize and distinguish the major organ systems at the light microscopic level. 6. Compare and contrast the microscopic anatomy of human tissues to those of the animal. **Embryology**: 7. The student would be able to gain knowledge about properties and structure of Gametogenesis. Spermatogenesis and oogenesis. 8. Types and classification of eggs in vertebrates and hormonal control of gametogenesis. 9. Understand cleavage, patterns of cleavage, cleavage pattern in some vertebrates. 10. Regarding gastrulation, formation of the genetic layers. Gastrulation pattern in some vertebrates and organogenesis. 11. Latest developments in vertebrate's embryology. 12. Work effectively, normally as part of a team, to produce an oral presentation.
Indicative Contents	**Histology:**

المحتويات الإرشادية	1. Histology definition, tissues components, classification of tissues: epithelial, connective, muscular, and nervous. Basement membranes (functions), types of epithelia: covering (or lining) epithelia and secretory (glandular) epithelia. 2. Secretory epithelia and glands: glands, secretory granules, classification of glands, development of glands: the exocrine and endocrine develops. 3. The term connective tissue, general connective tissue, fibro-collagenous tissue, components of connective tissue: (cells, fibers, and ground substance). Types of connective tissues: proper and special. 4. The Bone: matrix, and three cell types: osteocytes, osteoblasts and osteoclasts, Functions. Types of Bone: Compact (cortical) and cancellous (trabecular or spongy) bone, histogenesis. 5. The cartilage: Functions, chondrocytes, extracellular matrix, Ground substance, Types of cartilage: Hyaline, elastic and fibrocartilage. Growth of cartilage: interstitial growth and appositional growth. 6. Muscle tissue: myocytes, sarcoplasm, sarcolemma, types of muscles: Skeletal, cardiac and smooth muscle. Organization with muscle fibers. 7. The nervous tissue: Central nervous system, peripheral nervous system, nerve ganglia (types), nerve cells, or neurons (parts), glial cells, cerebrum, cerebellum and spinal cord. The meninges: Dura mater, arachnoid and pia mater. Blood-Brain Barrier. 8. The Gastrointestinal Tract: oral cavity, esophagus, stomach, small and large intestines, rectum, and anus and its associated glands; salivary glands, liver and pancreas. 9. The respiratory system: The conducting portion: (nasal cavities, nasopharynx, larynx, trachea, bronchi, bronchioles, and terminal bronchioles). The respiratory portion: (respiratory bronchioles, alveolar ducts, and alveoli). 10. The urinary system: Functions, organs: a pair of kidneys (nephron), a pair of ureters, the urinary bladder, the urethra. **Embryology**: 1. Embryology, prenatal development, divisions of prenatal period, divisions of prenatal period, embryologically: Pre-embryonic period, embryonic period, fetal period. Postnatal development: Infancy, childhood, puberty, adolescence, adulthood. Subdivisions of embryology: General embryology, systemic embryology, descriptive embryology, comparative embryology, experimental embryology, chemical embryology, teratology. 2. Gametes (oocytes and spermatozoa), meiosis, oogenesis, hormonal control of the female reproductive cycle, spermatogenesis: Spermatocytogenesis, meiosis, spermiogensis. 3. Fertilization: capacitation, acrosome reaction, and The phases of fertilization: phase 1, 2, 3. Syngamy, The results of fertilization, cleavage, morula, blastocyst, implantation, abnormal implantation: Ectopic tubal pregnancy (ETP), placenta previa. 4. Bilaminar embryo: Embryoblast, trophoblast: syncytiotrophoblast, cytotrophoblast. Human chorionic gonadotropin, hydatidiform mole, gestational trophoplast neoplasma, development of extraembryonic mesoderm. 5. Human development: Gastrulation, changes involving intraembryonic mesoderm, changes involving ectoderm. Vasculogenesis, hematopoiesis. 6. Fetal membranes and placenta, the placenta: Structure, full-term, circulation, membrane. Amnion and umbilical cord. 7. Fetal membranes in twins: monozygotic twins, dizygotic twins, monozygotic twins, conjoined (siamese) twining. Placental changes at the end of

	pregnancy, amniotic fluid.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	To encourage students to participate in exercises, answer questions, theoretical and practical reports, seminars, conduct collective and individual skill tests, and theoretical, laboratory and field brainstorming. At the same time refine and expand critical thinking skills. This will be achieved through quizzes, interactive tutorials and simple slideshow thinking that includes some sampling activities (hair sample, mouth swab, etc....) of interest to the students.

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

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Basic histology, classification of tissues: Epithelial tissues (types), secretory epithelia and glands (classification and development).
Week 2	Connective tissues, components (cell, fiber, and ground), types.
Week 3	The bone: Types, histogenesis. Cartilage: Types, growth.
Week 4	Muscle tissue, types, skeletal muscle, organization with muscle fibers.
Week 5	The nervous tissue, central and peripheral, neurons and types, neuroglia, meninges.

Week 6	Gastrointestinal tract, general structure, layers: the mucosa, submucosa, muscularis and serosa.
Week 7	The respiratory system, the conducting and respiratory portion, epithelium.
Week 8	Mid-term Exam +The urinary system, introduction, kidney, nephron, ureter, and urinary bladder.
Week 9	Introduction to human embryology, embryologically, postnatal development, subdivisions of embryology.
Week 10	Gametes, Meosis, female gametogenesis. Hormonal control of the female reproductive cycle. Male Gametogenesis.
Week 11	Fertilization, the phases of fertilization, syngamy, the results of fertilization, abnormal implantation.
Week 12	Bilaminar embryo, human chorionic gonadotropin, hydatidiform mole, gestational trophoplast neoplasma, development of extraembryonic mesoderm.
Week 13	Human development, vasculogenesis, hematopoiesis.
Week 14	Fetal membranes and placenta, placenta (Structure, full-term, circulation), amnion and umbilical cord.
Week 15	Fetal membranes in twins, placental changes at the end of pregnancy, amniotic fluid.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Histology**: Introduction of microscope (types, guidelines for use, components).
Week 2	Preparation of tissues (types of methods).
Week 3	Epithelial tissues (surface epithelial tissues and glandular epithelial tissues).
Week 4	Connective tissue (loose connective tissue and fibrous connective tissue).
Week 5	Muscle tissue (skeletal, smooth, cardiac tissue) and nervous tissue.
Week 6	Respiratory tissue.
Week 7	GI Tissue.
Week 8	Urinary tissue.
Week 9	**Embryology:** The female reproductive system.
Week 10	The male reproductive system.
Week 11	Stages of fertilization, cleavage and implantation.
Week 12	The second week of embryonic development and the third week of embryonic development.
Week 13	The development of the cardiovascular system of the fetus.
Week 14	Eye development in the fetus.
Week 15	Save the embryos.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Anatomy and histology in Health and Illness, 13th Edition by Ross and Wilson, Elsevier,	no

	2018. • Inderbir Singh's. (2014). Textbook of Human Histology: with Colour atlas and Practical guide. Seventh Edition. The Health Sciences Publishers. New Delhi, London, Philadelphia, Panama. • Anthony L. Mescher. (2013). Junqueira's Basic Histolog. New York Chicago San Francisco Lisbon Londony. Text and Atlas. **Embryology**: • Sadler, T. W., and Langman, J. (2012). Langman's medical emb*ryology* (12th ed.). Philadelphia: Wolters Kluwer Health/Lippincott Williams and Wilkins. • Textbook of Clinical Embryology, Vishram Singh,2012. • Color Atlas of Fetal and Neonatal Histology, Linda M. Ernst, MD,2011.	
Recommended Texts	• **Piper M. Treuting et.al. (2012).** Comparative Anatomy and Histology A Mouse and Human Atlas. Academic Press is an imprint of Elsevier. • Patrice F Spitalnik. Hislology laboratory manual. Vagelos College of Physicians and Surgeons Columbia University. **Embryology:** • Thomas F. Fletcher and Alvin F. Weber. (2013).Veterinary Developmental Anatomy. • Samuel Webster and Rhiannon de Wreede. (2012). Embryology at a Glance. A John Wiley and Sons, Ltd., Publication. •	no
Websites	Not founded	

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

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer			**Module Delivery**	
Module Type	core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits	3				
SWL (hr/sem)	150				
Module Level	2		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Sinan Adnan		**e-mail**	sinan@uoqasim.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**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	Students successfully completing this course will be able to: 1- Utilize the computer for fundamental tasks. 2- Identify and discuss the hardware components of the computer system. 3- E-Commerce: Concepts of Electronic banking Services. 4- Conducting research on the Internet. 5- An introduction to Artificial Intelligence.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Providing the student with Security and Networking. 2- Training the student in E-Commerce: Concepts of Electronic banking Services 3- Teaching the student to use of the computer and its various systems and identifying its parts and the development that has occurred in it from the beginning of the computer to the present time. 4- Definition of Al, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations. 5- Training the student in Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Expanding their critical thinking skills through classes, interactive tutorials and by considering types of simple experiments involving some slide showing that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	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	3

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري والعملي

	Material Covered	No. of Hours Theoretical	No. of Hours Practical
Week 1	Security and Networking: What is a network? Types of networks. Basic network components Network Security Basics. Understanding network Threats. Network Troubleshooting	2	2
Week 2	E-Commerce: Concepts of Electronic banking Services this include online banking: ATM and debit Card services, Phone banking, SMS banking. Electronic alert, Mobile banking	2	2

Week 3	Computer Troubleshooting: Identifying and solving Common hardware and software problems that Computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving Issues.	2	2
Week 4	Computer Troubleshooting: Identifying and solving Common hardware and software problems that Computer users encounter. Basic troubleshooting |techniques and tools for diagnosing and resolving Issues.	2	2
Week 5	Introduction to AI: Definition of Al, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations.	2	2
Week 6	Introduction to AI: Definition of Al, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations.	2	2
Week 7	AI in Our Daily Lives: AI in smartphones and Virtual assistants like Siri or Google assistant.	2	2
Week 8	Al in Our Daily Lives: AI in smartphones and Virtual assistants like Siri or Google sistant.)	2	2
Week 9	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising	2	2
Week 10	Mid Exam		
Week 11	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising	2	2
Week 12	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising	2	2
Week 13	AI and Society: (How AI affects social, AI and International relations, Al and the future of humanity.)	2	2
Week 14	Ethical Challenges in AI, AI ethics, privacy and Surveillance, the impact of AI on the job market.)	2	2
Week 15	The Future of AI (Future trends in AI, recent Research and emerging technologies.)	2	2
Week	Final Exam	2	2

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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1- Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology" 3rd Edition (2020) 2- Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020). 3- Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", 1st Edition (2024). 4- الخضر علي الخضر بحاث "اساسيات الحاسوب" 2016 5- الدكتور عادل عبد النور "مدخل الى عالم الذكاء الاصطناعي" 2005	
Websites		

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