



وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
إدارة ضمان الجودة والاعتماد الأكاديمي

وصف البرامج الأكاديمية
جامعة الحلة
كلية العلوم
قسم علوم الادله الجنائيه

2026



اسم الجامعة: جامعة الحلة

الكلية / المعهد: كلية العلوم

القسم العلمي: علوم الادله الجنائيه

اسم البرنامج الاكاديمي او المهني: بكالوريوس الادله الجنائيه

اسم الشهادة النهائية: بكالوريوس في علوم الادله الجنائيه

النظام الدراسي: فصلي - مسار بولونيا

تاريخ اعداد الوصف : ٢٠٢٥ / ١٠ / ١

تاريخ ملء الملف : ٢٠٢٥ / ١٠ / ١٥

دقق الملف من قبل شعبية ضمان الجودة والأداء الجامعي

اسم مسؤول شعبية ضمان الجودة والأداء الجامعي:

التاريخ ٢٠٢٦ / ١٢ / ٢٠

التوقيع

م.م علي حسن



مصادقة السيد العميد

٢٠٢٦ / ١٢ / ٢٠



1. الرؤية

المحافظة على الادلة في موقع الجريمة و اخذ العينات من موقعها و توثيق الادلة و التعرف على كيفية التعامل مع المعدات و التقنيات الحديثة في مجال الاختصاص و منع و تحديد حصول الجريمة و دعم المحاكم و المدعين العاملين بالحفاظ على المبنية على الادلة الجنائية
اعد د كوادر متخصصة تسهم في رفع كفاءة عمل واداء الجهات القضائية والعدالة تعتمد على الاساليب العلمية وقادرة على استخدام المعدات والتقنيات والطرق الحديثة في تحليل وتوثيق الادلة والتحقيقات التي تدعم تحقيق العدالة في المجتمع

2. مهمة البرنامج

توفير و اعداد افراد ذوي كفاءة علمية عالية في مجالات التحري عن الجرائم و التحقيقات الجنائية و رفع بصمات و جمع الادلة و التعامل معها وتحليلها مما يؤدي الى تشخيص الجناة و على اسس علمية لا تقبل اللبس

3. أهداف البرنامج

- تمكين الطلبة من الجوانب النظرية و العملية في العلوم البيولوجية و الفيزيائية و الكيمائية و العلوم الطبية الاخرى المتعلقة بالعلوم الجنائية.
- الامام الطلبة بالمهارات العلمية و العملية اللازمة لجمع المعلومات و التقاط الادلة الجرمية و التعامل معها و تحليلها في مختبرات العلوم الجنائية بالطرق العلمية الحديثة
تمكين الطلبة من تطبيق الاليات الصحيحة في التعامل مع مسرح الجريمة و استخدام الاساليب العلمية الحديثة ضمن القوانين و التشريعات المتبعة محليا و دوليا
- تدريب الطلبة على تحليل الادلة و الربط بينها لكشف المجرم و كتابة التقارير و تطوير مهارات التواصل و الالقاء لديهم
- ادراك اهمية البحث العلمي و التطور التكنولوجي في مجال العلوم الجنائية و تهيئة الطلبة للتواصل مع احدث ما تم الوصول اليه في هذا المجال
- ادراك علاقة الجريمة بالمجتمع ككل و الامور الشخصية و النفسية و الامام بالاجراءات الشرطية و الحقوقية المتعلقة بالجريمة و الالتزام بالاخلاقيات المهنية

4. الاعتماد البرامجي

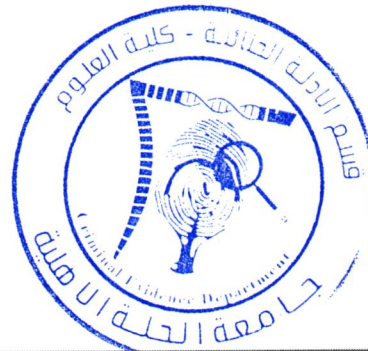
البرنامج ليس لديه أي اعتماد لانه قسم مستحدث سنة 2024-2025

5. مؤثرات خارجية

يتأثر برنامج قسم الادلة الجنائية بمجموعة عوامل خارج اطار القسم نفسة لكنها تؤثر بشكل مباشر على تصميم المناهج الاهداف التعليمية مثل التطور العلمي و التكنولوجي و ظهور مجالات جديدة مثل الجرائم الالكترونية و التحليل الرقمي اضافة الى القوانين و التشريعات و اي تغيير في التشريعات ينعكس على طرق التدريس و اخلاقيات المهنة .

6. هيكل البرنامج

ملاحظات*	نسبة مئوية	الساعات المعتمدة	عدد الدورات	هيكل البرنامج
ساندة	13%	32	11	متطلبات المؤسسة
اساسية	15%	38	13	متطلبات الكلية
رئيسية	70%	168	27	متطلبات القسم
			الثالثة	التدريب الصيفي
اختيارية	2%	4	1	غير ذلك



أهداف البرنامج الأكاديمي:

- الهدف من البرنامج هو تخريج كادر يمتلك المهارات العلمية والعملية في كشف الأدلة.
- تم تصميم البرنامج لتزويد المحققين بالكفاءات اللازمة لمواكبة التطورات السريعة في المجال .
- ويهدف إلى تزويدهم بالمهارات اللازمة لتطوير الخبرات والتعامل مع الجرائم وكشف الأدلة.
- صُمم البرنامج لتزويد الطلاب بالمهارات العلمية والعملية اللازمة لتشخيص وكشف الحقائق وتحقيق العدالة.
- العمل على تعزيز معايير الأداء بما يتضمن تطبيق المعايير الدولية في مجال التعليم .
- مواكبة التطورات الحاصلة في المناهج الدراسية
- تعزيز الصلات بين القسم ومختلف شرائح المجتمع
- الانفتاح والتواصل مع المؤسسات العلمية المناظرة داخل وخارج القطر .

أ- الأهداف المعرفية

يهدف البرنامج الى تمكين الطلبة من:

- 1- فهم الاسس النظرية في مبادئ علم الادلة الجنائية وفروعه
- 2- المعرفة بالعلوم المساندة وتحليل الادلة وتفسير النتائج مختبرياً
- 3- معرفة اجراءات مسرح الجريمة وفهم خطوات جمع الادلة وحفظها
- 4- التحليل العلمي للأدلة كفهم طرق تحليل الDNA, البصمات والسموم
- 5- المعرفة بالقوانين والتشريعات والالمام بالقوانين الجنائية المرتبطة بالأدلة
- 6- فهم اخلاقيات العمل الجنائي والالتزام بالحيادية والدقة.

ب- أهداف التأهيل للبرنامج:

يسعى البرنامج الى

- 1- اعداد كادر مهني متخصص في مجالات علم الادلة الجنائية والتحليل الجنائي
- 2- تطبيق المعرفة العلمية في الواقع العملي وحل القضايا الجنائية بأسلوب علمي دقيق
- 3- ممارسة العمل الجنائي وفق المعايير الاخلاقية والقانونية
- 4- القدرة على التكيف مع التطورات في المجال

طرق التدريس والتعلم

يعتمد البرنامج على مجموعة من اساليب التعلم الحديثة ومنها

المحاضرات النظرية والمختبرات العملية والندوات العلمية والدورات التدريبية والميدانية في المختبرات الجنائية والمؤسسات الامنية لغرض اكتساب خبرة عملية مباشرة



طرق التقييم

- 1- النقاش العلمي والحوار الشفوي والامتحانات الفصلية والنهائية .
- 2- الحلقات الدراسية (السمنار) .
- 3- الواجبات المنزلية .
- 4- الأنشطة العملية ودراسة الحالات .
- 5- كتابة وتقديم تقارير وتدوين الملاحظات عن ما اتم اكتسابه من خبرات طبية في الزميدانية والتدريب الصيفي .

-اختبارات الكفاءة لتحديد مستوى كسب المتعلم للمعلومات والمهارات في مادة دراسية تعلمها مسبقاً وذلك من خلال اجاباته على الأسئلة والفقرات التي تمثل محتوى المادة الذ

الأهداف الوجدانية والقيمية

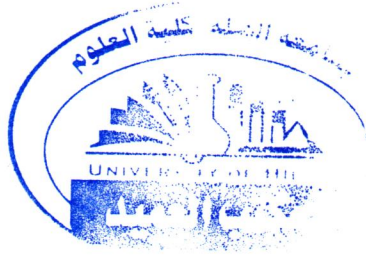
تهدف على اكتساب الطالب مجموعة من المعارف والمهارات والقيم التي اكتسبها الطالب بعد البرنامج الأكاديمي بنجاح ويجب أن يُحدد مخرجات التعلم لكل مقرر بالشكل الذي يحقق اهداف البرنامج.

ت- تخطيط التنمية الشخصية

تنمية قدرات الطلبة على مشاركة الأفكار و الاستراتيجيات المستخدمة من قبل عضو هيئة لتطوير تعليم وتعلم الطالب وهي خطط يتم إتباعها للوصول إلى أهداف التعلم. أي تصف الأنشطة الصفية واللاصفية لتحقيق نتائج التعلم للبرنامج

معايير القبول.

- خريجو الدورة الإعدادية السادسة للفروع الاحيائي والتطبيقية.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Molecular Biology	Module Delivery	
Module Type	Core	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	FOR24119		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level		Semester of Delivery	2
Administering Department	FORN	College	SC
Module Leader	Ruqaya Yahya Abd AL-Shaheed	e-mail	ruqayyah_yahya@hilla-unc.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/3/2026	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

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. This module aims to provide a strong foundation in molecular biology and biochemistry that will be built upon in subsequent modules.2. Core biological molecules will be examined with a focus on their structure and function.3. Teaching will be delivered using a combination of lectures, workshops and practicals.4. Problem solving and quantitative skills will be developed through complementary workshops using case studies, applications and examples based on lecture content.5. Experience of biochemical techniques such as chromatography and enzyme kinetics will be gained through practicals.6. The module will be assessed by an open exam at the end of the module.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>Students who successfully complete this module will be able to:</p> <ol style="list-style-type: none">1. Describe the main chemical components of cells, their structural properties, how these relate to their functions, and how they are altered during cellular processes2. Explain theoretical frameworks (such as Michaelis Menten kinetics, the laws of thermodynamics and the chemiosmotic theory) that allow us to understand function of biological molecules and cells3. Integrate knowledge about heterotrophic metabolism of carbohydrates & lipids and phototrophic metabolism and how they relate to energy metabolism via ATP4. Relate knowledge of biological molecules to health and disease and to their application in biotechnology5. Analyse and evaluate enzyme kinetics data
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>The information on this page is indicative of the module that is currently on offer. The University is constantly exploring ways to enhance and improve its degree programmes and therefore reserves the right to make variations to the content and method of delivery of modules, and to discontinue modules, [20h] if such action is reasonably considered to be necessary by the University. Where appropriate, the University will notify and consult with affected students in advance about any changes</p>

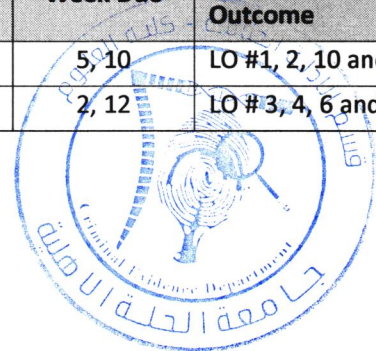


	<p>that are required in line with the University's policy on the Approval of Modifications to Existing Taught Programmes of Study[40h].</p> <p>Developed and demonstrated time management and organisational skills</p> <p>Developed skills at interpreting and retrieving information[20h] (knowledge management) and be able to demonstrate this in examinations</p> <p>Developed, and be able to apply, problem-solving skills</p> <p>Developed, and be able to demonstrate in examinations, written communication skills[15].</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>Molecular biology skills can help you work in many scientific fields, such as food science, biotechnology, forensics and more. In this article, we discuss the definition of molecular biology skills, the types of skills to include on your resume and strategies for developing molecular biology skills.</p>

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

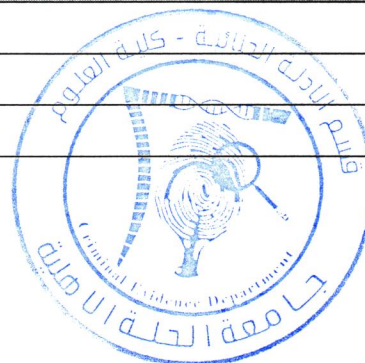
Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7



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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and brief historical review
Week 2	Experiments to prove DNA is the genetic material
Week 3	The second evidence using virus (phage) model
Week 4	DNA and RNA as macromolecules: base structure and rules
Week 5	Eukaryotic and prokaryotic DNA
Week 6	Chemical and physical properties of DNA: the hyperchromic effect
Week 7	Haploid chromosome
Week 8	Chromatin organization and chromosome structure
Week 9	DNA replication
Week 10	DNA repair pathways
Week 11	RNA structure and function
Week 12	RNA transcription and post transcription events
Week 13	Translation: protein synthesis
Week 14	Epigenetics
Week 15	Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Preparation of buffers
Week 2	Lab 2: Laboratory safety rules
Week 3	Lab 3: DNA extraction



Week 4	Lab 4: Instruments and equipment in molecular lab
Week 5	Lab 5: Polymerase chain reaction
Week 6	Lab 6: Gel electrophoresis
Week 7	Lab 7: Exam
Week 8	Lab8:Chromosomal DNA extraction from bacteria
Week 9	Lab9:Chromosomal DNA extraction from plant
Week 10	Lab10:Plasmids isolation and extraction
Week 11	Lab11:Protein
Week 12	Lab12:Mutations
Week 13	Lab13:Real time PCR
Week 14	Lab14:Seminars
Week15	Review before final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Alberts B, et al. Essential Cell Biology, 5th Edition, Garland Science Pub., 2019 ISBN: 978-0393680393	Yes
Recommended Texts	Human Physiology: From Cells to Systems Lauralee Sherwood 7th ed. Brookes/Cole ISBN 9780495826293	No
Websites	https://www.modules.napier.ac.uk/Module.aspx?ID=BMS09112	

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	Laboratory Instrument & Techniques		Module Delivery
Module Type			<input checked="" type="checkbox"/> Theory
Module Code	FOR24021		<input checked="" type="checkbox"/> Lecture
ECTS Credits	6		<input checked="" type="checkbox"/> Lab
SWL (hr/sem)	150		<input type="checkbox"/> Tutorial
			<input type="checkbox"/> Practical
			<input type="checkbox"/> Seminar
Module Level	2	Semester of Delivery	2
Administering Department	FOR	College	Science
Module Leader	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Peer Reviewer Name	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Scientific Committee Approval Date	12/12/2025	Version Number	1.0

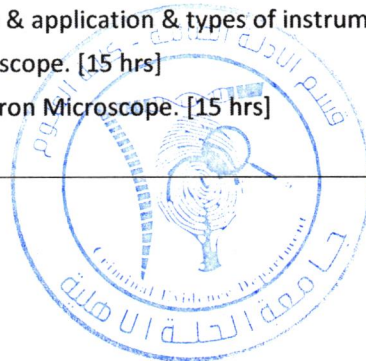
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<p>This module aims to introduce students to Microscope and types , the spectroscopic and chromatographic techniques , Electrophoresis , Balance , Temperature control instrument , PCR & RT-PCR and provide them with hands-on experience of laboratory instrumental analysis, further developing the practical skills gained in the Laboratory Chemical & Biological module.</p> <p>This module also aims to provide training to the students on the research methodology and skills, <i>e.g.</i> literature survey, experimental design, data acquisition, result analysis and report writing-up, which will pave the way for their final year research project.</p>
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>Knowledge and Understanding:</p> <ol style="list-style-type: none">1 Formulate experimental methods for all instrument and design appropriate experimental set-ups.2 Demonstrate the sample preparation and operational skills using the advanced all this instrument.3 Acquire and critically assess experimental results with comparison to standards or databases. <p>Transferable/Key Skills and other attributes:</p> <ul style="list-style-type: none">• Safe-working laboratory practices• Observation, recording and presenting complex scientific data• Numeracy, literacy, IT and Information management• Time management• Problem solving skills• Literature search, data processing and academic writing skills• Team working
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A - primary information of laboratory instrument & techniques</u></p> <p>On completion of this module, students are expected to be able to:</p> <ol style="list-style-type: none">1 Demonstrate knowledge of introduction of instrument & types2 Demonstrate knowledge of the principle & application & types of instrument.3 Demonstrate an understanding of Microscope. [15 hrs]4 Demonstrate understanding of the Electron Microscope. [15 hrs]



	<p>Balance , Temperature control instrument (Incubator , Water bath , Autoclave , Hot air oven , Hotplate Magenetic Stirrer) and types. [16 h]</p> <p>PCR & RT- PCR , Electrophoresis , chromatography , pHmeter ,Ultrasonic , Centrifuge . [15 hrs]</p> <p><u>Part B - essential and details</u></p> <p>Fundamentals</p> <p>To publicise the key learning resources that are important or essential for those studying the module or to demonstrate the academic foundation of the module. To provide a short list, indicating the type and level of information that students are expected to consult. Further, in depth, guidance and a comprehensive list of reading and resources should be made available . [15 hrs]</p> <p>Normally a short list of books or articles in reference format (author, date, title, and publisher). If a core text or textbook exists, this should be indicated. Lists should be indicative, rather than a full bibliography.. [7 hrs]</p> <p>To identify where the whole module may be taken by students at a distance, either by arrangement with the Programme Director or because it forms part of a programme that is wholly or partly delivered virtually. If distance learning is possible, a second module descriptor will need to be created, to identify learning, teaching, assessment and contact methods/support for students in the distance learning version of the module.. [15 hrs]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>To describe the learning activities of the students and the teaching methods of the staff. Effective module design should result in a varied range of active learning experiences for students, including learning activities which are 'research-like'.</p> <p>Activities should, of course, motivate and encourage deep learning (reflection on wider meanings, rather than superficial memorisation of information). They should also be varied and flexible enough to accommodate different learning styles and orientations, and allow for inclusivity of students from different backgrounds and with different kinds of learning abilities.</p> <p>Learning activities therefore need to include reference to independent, interdependent (peer- supported) and online activities, as well as participation in different kinds of taught class.</p>



Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

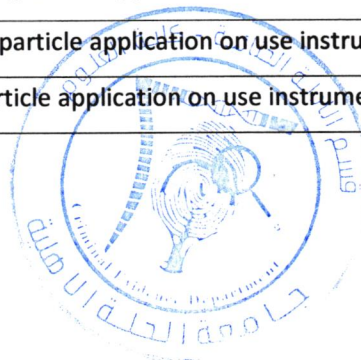
Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction of instrument
Week 2	Microscope , light microscope and Electron Microscope
Week 3	Balance , Temperature control instrument (Incubator , Water bath) and types.
Week 4	Temperature control instrument (Autoclave , Hot air oven , Hotplate Magenetic Stirrer) and types.
Week 5	Polymerase chain reaction (PCR)
Week 6	Exam Mid-term Exam
Week 7	Real-Time polymerase chain reaction
Week 8	Electrophoresis



Week 9	Spectrophotometry
Week 10	Laboratory Centrifuge (principle , types& Application).
Week 11	Chromatography (principle , types& Application).
Week 12	Ultrasonic (principle , types& Application).
Week 13	PHmeter (principle , types& Application).
Week 14	HPLC
Week 15	EXAM
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1 : Introduction of instrument
Week 2	Lab 2 : Microscope , light microscope and Electron Microscope (particle application on use instrument).
Week 3	Lab 3 : Balance , Temperature control instrument (Incubator , Water bath) and types. (particle application on use instrument).
Week 4	Lab 4: Temperature control instrument (Autoclave , Hot air oven , Hotplate Magnetic Stirrer) and types. (particle application on use instrument).
Week 5	Lab 5: Polymerase chain reaction (PCR) (particle application on use instrument).
Week 6	Exam Mid-term Exam (particle application on use instrument).
Week 7	Lab 6: Real-Time polymerase chain reaction(particle application on use instrument).
Week 8	Lab 7 : Electrophoresis(particle application on use instrument).
Week 9	Lab 8 : Spectrophotometry(particle application on use instrument).
Week 10	Lab 9 : Laboratory Centrifuge (principle , types& Application). (particle application on use instrument).
Week 11	Lab 10 : Chromatography (principle , types& Application). (particle application on use instrument).
Week 12	Lab 11 : Ultrasonic (principle , types& Application). (particle application on use instrument).
Week 13	Lab 12 : PHmeter (principle , types& Application). (particle application on use instrument).
Week 14	Lab 113 : HPLC (principle , types& Application). (particle application on use instrument).



Week 15	Exam
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	FReece J, Urry L, Cain M, Wasserman S, Minorsky P, Jackson, R. (Eds) 9th Global Edition, 2011, Campbell Biology, Pearson Benjamin Cummings.	Yes
Recommended Texts	Lobban C.S. (1992) <i>Successful Lab Reports: A Manual for Science Students</i> , Cambridge University Press. Higson, S.P.J. (2003) <i>Analytical Chemistry</i> , Oxford University Press. Skoog, D.A., Holler, F.J. and Nieman, T.A. (1998) <i>Principles of instrumental analysis</i> , Orlando: Harcourt Brace College Publishers. Mathew Folaranmi Olaniyan (2017) LECTURE NOTES ON LABORATORY INSTRUMENTATION AND TECHNIQUES . Edition: 1 ST Editor: ACHIEVERS UNIVERSITY, OWO-NIGERIA/DR A.A. OLADELE(READER) ISBN: ACHIEVERS UNIVERSITY, OWO-NIGERIA	No
Websites	Mathew OLANIYAN Professor PhD; Cert. in Immunology: PGDE; FMLSCN; FWAPCMLS in Immunology Medical Laboratory Science/ School of Postgraduate Studies Research profile (researchgate.net)	

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



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

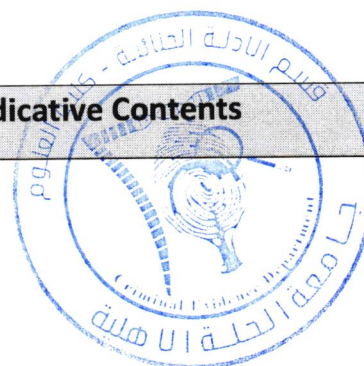


MODULE DESCRIPTION FORM

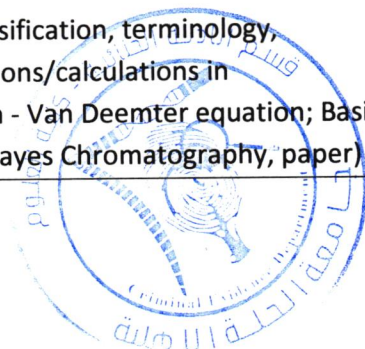
Module Information			
Module Title	Analytical Chemistry		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR24120		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	2	Semester of Delivery	
Administering Department	FOR	College	Science
Module Leader	M.Sc. Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	M.Sc. Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Peer Reviewer Name	M.Sc. Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Scientific Committee Approval Date	10/12/2025	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents



أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	<p>The module provides an introductory overview of the:</p> <ol style="list-style-type: none"> 1- main techniques used in analytical chemistry. 2- provides understanding of the fundamental principles of chemical analysis as well as the main aspects of their application. 3- combination of lectures and practical sessions allows the students to get familiarised with the common practices in an analytical chemistry laboratory. 4- Make able to calibration of instrumentation, validation, analysis of quality control samples, etc.) 5- introduce them to health & safety regulations and risk assessment.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understand and describe the fundamental principles and operation of analytical techniques, including spectroscopy, chromatography and electrochemistry. 2. Undertake calculations associated to the calibration of instruments and analytical quantification, and evaluate experimental error. 3. Operate basic analytical techniques, develop problem solving skills and be familiar with good laboratory practice. 4. Appreciate the implications of the provisions for COSHH (Control of Substances Hazardous to Health) and Health and Safety regulations in the laboratory environment.
Indicative Contents المحتويات الإرشادية	<p>-Fundamentals of analytical chemistry– Good laboratory practice, health and safety, COSHH; Fundamentals of analytical measurement – accuracy, precision (repeatability and reproducibility), traceability, robustness, control charts.[15h]</p> <p>- Sample preparation – Sampling, decomposition & dissolution.[10h]</p> <p>- Classical methods – Gravimetry & titrimetry analysis[10h]</p> <p>- Spectroscopy – Fundamentals, Beer’s Law, instrumentation, and calculations; Atomic emission spectroscopy; Quantitative molecular spectroscopy – UV-vis absorption and fluorescence.[12h]</p> <p>- Introduction to separation science – Classification, terminology, fundamentals of solute interaction, equations/calculations in chromatography; Efficiency and resolution - Van Deemter equation; Basic chromatographic methods - planar (Thin Laves Chromatography, paper) and</p>



	<p>column chromatography.[15h]</p> <p>- Electrochemistry – Basic concepts, galvanic cells, standard potentials, Nernst equation, applications, problem solving, calculations and data presentation; Potentiometry - basic ion selective electrodes, pH electrode, applications. [14h]</p> <p>- Practical work on basic analytical techniques and laboratory good practice – Experiments on titration, electrochemistry, atomic emission spectroscopy and chromatography. [10h]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>The assessment strategy is designed to provide students with the opportunity to demonstrate:</p> <ul style="list-style-type: none"> - Understanding of fundamental principles of basic analytical techniques. - Know-how of the chemical analysis practice. - Competence to perform fundamental calculations. - Capacity for independent/critical thinking and problem-solving. - summative assessment for this module <p>-Introduce the students to the fundamentals of the analytical techniques during the lectures. These would include the physical-chemical principles as well as design and operation of instrumental analytical techniques.</p> <ul style="list-style-type: none"> - Provide hands-on experience in an analytical laboratory; including practice in sample preparation, operation and calibration of the instruments, validation, and analysis of unknown samples. - Encourage the development of their self-evaluation skills by describing the main sources of error during the practical experiments, nurturing problem-solving skills and critical thinking.

Student Workload (SWL) الحمل الدراسي للطالب		
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً
		6.1



Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Analytical Chemistry
Week 2	Units, Concentration and Stoichiometry
Week 3	Concentration types
Week 4	Statistical treatment of analytical data
Week 5	standard solution 1
Week 6	standard solution 2
Week 7	Titration 1
Week 8	Titration 2
Week 9	Exam
Week 10	Acids and bases
Week 11	Spectrochemical analysis 1
Week 12	Spectrochemical analysis 2
Week 13	Separation methods 1

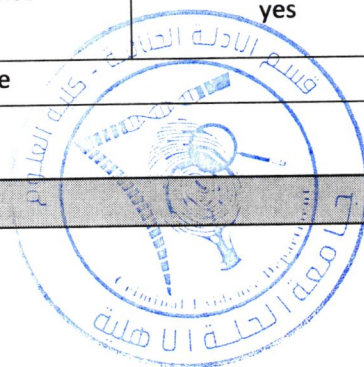


Week 14	Separation methods 2
Week 15	Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: General safety rules for laboratory
Week 2	Lab 2: General chemistry equipment
Week 3	Lab 3: Standard solution
Week 4	Lab 4: Preparation of standard solution from liquid solutions
Week 5	Lab 5: Buffer solution
Week 6	Lab 6: Titration strong acid with strong base
Week 7	Lab 7: Determination of acetic content in a vinegar sample
Week 8	Lab 8: Volumetric analysis (Mohr method)
Week 9	Lab 9 : pH-metric titration
Week 10	Conductmetric titration strong acid with strong base
Week 11	Separation of I group cations (Ag ⁺ , Pb ²⁺ , and Hg ²⁺)
Week 12	Separation of II group cations
Week 13	Techniques of paper chromatography
Week 14	Exam

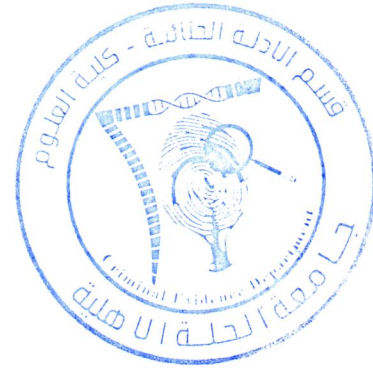
Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	https://guides.loc.gov/chemistry-resources/print-materials/analyticals	NO
Recommended Texts	https://guides.library.utoronto.ca/chm217/reference-resources	yes
Websites	https://www.coursera.inorg/browse/chem-science	

Grading Scheme



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

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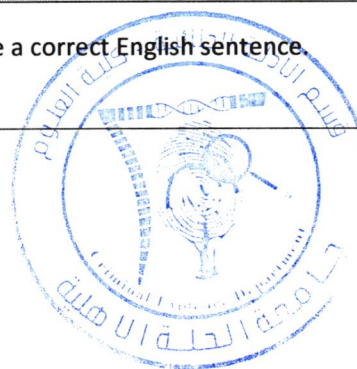
MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English Language 2		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UNI 2-101		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	2	Semester of Delivery	
Administering Department	FOR	College	Science
Module Leader	Ammar Hassan Obayes	e-mail	ammam_hassan@hilla-unc.edu.iq
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	Master of Arts
Module Tutor	Ammar Hassan Obayes	e-mail	ammam_hassan@hilla-unc.edu.iq
Peer Reviewer Name	Non	e-mail	...
Scientific Committee Approval Date	21/09/2025	Version Number	V1

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Providing students with the necessary rules to write a correct English sentence.

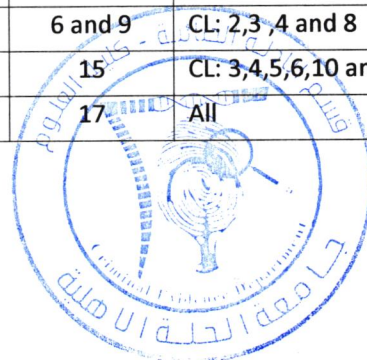


Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Providing students with written expression skills so that they can write simple compositions while linking sentences correctly.
Indicative Contents المحتويات الإرشادية	Developing students' ability to understand what they read in English. present perfect form and use (10 hrs) The preposition (in, at, on) used in spatial expressions (30 hrs) universal pronouns (30 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Giving live lectures, using the data show, and having students do the exercises.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	40	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	70		

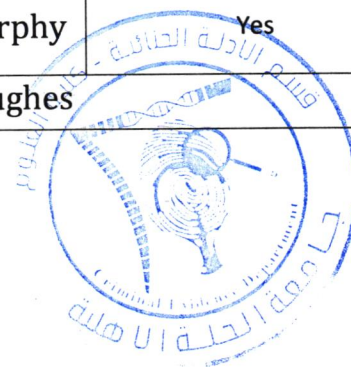
Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	15% (15)	5, 10, and 12	CL: 2,3 and 9,10 and 12
	Assignments	2	10% (10)	2 and 12	CL: 6 and 11
	Seminar	2	10% (10)	6 and 9	CL: 2,3 ,4 and 8
Summative assessment	Midterm Exam	2hr	10% (10)	15	CL: 3,4,5,6,10 and 14
	Final Exam	3hr	50% (50)	17	All



Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	present perfect form
Week 2	present perfect uses
Week 3	Adverbs of time used with the present perfect
Week 4	Comparison between the present perfect and past simple
Week 5	Doing the exercises on the present perfect and past simple
Week 6	Mid-term Exam
Week 7	The preposition in used in spatial expressions
Week 8	The preposition at used in spatial expressions
Week 9	The preposition on used in spatial expressions
Week 10	Doing the exercises on using in, at, on in spatial expressions
Week 11	universal pronouns
Week 12	Doing the exercises on universal pronouns
Week 13	will vs. going to
Week 14	Doing the exercises on will vs. going to
Week 15	Seminar Discussion
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	New Headway Plus: Preliminary	Yes
Recommended Texts	English Grammar in Use by Raymond Murphy	Yes
Websites	Online English Grammar by Anthony Hughes	



Grading Scheme

مخطط الدرجات

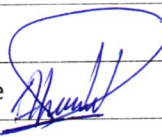
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - 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	Investigation and criminal investigation		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	FOR24023			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	2	Semester of Delivery		2
Administering Department	FORN	College	SC	
Module Leader	Ahmed.Hussein		e-mail	asdali123456ui@gmail.com
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor	Name (if available)		e-mail	asdali123456ui@gmail.com
Peer Reviewer Name	Name		e-mail	asdali123456ui@gmail.com
Scientific Committee Approval Date	16/12/2025	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	2/1
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<p>إذا كان الهدف الأسمى للتحقيق الجنائي هي البحث والتحري عن الحقيقة ، فإن المحقق وحده لا يمكنه القيام والغموض وعدم الإلمام بكل جوانبها بذلك بمفرده خصوصاً إذا كانت الجريمة المرتكبة يشوبها اللبس أو فني يصعب على المحقق فهمها وتحليلها ، ليس بسبب لاسيما إذا تعلق التحقيق بوقائع لها طابع علمي تكوين المحقق في حد ذاته وخبرته القانونية لا تتيجان له إدراك نقص الذكاء أو الخبرة أو الإدراك بل أن التقنيين والمتخصصين . أمور لها أهلها من</p> <p>لذا سوف نتناول في هذا المطلب التعريف بالخبرة ونبين أهميتها في الإثبات الجنائي.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>تتميز مهمة الخبير بعدد من الخصائص وهي مهمة فنية ومحددة وذات طابع قضائي وإجراء اختياري للمحكمة ، وعلى هذا الأساس يجب على الخبير ان يمتلك المهارات الآتية:</p> <p>1- مهارة فنية</p> <p>أن أهم ما تتميز به الخبرة أنها ذات طابع فني ولجوء القاضي أو المحقق إلى الاستعانة بالخبير إنما تكون المسألة المطروحة في الدعوى الجزائية ذات طابع فني لا يستطيع كل منهما أن يقدرها حسب مؤهلاته وخبراته ، وعليه فإن مهمة الخبير تقتصر استعانة الخبير بمعلوماته الفنية وتبعاً لذلك لا يعد خبيراً من يكلفه القاضي بمعاينة يعتمد فيها على حواسه فقط ، ولكن يعد خبيراً من كلفته المحكمة بأن يجري معاينة ويأتي بنتائج هذه الملاحظة إذا كانت تقتضي تطبيق أساليب علمية أو فنية.</p> <p>2- مهارة القدرة على تحديد حجم السلوك</p> <p>عند انتداب الخبير بتحديد المهمة التي يقوم بها والمسائل التي يلتزم الإجابة أو الكشف أو التحليل عنها بما يتناسب واختصاصه الفني أو المهني، فالقاضي يعين للخبير في صورة واضحة ومحددة موضوع مهمته وفي بعض الحالات يضع له أسئلة معينة يتعين على الخبير أن يجيب عنها ، ولا يجوز أن تكون مهمة الخبير عامة تشمل إبداء رأي في الدعوى ، إذ يعد ذلك تخلياً من القاضي عن رسالته .</p> <p>3- مهارة قضائية</p> <p>المقصود بذلك أن مسألة اللجوء إلى الخبرة أمر تقررته المحكمة وحدها وهو أما بناء على طلب من الخصوم في الدعوى الجزائية أو استناداً إلى قرار تتخذه من تلقاء نفسها حسب تقديرها للمسألة المعروضة أمامها وحاجتها إلى رأي فني.</p> <p>وأن مسألة اختيار الخبير تعود إلى المحكمة والتي تعد في ذلك بمعارفه الفنية، ولها أن تستشير الخصوم في هذا الشأن ولكنها غير ملزمة بطلبهم، فالخبير لا يمارس مهمته إلا بانتداب قضائي، إلا بانتداب قضائي، ويؤدي مهمته تحت إشراف القاضي، وخالصة عمل الخبير التي يتضمنها تقريره تخضع في النهاية لتقدير القاضي .</p> <p>4- مهارة إختيارية</p> <p>الأصل في الخبرة أنها إجراء اختياري للمحكمة وهذا يعني أن المحكمة غير ملزمة بإجابة طلبات الخصوم بطلب خبير في الدعوى ما دامت ترى في أدلة الدعوى المطروحة أمامها ما يمكنها من حسم الدعوى دون الاستعانة برأي الخبير .</p> <p>وتطبيقاً لذلك قضت محكمة النقض المصرية بأنه " لا إخلال بحق الدفاع إذا لم تجب المحكمة طلب تعيين خبير لفحص العقد العقول بتزويره متى كان فيما ذكره حكمها عن طريق التزوير وثبوته على المتهم ما يفيد أن المحكمة اقتنعت بما شاهدته وما تبينته من وقائع الدعوى وأقوال الشهود بحصول التزوير وبأنها لم تكن في حاجة إلى الاستعانة برأي فني في ذلك " ، وقضت محكمة تمييز العراق بأن " المحكمة غير ملزمة باستدعاء خبير آخر إذا كانت الواقعة المبحوث عنها واضحة وضوحاً كافياً ، وفي هذه الحالة يتعين على المحكمة تسيب رفضها " .</p>
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>إذا كان على المحقق أن يتفرغ لأعمال البحث والتحقيق كالاستجواب ومناقشة الشهود والكشف والتفتيش وجمع المعلومات الأخرى فإن العناية بالأثار وفحصها ينبغي أن تترك للخبير متخصص في هذا النوع من العمل ، ومن ثم فإن الخبير هو ذلك الشخص الذي اكتسب خبرة عملية وفنية نتيجة لدراسات علمية كالطبيب العدلي أو المحلل الكيميائي أو نتيجة لممارسة مهنة معينة فترة من الزمن كإرباب الحرف والصناعات كالتجارين والحدادين وغيرهم .</p> <p>ومن الجائز أن يبلي الخبير برأيه شفوياً أمام المحقق الذي ينبغي عليه أن يدونه في محضر التحقيق ثم يوقع عليه كليهما ، عليه فإن عمل الطبيب العدلي أو خبير المختبر الجنائي مع المحقق أمر لا بد منه لإزاحة الستار عما يكتنف الجريمة من غموض وملابسات وكلما زاد هذا التعاون بين الاثنين كلما سهل اكتشاف الجريمة ومعرفة مرتكبها ، علماً أن المحقق أو القاضي غير ملزم بالأخذ برأي الخبير طبقاً لمبدأ الاقتناع الذاتي للقاضي وتكوين رايه واعتقاده بالإدانة أو البراءة في الأمور الجنائية حسب اعتقاده فهو خبير الخبراء وله كلمة الفصل في الأمور الجنائية.</p> <p>أن تخويل القاضي للخبير في إبداء مشورته بخصوص الواقعة أو بشأن مسؤولية المتهم هو نوع من التوكيل ، وقد تعرض هذا الرأي إلى انتقادات عديدة من بينها أن رأي الخبير لا يلزم أحداً ، كما أن الخبير لا يعد مسؤولاً عن أخطائه غير الجسيمة بخلاف العلاقة التي تربط الوكيل بالموكل ، حيث أن الأول يمثل الثاني بكيفية تلمه تجاه الغير ويكون هذا ملزماً به وفقاً لعقد التوكيل ذلك لأن الغرض من الوكالة هو القيام بأعمال قانونية لحساب الموكل كذلك ليس للوكيل أن يتمتع بسلطات أكثر من موكله ، بينما الخبرة تختلف تماماً عن هذا الأمر فهي لا تلزم القاضي في الأخذ بها من جهة وليس باستطاعة القاضي القيام بعمل الخبير وليس لها أن يتمتع بسلطات القاضي .</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>الخبرة تمثل معلومات فنية يحصل عليها القائم بالتحقيق من إرباب الفن والحرف والمعرفة وهذه معلومات تساعده في حل ما يشكل عليه من الأمور التي لا يمكن حلها بمعلوماته الخاصة والوصول إلى نتائج خبسية بشأنها عدم الإلمام بالأمور والمسائل التي ربما يتوقف الوصول للدليل عليها والذي يكون هو دليل إثبات في ارتكاب الجريمة ونسبتها لفاعلها الأعلى سبيل المثال لا يمكن للباحث الجنائي أو القاضي التوصل إلى كفاية المادة السامة التي يستعملها الجاني في أحداث الوفاة ما لم يستعين بأحد اصحاب الاختصاص من الكيميائيين لمعرفة ذلك. سيما أن هناك العديد من القضايا التي تلعب فيها الخبرة للبور الفاعل والرئيس في الفصل في غموضها وكشف ملابسات الجريمة. وأحياناً تكون الخبرة هي البينة الوحيدة التي يمكن بواسطتها التوصل إلى البراد الثابت، وذلك فإن الخبرة طريقة من طرق التحقيق، ومن مفارقات الحال انه قد تكون الخبرة على نقض</p>
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	<p>ادلة عديدة, وبالرغم من ذلك يعتمد الباحث لأنها تبنى على اليقين من ذوي الاختصاص ومن النادر يتسرب إليها الشك والاحتمال.</p> <p>ويحصل الخبير على خبرته من خلال ممارسة مهنة معينة أو عمل أو اختصاص علمي, ولكن لا نسلم الى القول بان يُعد خبيراً كل من يسند اليه المحقق أو القاضي مهمة ذات طبيعة خاصة مالم تتوافر فيه صفة الإدراك والاستنتاج فضلاً عن الأمانة والإخلاص.</p>
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Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	1-مفهوم الخبير الجنائي
Week 2	2-علاقه الخبير الجنائي بالخبير المدني



Week 3	3-التنظيم القانوني للخبير الجنائي
Week 4	4-المسؤولية القانونية للخبير الجنائي
Week 5	5-اليات عمل الخبير الجنائي
Week 6	6-الحمايه القانونيه للخبير الجنائي
Week 7	7-العلاقه بين المحقق والخبير
Week 8	8-خصائص الخبير الجنائي
Week 9	9-امتحان
Week 10	10-المسوليه المدنيه للخبير
Week 11	11-المسوليه الجنائيه للخبير
Week 12	12-اجاءات انتداب الخبير الجنائي
Week 13	13-رسوم الخيره الجنائيه
Week 14	14-القيمه القانونيه للخبره الجنائيه
Week 15	Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly tot. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	2-علاقه الخبير الجنائي بالخبير المدني
Week 2	4-المسوليه القانونيه للخبير الجنائي
Week 3	5-اليات عمل الخبير الجنائي
Week 4	7-العلاقه بين المحقق والخبير
Week 5	11-المسوليه الجنائيه للخبير
Week 6	14-القيمه القانونيه للخبره الجنائيه
Week 7	14-القيمه القانونيه للخبره الجنائيه

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		Yes
Recommended Texts		No



Websites

Grading Scheme

مخطط الدرجات

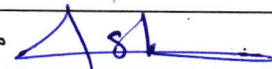
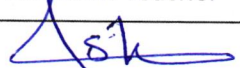
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
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

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

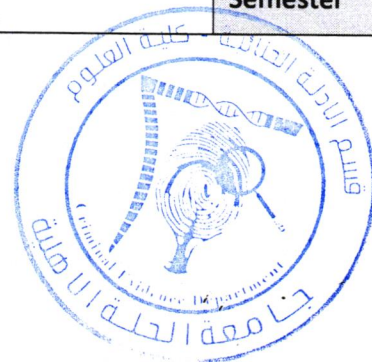


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Forensic Computer Applications		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	UNI 2-103		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	2 nd	Semester of Delivery	
Administering Department	FOR	College	Science
Module Leader	م.م شهد رائد هادي 	e-mail	shahed.raed@hilla-unc.edu.iq
Module Leader's Acad. Title	Assistant Teacher	Module Leader's Qualification	MSc.
Module Tutor	م.م شهد رائد هادي 	e-mail	shahed.raed@hilla-unc.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	17/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Basic Computer Science	Semester	1
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<p>This course forensic computer application includes interactive lectures and practical applications to teach students the remaining MATLAB functions for the purpose of enhancing and analyzing criminal images. These functions include techniques for clarifying and removing fog and noise, which help forensic experts in identifying and distinguishing the offender.</p> <p>The course comprises interactive lectures and hands-on exercises that enable students to apply image processing algorithms and enhancement methods. Additionally, it equips students with the skills to analyze forensic images through various examples.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Studying the course on forensic computer applications can lead to several learning outcomes, including:</p> <ol style="list-style-type: none">1. Providing students with skills in utilizing ready-made functions in MATLAB.2. Learning about algorithms and their application in problem-solving.3. Understanding the different types of images and their significance in processing. Students will acquire digital image processing skills using the MATLAB language.4. Proficiency in Image Enhancement and Restoration: Students will gain expertise in applying image enhancement techniques to improve the visual quality of forensic images. They will learn methods to reduce noise, enhance contrast, and sharpen edges while preserving important anatomical details.5. Image Segmentation and Region of Interest Extraction: Developing skills in segmenting forensic images to identify and extract specific regions of interest (ROIs) or anatomical structures. Students will learn about segmentation algorithms such as thresholding, region growing, active contour models, and clustering methods.6. Feature Extraction and Analysis: Learning how to extract meaningful features from forensic images that can be used for further analysis and characterization. Students will understand feature extraction techniques such as texture analysis, shape analysis, intensity-based features, and statistical features.7. Pattern Recognition and Classification: Acquiring knowledge in developing machine learning and pattern recognition algorithms for automatic detection, classification, and recognition of structures or abnormalities in forensic images. Students will comprehend concepts such as feature selection, classifier design, and performance evaluation.
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A</u></p> <p>Functions & Files, Elementary Mathematical Functions, User Defined, Functions</p>

Advanced Function Programming , Working with Data Files (read and write data file), Programming Techniques: Image Types , •Indexed images, •Intensity (or grayscale) images, •RGB images, Convert signals from an image sensor into digital images, Convert Between Image Types, Convert Between Data Types. [6 hrs]

Part B

Introduction in forensic image processing, Image processing in MATLAB, Read Image, Show Image, Displaying Images ,Writing Images, Image Rotation and Scale, Digital Image, Basic relationship between image pixels, Image Enhancement, Contrast Manipulation. [6 hrs]

Part C

Noise Removal, Linear Filtering, Nonlinear Filter, Filters for noise removal, 1. Mean Filtering, 2. Median Filtering, 4. Rank filtering, Modeling the Degradation Function, Use function deconvreg to restore a blurred, noisy image, Gaussian Blur Filter, Histogram Equalization, Adjust Intensity Values Using Histogram Equalization. [10 hrs]

Part D

Edge Detection, Canny Edge Detector, Sobel Edge Detection, Deblurring Images Using the Lucy-Richardson Algorithm, Definition the Analysis of forensic Images, Definition features detection, Perform Thresholding and Morphological Operations on Image, Morphological Dilation and Erosion, Corners, Template Matching. [10 hrs]

Part E

Definition the texture, Properties of textures, Create Gray-Level Co-occurrence (GLCM) Matrix from image, Image Segmentation, Point, Line, and Edge Detection, Use Intensity Thresholding to segment the object from the background of the image. [8 hrs]

Part F

Classification and Clustering, Definition the classification, Classification Based on Distance to Training Samples, Minimum distance classification, K nearest neighbor classifier, Examples using MATLAB, Decision Boundaries, Adaptive Decision Boundaries. [8 hrs]

Part G

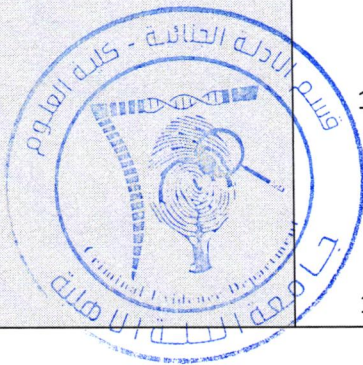
Biological Neural System, The Multilayer Perceptron, Structure of the Multilayer Perceptrons, Create a Perceptron Network (nntool) ,Create Network ,Train the Perceptron, Export Perceptron, Results to Workspace, Clear Network/Data Window, Importing from the Command Line, Save a Variable to a File and Load It Later, Applications in forensic Image Analysis, Classification by Association, Multiple Instance Learning, Bag of Visual Words, Dealing with Imbalanced Data. [12 hrs]

Learning and Teaching Strategies

When it comes to forensic image processing and analysis using MATLAB, here are some strategies to consider:

1. Introduce the concepts of forensic image analysis: we start by providing an overview of forensic image analysis and its applications, such as image enhancement, restoration, forgery detection, and facial recognition.
2. Familiarize students with MATLAB's image processing toolbox: Teach students how to use MATLAB's image processing toolbox, which offers a wide range of functions and algorithms for forensic image analysis. Cover topics such as image filtering, histogram equalization, noise removal, and edge detection.
3. Hands-on exercises and projects: Provide students with hands-on exercises and projects that involve applying forensic image processing techniques using MATLAB. Assign tasks such as enhancing low-light images, removing noise from images, detecting image forgeries, or performing facial recognition.
4. Image visualization and analysis: Demonstrate how to visualize and analyze images using MATLAB. Show students how to display, manipulate, and explore forensic images using functions like `imshow`, `imtool`, or `montage`. Teach them techniques for extracting features, measuring image properties, and performing quantitative analysis.
5. Image enhancement and restoration: Teach students various image enhancement and restoration techniques using MATLAB. Cover topics such as contrast adjustment, noise reduction, image sharpening, and image inpainting.
6. Forgery detection and authentication: Explore techniques for detecting image forgeries, such as copy-move forgery detection, splicing detection, and image tampering analysis.
7. Facial recognition: Introduce facial recognition techniques and algorithms using MATLAB. Explain the concepts of feature extraction, face detection, and face matching. Demonstrate how to build a basic facial recognition system using MATLAB's facial recognition toolbox or relevant libraries.
8. Error handling and robustness: Emphasize the importance of error handling and robustness in forensic image processing. Teach students how to handle common challenges and issues in image analysis, such as variations in lighting, noise, or image distortions.
9. Validation and verification: Discuss the importance of validation and verification in forensic image analysis. Teach students how to validate their results, evaluate the performance of their algorithms, and compare different approaches.
10. Collaboration and interdisciplinary learning: Foster collaboration among students from different disciplines, such as computer science, forensic science, and law enforcement. Encourage interdisciplinary discussions and projects that combine image processing techniques with forensic science knowledge.
11. Stay updated with advancements in forensic image processing: Stay informed

Strategies



about the latest research and advancements in the field of forensic image processing. Incorporate recent techniques and algorithms into your teaching to expose students to current trends and emerging technologies.

12. Ethical considerations: Discuss ethical considerations and legal implications related to forensic image processing. Teach students about privacy concerns, data integrity, and the ethical use of image analysis techniques in forensic investigations.

By implementing these strategies, you can provide students with a solid foundation in forensic image processing and analysis using MATLAB, preparing them for careers in forensic science, law enforcement, or image analysis research.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	40	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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



Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

Material Covered

Week 1	Functions & Files, Elementary Mathematical Functions, User Defined Functions Advanced Function Programming , Working with Data Files (read and write data file).
Week 2	Programming Techniques: Image Types , •Indexed images, •Intensity (or grayscale) images, •RGB images, Convert signals from an image sensor into digital images, Convert Between Image Types, Convert Between Data Types, Examples.
Week 3	Introduction in forensic image processing, Image processing in MATLAB, Read Image, Show Image, Displaying Images ,Writing Images, Image Rotation and Scale, Examples.
Week 4	Digital Image, Basic relationship between image pixels, Image Enhancement, Contrast Manipulation
Week 5	Noise Removal, Linear Filtering, Nonlinear Filter, Filters for noise removal, 1. Mean Filtering, 2. Median Filtering, 4. Rank filtering.
Week 6	Modeling the Degradation Function, Use function deconvreg to restore a blurred, noisy image, Gaussian Blur Filter, Histogram Equalization, Adjust Intensity Values Using Histogram Equalization.
Week 7	Edge Detection, Canny Edge Detector, Sobel Edge Detection, Deblurring Images Using the Lucy-Richardson Algorithm.
Week 8	Definition the Analysis of forensic Images, Definition features detection, Perform Thresholding and Morphological Operations on Image, Morphological Dilation and Erosion, Corners, Template Matching.
Week 9	Definition the texture, Properties of textures, Create Gray-Level Co-occurrence (GLCM) Matrix from image.
Week 10	Image Segmentation, Point, Line, and Edge Detection, Use Intensity Thresholding to segment the object from the background of the image.
Week 11	Classification and Clustering, Definition the classification, Classification Based on Distance to Training Samples, Minimum distance classification.
Week 12	K nearest neighbor classifier, Examples using MATLAB, Decision Boundaries, Adaptive Decision Boundaries.
Week 13	Biological Neural System, The Multilayer Perceptron, Structure of the Multilayer Perceptrons.
Week 14	Create a Perceptron Network (nntool) ,Create Network ,Train the Perceptron, Export Perceptron, Results to Workspace, Clear Network/Data Window, Importing from the Command Line, Save a Variable to a File and Load It Later, Applications in forensic Image Analysis.
Week 15	Classification by Association, Multiple Instance Learning, Bag of Visual Words, Dealing with Imbalanced Data, Exercises.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

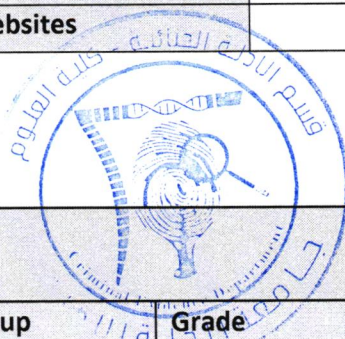
المنهاج الاسبوعي للمختبر

Material Covered

Week 1	Lab 1: Functions & Files, Working with Data Files (read and write data file).
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Week 2	Lab 2: Programming Techniques: Image Types , •Indexed images, •Intensity (or grayscale) images, •RGB images, Convert signals from an image sensor into digital images, Examples of convert between Image Types, Convert Between Data Types, Examples of Image Rotation and Scale, Read Image, Show Image.
Week 3	Lab 3: Read, write, display images, Image Rotation and Scale, Contrast Adjustment, Histogram Equalization
Week 4	Lab 4: Rank and Max-Min Filters
Week 5	Lab 5: Edge Detection, Thresholding, Morphological (Dilation and Erosion) Operations and Corners on Image, Template Matching and Texture.
Week 6	Lab 6: Create Gray-Level Co-occurrence (GLCM) Matrix from image, Image Segmentation Polynomial and Global thresholds
Week 7	Lab 7: Classification and Clustering , Perceptron Network

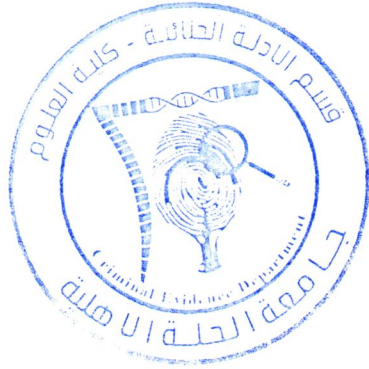
Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1- Matlab: Numerical Computing, Tutorial point, 2014. 2- Alasdair McAndrew, An Introduction to Digital Image Processing with Matlab, Notes for SCM2511 Image, Processing 1, Semester 1, 2004, School of Computer Science and Mathematics, Victoria University of Technology. 3- Gonzalez R. C." Digital Image Processing", Woods R. E. ,2008 Image Processing for Computer Graphics and Vision, by Luiz Velho • Alejandro C. Frery •Jonas Gomes 2009 4- Sammes, A., & Jenkinson, G. (Eds.). (2016). Forensic Computing: A Practitioner's Guide. Springer.	Yes
Recommended Texts	1- Sutherland, I. E. (Ed.). (2021). Handbook of digital image processing: with examples in MATLAB. Springer. 2- Kouzmanoff, S., & Khan, H. (2019). Handbook of Digital Forensics and Investigation. Academic Press.	No
Websites		



Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors

	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX - Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F - Fail	راسب	(0-44)	Considerable amount of work required

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

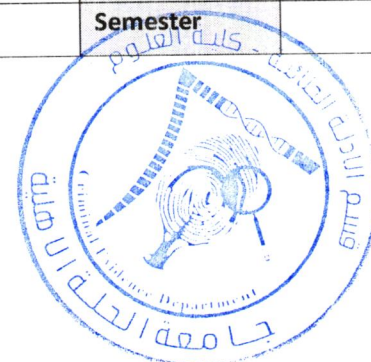


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Biochemistry		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR23013		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	FOR	College	Science
Module Leader	Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Peer Reviewer Name	Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Scientific Committee Approval Date	13/12/2025	Version Number	1.0

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



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<p>1-This module aims to teach you core concepts in biochemistry including topics on structure of proteins, enzyme kinetics and metabolic pathways.</p> <p>2-The module will also provide a background to fundamental aspects of chemistry.</p> <p>3-This module provides you with the core knowledge and skills to enhance performance in the area of biological chemistry towards best benefit for forensic science in:</p> <ul style="list-style-type: none">❖ Metabolism, Analytical Techniques in Biochemistry,❖ Bioinorganic Chemistry❖ Energy Metabolism
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Module-specific skills</p> <ol style="list-style-type: none">1. Understand the biological, chemical and physical principles associated with forensic investigation.2. Discuss the analytical techniques used in forensic science and their correct choice.3. Demonstrate knowledge of the principal scientific techniques and skills required for the recognition, processing, recording, preservation, recovery, analysis and interpretation of evidence at and from a range of crime scenes.4. Evaluate the limitations and principles of uncertainty in analysis and interpretation of forensic evidence.5. Construct logical arguments and effectively communicate theories in different formats, including crime scene maps and a sequence of events.6. Interpret written instruction to create time and spatial reconstructions of complex events with attention to detail.



استراتيجيات التعلم والتعليم

Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in discussion , for verities of information which could be applied to make real and ideal behaviour with forensic as science and as skills should be developed.while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

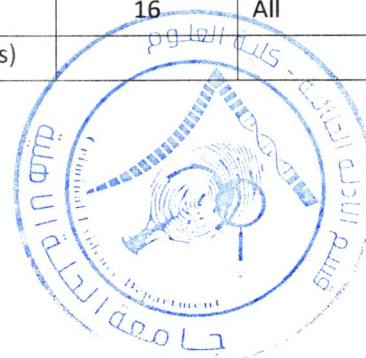
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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



Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Biochemistry
Week 2	Enzymes 1
Week 3	Enzymes 2
Week 4	Carbohydrates 1
Week 5	Carbohydrates 2
Week 6	Carbohydrates 3
Week 7	Carbohydrates Metabolism
Week 8	Exam
Week 9	Lipids
Week 10	Lipids Metabolism
Week 11	Cholesterol
Week 12	Amino Acids
Week 13	Proteins 1
Week 14	Proteins 2
Week 15	Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Chemistry Laboratory Safety Rules
Week 2	Lab 2: Spectrophotometry
Week 3	Lab 3: Determination of Ca Concentration in Serum
Week 4	Lab 4: Determination of P Concentration in Serum
Week 5	Lab 5: Determination of Total Iron Concentration in Serum
Week 6	Lab 6: Determination of Mg Concentration in Serum
Week 7	Lab 7: Exam
Week 8	Lab 8: Determination of Glucose Concentration in Serum



Week 9	Lab 9:Determination of Urea Concentration in Serum
Week 10	Lab 10:Determination of Creatinine Concentration in Serum
Week 11	Lab11:Determination of Uric Acid Concentration in Serum
Week 12	Lab 12:SGOT and SGPT
Week 13	Lab 13:Glucose Tolerance Test
Week 14	Exam
Week 15	Review All Previous Experiences

Learning and Teaching Resources

مصادر التعلم والتدريس

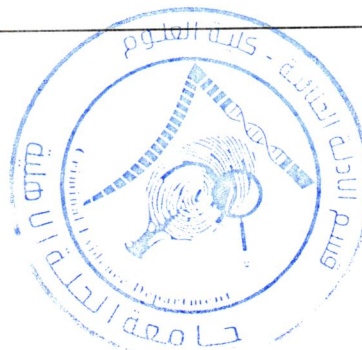
	Text	Available in the Library?
Required Texts	R. H. Garrett, C. M. Grisham, Biochemistry, Brooks / Cole Cengage Learning, 2011	Yes
Recommended Texts	R. Brückner, Reaktionsmechanismen, Spektrum Verlag, 3rd Edition, 2004	No
Websites	https://biosciences.exeter.ac.uk/staff/module/?mod_code=BIO2068	

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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MODULE DESCRIPTION FORM

Module Information			
Module Title	Anatome and Physiology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR23015		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	Forensic \FOR	College	science
Module Leader	Abeer Imad alnfie	e-mail	abeer.emad@hilla-unc.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	M.s.c
Module Tutor	Abeer Imad alnfie	e-mail	abeer.emad@hilla-unc.edu.iq
Peer Reviewer Name		e-mail	abeer.emad@hilla-unc.edu.iq
Scientific Committee Approval Date	15/12/2025	Version Number	1.0

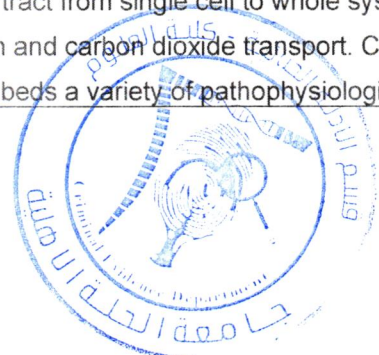
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

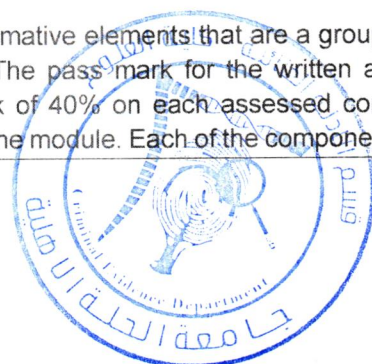
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. The aim of the module is to introduce and explore the fundamental concepts of human physiology and anatomy from cellular functions through to systems that are responsible for homeostasis.2. The module aims to begin with the broader principles of how cells communicate and how cells function.3. To explore key anatomy with physiological systems:<ul style="list-style-type: none">➤ investigating the central and peripheral nervous systems,➤ how differing muscles are stimulated to contract,➤ the digestive system and key associated nutritional principles, the cardiorespiratory system,➤ the renal system and its regulatory role and the immune system and how it aims to protect the body against infection and disease.4. This module also aims to introduce the principles of group learning, critical thinking, problem solving and communication of scientific information.
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>On successfully completing the module you will be able to...</p> <ul style="list-style-type: none">• 1. Demonstrate an integrated basic knowledge of the biomedical principles underpinning human health with forensic science .• 2. Demonstrate a basic awareness of the scientific principles underpinning the prevention, diagnosis and management of some important diseases• 3. With guidance, apply skills of critical thinking, problem-formulation and problem-solving.
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>1-Cardiovascular physiology [10h]</p> <p>Structure and function of the heart and blood vessels from single cell to whole system. Cardiac electrical activity and its measurement. Perfusion and its control. Blood pressure regulation. Embeds a variety of anatomical and pathophysiological examples with reference to both biomedical and forensic applications throughout e.g. coronary heart disease.</p> <p>2-Respiratory anatomy and physiology [10h]</p> <p>Structure and function of the respiratory tract from single cell to whole system. Lung mechanics and ventilation. Oxygen and carbon dioxide transport. Central and peripheral control of respiration. Embeds a variety of pathophysiological</p>



	<p>examples with reference to both biomedical and forensic applications throughout e.g, asthma</p> <p>3 -Reproductive anatome and physiology[15h]</p> <p>Structure and functions of the reproductive systems from single cell to whole system. Normal body control of the female reproductive system and hormonal cycles. Embeds a variety of anatomical and psychophysiology examples with reference to both biomedical and forensic applications throughout e.g. infertility.</p> <p>4- Neuro and sensory anatomical and physiology [15h]</p> <p>Basic structures and divisions of the peripheral and central nervous system from single cell to whole system. Structure and function of nerves and the cells in the nervous system. How nerves communicate. Higher CNS functions and the ANS. Structure and function of key sensory organs. Embeds a variety of anatomical and pathophysiological examples with reference to both biomedical and forensic applications throughout e.g. dementia</p> <p>5 -Skeletomuscular system [14]</p> <p>Skeletal muscle structure and ultrastructure. Muscle and fibre types. Functions of tendons, joints, bones, muscle ligaments and fascia. The neuromuscular junction. Excitation - contraction coupling. The sliding filament theory. Muscle spindles. Golgi tendon organs. Reflex arcs. Embeds a variety of anatomical and pathophysiological examples with reference to both biomedical and forensic applications throughout e.g. muscular dystrophy.</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>The module will consist of lectures with theoretical analysis and real-world examples and applications to improve students' learning and analytical skills. In-class group discussions of research papers will facilitate deeper understanding and encourage critical thinking.</p> <p>The assessment includes two summative elements that are a group recorded quiz and an individual written essay. The pass mark for the written assignment and module is 50%. A qualifying mark of 40% on each assessed component of the module must be achieved to pass the module. Each of the component marks is then</p>



combined, using the appropriate weighting, to give an overall mark for the module. If the overall mark is less than 50% when the weighting has been applied to the components, this constitutes a failure of the module.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

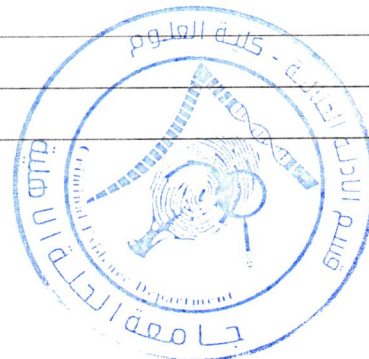
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Intruduction for <u>Anatomy</u> and <u>Physiology</u> Organizing Principles such as Homeostasis & Feedback Loops
Week 2	Cell, tissue , and Membrane
Week 3	Skelton, and muscular
Week 4	Nervous and endocrine system



Week 5	Cell Physiology & Membrane Transport
Week 6	Tissue Physiology, Neurophysiology and Sensory Physiology
Week 7	Endocrinology, Muscle Physiology
Week 8	Cardiovascular and Respiratory Physiology
Week 9	Immunology
Week 10	Lymphatic and Respiratory System
Week 11	Osmoregulatory Physiology
Week 12	Gastrointestinal Physiology
Week 13	Reproductive Physiology
Week 14	Digestive and Urinary System
Week 15	exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

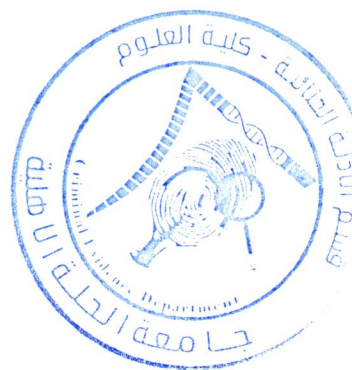
	Material Covered
Week 1	Lab 1: Erythrocyte Physiology
Week 2	Lab 2: Pulse and Pressure
Week 3	Lab 3: EEG and States of Consciousness
Week 4	Lab 4: Brain Imaging
Week 5	Lab 5: Electromyography & Dynamometry
Week 6	Lab 6: Electrocardiography
Week 7	Lab 7: exam
Week 8	Lab 8: Ventilation & Spirometry
Week 9	Lab 9 : Urinalysis
Week10	Lab10: View film "Fed Up", food diary assigned
Week11	Lab11: Physiology of Adiposity; SOS of lab instructor
Week12	Lab12: Lower extremity bones
Week13	Lab13: Muscles tissue and skin
Week14	Lab14: The brine
Week15	review before final exam



Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Human from Cells to Systems. Sherwood, L. (2016, 9th edition) Cengage Learning.	no
Recommended Texts	https://training.seer.cancer.gov/linksre/	yes
Websites	https://www.ucc.ie/en/physiology/courses/physiologyasamodule/	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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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

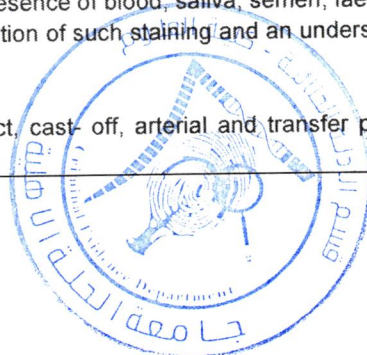
Module Information			
Module Title	Fundamentals of Fluids Detection and Secretions		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR23016		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	FOR	College	Science
Module Leader	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	
Module Tutor	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Peer Reviewer Name	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Scientific Committee Approval Date	10/12/2025	Version Number	1.0

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



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<p>The aim of this Module is :</p> <p>1-to provide the student with an understanding of examination strategies for the range of body fluids encountered in forensic biology casework together with the science underpinning the interpretation of bloodstain patterns.</p> <p>2-An awareness of the contribution of selected areas of the biological sciences to specialised forensic science studies is also given.</p> <p>3-to provide a basic grounding in Forensic Criminology.</p> <p>4- to promote analytical and evaluative skills, as well as encourage the application of material to appropriate case studies.</p> <p>5- students will, through seminar work, applied approach and problem solving, develop a knowledge and understanding of the subject area, as well as an appreciation of the ethical and complex issues that surround forensic criminology.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>By the end of this module the student should be able to:</p> <ol style="list-style-type: none"> 1. Understand the rationale for undertaking different body fluid examinations as an aid to crime investigation. 2. Relate the biological characteristics of different body fluids to the methods used for location and identification in the forensic laboratory. 3. Identify and interpret bloodstain patterns and relate these to a theoretical treatment of blood dynamics. 4. Have a basic understanding of how the results of biological examinations are used in the context of case interpretation. 5. Analyse and critically evaluate the contribution of selected areas of biology to specialised aspects of forensic science. 6. Explain the analytical, laboratory and legal requirements of producing DNA STR profiles. 7. Perform interpretation of DNA STR profiling results, including calculation of likelihood ratios. 8. Critically evaluate DNA STR profiling results citing significant research in the field. 9. Show an understanding of the scientific basis and utilisation of techniques of bone anthropometry and pathology in the study of human tissue. 10. Demonstrate the ability to critically evaluate body fluid evidence and blood stain patterns.
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>1 Body Fluids Methods for detection and confirmation of the presence of blood, saliva, semen, faeces and urine. Interpretation of the presence and distribution of such staining and an understanding of body fluid persistence.[18h]</p> <p>2 Blood Dynamics and Blood Stain Patterns Rheology of blood and blood behaviour. Impact, cast-off, arterial and transfer patterns, interpretation and evidential value.[18h]</p>

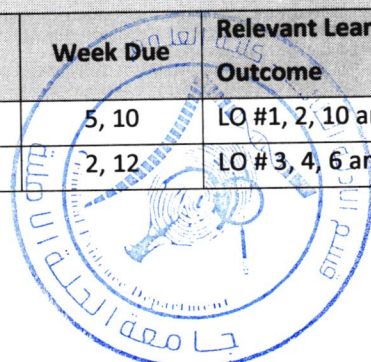


	<p>3 Selected Areas of Biology Relevant to Forensic Science For example: aspects of entomology, trichology and other specialist areas of forensic biology may be considered.[15h]</p> <p>4:Forensic Psychology: the social context of crime; what is forensic and criminal psychology; serial killing; profile analysis: investigative psychology and statistical profiling; false confessions; false allegations; eye witness testimony; lies, detection and credibility; psychology in prison; assessing risk and dangerousness.[15h]</p> <p>5:Criminal Investigation: Introduction to forensic science; the crime scene; trace and contact evidence: recoverable materials; trace and contact evidence: fingerprints; analysing body fluids; DNA profiling; fires; examination of human remains; questioned documents; forensic science in court and presenting evidence to a jury.[20h]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module covers a wide variety of theoretical, conceptual and practical areas, which require a range of knowledge and skills at a more advanced level to be displayed and exercised. Delivery of its syllabus content therefore involves a diversity of teaching and assessment methods suitable to the learning outcomes of the module; these include formal lectures, structured tutorials (work closely integrated with the lecture material), practical exercises, and completion and submission of written coursework making use of appropriate forms of IT and VLE, and independent study.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4.6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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



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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction in blood and body fluid
Week 2	Bile composed and liver enzymes
Week 3	Brest milk composition
Week 4	Cerebral spinal fluid
Week 5	Digestive system secretion, Saliva, mucus
Week 6	Amniotic fluid characteristic
Week 7	Mucus secretion and nasal drainage
Week 8	Peritoneal fluid
Week 9	Skin, sweating gland
Week 10	Eyes, tears secretion
Week 11	Seminal fluid
Week 12	Urine analysis
Week 13	Vomiting
Week 14	Vaginal secretion
Week 15	Exam
Week 16	Preparatory week before the final Exam

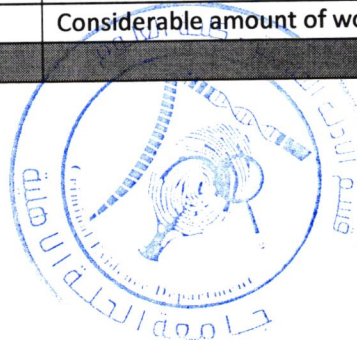
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Lab Safety
Week 2	Lab 2: Blood investigation and body fluid analysis
Week 3	Lab 3: Bile composed and liver enzymes investigation



Week 4	Lab 4: Breast secretion
Week 5	Lab 5: Determination the CSF component
Week 6	Lab 6: Investigate the secretion of digestive system, Saliva, mucus
Week 7	Lab 7: Exam
Week 8	Lab 8: Amniotic fluid
Week 9	Lab 9 : Mucus secretion and nasal drainage
Week 10	Lab10:Peritoneal fluid
Week 11	Lab11:Skin, sweating gland
Week 12	Lab12:Eyes, tears secretion
Week 13	Lab13:Seminal fluid
Week 14	Exam
Week 15	Review week

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Essential Haematology. Hoffbrand A.V., Pettit J.E. & Moss P.A.H., Blackwell, ISBN: 0632051541	NO
Recommended Texts	Flesh and Bone: An Introduction to Forensic Anthropology. Naftali M., Carolina Academic Press, ISBN:0890896380	yes
Websites	https://modules.abertay.ac.uk/module.cfm?modcode=FOR301&term=S1	

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.

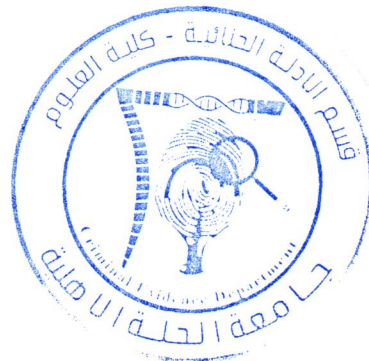


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Genetics		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR23114		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	FORN	College	SC
Module Leader	Ruqaya Yahya Abd AL-Shaheed	e-mail	ruqayyah_yahya@hilla-unc.edu.iq
Module Leader's Acad. Title	Lecturer Dr.	Module Leader's Qualification	Lec. Dr.
Module Tutor	Ruqaya Yahya Abd AL-Shaheed	e-mail	ruqayyah_yahya@hilla-unc.edu.iq
Peer Reviewer Name	Name	e-mail	
Scientific Committee Approval Date	21/12/2025	Version Number	1.0

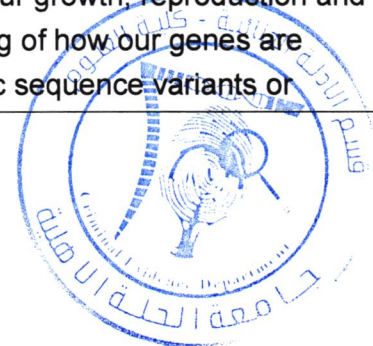
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	FOR 23114 (Genetics)	Semester	2/1
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

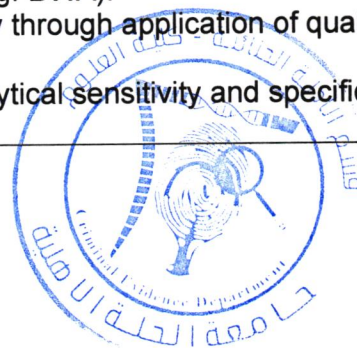
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<p>1-genetics begins with scientific research, which translates through clinical practice to touch the lives of patients and families with genetic disease on a daily basis.</p> <p>2- This module aims to provide a lens through which to view the core aspects of this multidisciplinary subject, describing how and why genetics is important in the development, diagnosis and treatment of disease.</p> <p>3-focus firstly on the basics of how genetic material is replicated, curated, and inherited, to enable an understanding of how genetic sequence variants lead to genetic disease, or to susceptibility to complex diseases.</p> <p>4-Genetic research and disease often raises challenging ethical questions and considerations, which will also be explored in the module You will also explore the molecular mechanisms by which genes are regulated alongside the contribution and role of environment influences.</p> <p>5- Overall the module link clinical genetics practice with internationally-leading research strengths at CMH, to provide a holistic view of medical genetics from the scientific, clinical and patient perspectives.</p>
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>On successfully completing the module you will be able to...</p> <ol style="list-style-type: none">1. Describe in some detail and discuss the cellular and molecular basis of inheritance2. Explain the differences between acquired, monogenic, polygenic and epigenetic disease3. Explain the different mechanisms by which genes are regulated in humans4. Discuss the contribution of genetics and environment to disease processes in humans5. Show awareness of, and discuss the ethical issues in modern genetics6. Discuss with examples the importance of interaction between patients, scientists and clinician
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Our genetics influence every aspect of our growth, reproduction and health. Due to this, a deep understanding of how our genes are inherited and regulated, and how genetic sequence variants or</p>



	<p>epigenetic factors affect gene function is crucial for understanding normal human development, and the basis of genetic diseases.[16h]</p> <p>Knowing how molecular pathways function and are altered by gene variants is important to identify molecular biomarkers to monitor disease onset and progression, and define new therapies to treat disease. For example, research studies have detailed how breast cancer risk is greatly increased by the inheritance of specific <i>BRCA1</i> gene variants, and discovered that some patients with maturity-onset diabetes of the young (MODY) may transfer from insulin injections onto sulphonylurea tablets taken orally. [16h]</p> <p>Thus medical genetics as practiced today involves close scientific, clinical and patient interaction. This module describes how genomic research and clinical genetic services work in close synergy to deliver modern diagnostic and clinical genetic services, and discusses some of the ethical challenges and considerations, as well as patient perspectives, associated with this ever increasingly important discipline.[16h]</p> <p>Genetics provides an introduction to both classical and modern molecular genetics. We start by looking at Mendelian genetics, including consideration of how genetic maps are created and an introduction to human pedigrees. We then examine the basic mechanisms of transcription and translation and how gene expression can be regulated. The module concludes by considering the molecular tools that geneticists use and how these have been used to uncover the content of diverse genomes.[16h]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<ul style="list-style-type: none"> • Aligning genome data to reference sequence using up to date alignment programmes (e.g. BWA). • Assessment of data quality through application of quality control measures. • How to determine the analytical sensitivity and specificity of genomic tests.



- Use of tools to call sequence variants e.g. GATK, annotation of variant-call files using established databases.
- Filtering strategies of variants, in context of clinical data, and using publicly available control data sets
- Use of multiple database sources, in silico tools and literature for pathogenicity evaluation, and familiarisation with the statistical programmes to support this.
- Principles of integration of laboratory and clinical information, and place of best practice guidelines for indicating the clinical significance of results.

Student Workload (SWL)

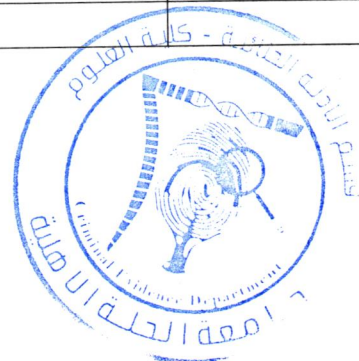
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

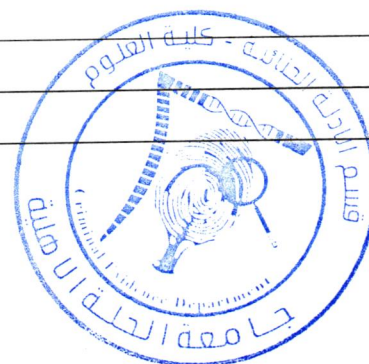
تقييم المادة الدراسية

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



Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Introduction to genetic
Week 2	Classical Mendelian genetics
Week 3	The population genetic
Week 4	Human genome
Week 5	Functions of gene and chromosome
Week 6	Mitosis and meiosis genetic code
Week 7	Genetic variation
Week 8	Gene flow and new species
Week 9	Mutation and chromosomal abnormalities
Week 10	Medical genetic diseases
Week 11	Karyotype, Banding techniques
Week 12	Mutagens and carcinogens
Week 13	Autosomal dominant inheritance
Week 14	Autosomal recessive inheritance
Week 15	Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Organisms supported as a model system for genetics
Week 2	Lab 2: The first law of Mendel and the deviations from Mendel's first law
Week 3	Lab 3: The second law of Mendel and the deviation from Mendel's second law
Week 4	Lab 4: The quantitative inheritance
Week 5	Lab 5: Genetics and sex
Week 6	Lab 6: Link and crossing over
Week 7	Lab 7: Cases of crossing over suppression
Week 8	Lab 8: Genetic mapping
Week 9	Lab 9: Mutation and chromosomal abnormalities



Week 10	Lab 10: Medical genetic diseases
Week 11	Lab 11: Karyotype, Banding techniques
Week 12	Lab 12: Mutagens and carcinogens
Week 13	Lab 13: Autosomal dominant inheritance
Week 14	Lab 14: Autosomal recessive inheritance
Week 15	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	FReece J, Urry L, Cain M, Wasserman S, Minorsky P, Jackson, R. (Eds) 9th Global Edition, 2011, Campbell Biology, Pearson Benjamin Cummings.	Yes
Recommended Texts	Butler, J. (2005) Forensic DNA Typing 2nd Ed. Elsevier (MA) ISBN: 9780121479527 Forensic Science – Jackson A.R. & Jackson J., Prentice Hall, ISBN: 130432512	No
Websites	Cochrane reviews: http://www.cochrane.org/cochrane-reviews Pubmed/MedLine: http://www.ncbi.nlm.nih.gov/pubmed	

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

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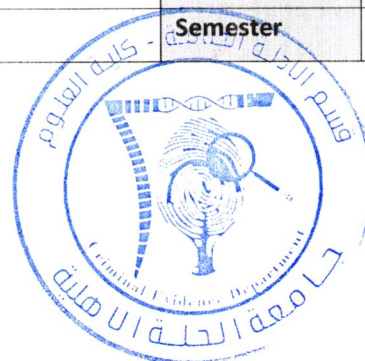


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	chemistry		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR1102		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	FOR	College	Type College Code
Module Leader	Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Peer Reviewer Name	Mariam Hamid Abdulsattar	e-mail	Mariam.Hamid.Abdulsattar@uomus.edu.iq
Scientific Committee Approval Date	12/12/2025	Version Number	1.0

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



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<p>1-To develop skills and understanding of different types of elements through the application of techniques.</p> <p>2. To understand metals, physical and chemical properties.</p> <p>3. This course deals with the basic concept of general chemistry.</p> <p>4. To understand periodic table and distribution elements on it</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Recognize the classification of elements. 2. List the various terms associated with periodic table. 3. Summarize what is meant by a basic chemical property. 4. Discuss the reaction and involvement of atoms in chemical reaction. 5. Describe bonds, oxidation number, and Lewis term. 6. Identify the elements according to conductivity and their applications. 7. Discuss the electrons distribution in the atomic levels. 8. Identify the primary terms that used to characterized physical and chemical properties.
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Part A-Circuit Theory Starting from atomic theory and electron distribution in the outer and inner shells the details required make enough information for the principle of chemistry. [15hrs]</p> <p>Enhance the principle of general chemistry when highlight in more information about losing and acceptance electrons with the abilities for forming any bonds and forming new molecules with new properties. [16hrs]</p> <p>Periodic table with highlight in the orientations of molecules to show different and variance in properties. [12hrs]</p> <p>Revision problem classes [6hrs]</p> <p>Part B-Analogue chemistry</p> <p>3-Fundamentals Electron configuration, oxidation number, The ratios of forming molecules. [15hrs]</p> <p>Components and active site. [9hrs]</p> <p>Identification of general properties.[9hrs]</p>



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>To describe the learning activities of the students and the teaching methods of the staff. Effective module design should result in a varied range of active learning experiences for students, including learning activities which are 'research-like'.</p> <p>Activities should, of course, motivate and encourage deep learning (reflection on wider meanings, rather than superficial memorisation of information). They should also be varied and flexible enough to accommodate different learning styles and orientations, and allow for inclusivity of students from different backgrounds and with different kinds of learning abilities.</p> <p>Learning activities therefore need to include reference to independent, interdependent (peer- supported) and online activities, as well as participation in different kinds of taught class.</p>
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Student Workload (SWL)

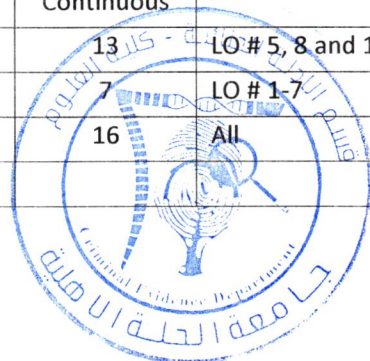
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

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



Delivery Plan (Weekly Syllabus)

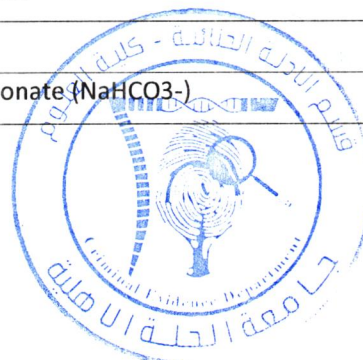
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to chemistry
Week 2	Periodic table
Week 3-4	Atomic structure types of bonding
Week 5	Physical and chemical properties/ Drawing Lewis Structures
Week 6	Chemical Reactions
Week 7	Preparation solution (types of concentration)
Week 8	Exam
Week 9-10	Acids and Bases and titration
Week 11-12	Titrimetric Methods
Week 13-14	Separation method of elements
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: General safety rules for Laboratory and equipments
Week 2	Lab 2: Standard Solution
Week 3	Lab 3: Preparation of standard solution from liquid solutions
Week 4	Lab 4: Preparation of standard solution from solid materials
Week 5	Lab 5: Titration Strong Acid with Strong Base
Week 6	Lab 6: Titrating Sodium Carbonate With Hydrochloric Acid
Week 7	Lab 7: pH - Metric Titration
Week 8	Lab 8 : exam
Week 9	Lab 9 : Conductometric Titrating of Strong Acid With Strong Base
Week 10	Lab 10: Titration of Acetic Acid in Vinegar
Week 11	Lab 11: Titration of a Mixture of Carbonate (CO_3^{2-}) and Bicarbonate (NaHCO_3^-)

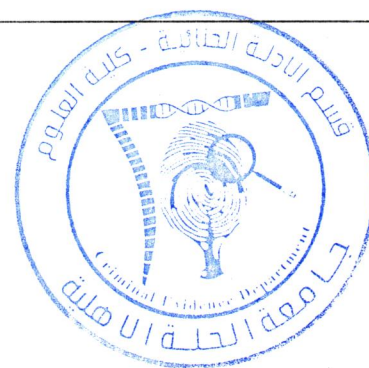


Week 12-13	Lab 12: Separation of I Group Cations (Ag+, Pb2+, Hg22+)
Week 14	Lab 14: exam
Week 15	Review All Previous Experiences

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	A Textbook of Physical Chemistry Vol-6 Kapoor, K.L Mc Graw-Hill 2019	Yes
Recommended Texts	Introductory Chemistry Essentials, Global Edition Tro, N. J. Pearson 2015	yes
Websites	https://openstax.org/details/books/chemistry-2e https://open.umn.edu/opentextbooks/textbooks/219	

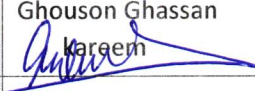
Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair 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	General Biology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR1101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	FOR	College	Science
Module Leader	Ghouson Ghassan kareem	e-mail	Ghusun_ghassan@hilla-unc.edu.iq
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSC
Module Tutor	Ghouson Ghassan kareem)	e-mail	E-mail
Peer Reviewer Name	Ghouson Ghassan Kareem 	e-mail	Ghusun_ghassan@hilla-unc.edu.iq
Scientific Committee Approval Date	14/12/2025	Version Number	1.0

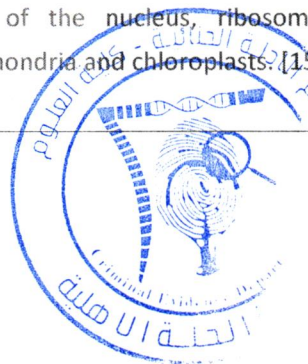
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. This module gives students an understanding of the science and techniques that underpin forensic biology.2. Topics covered will include identification of biological fluids, the analysis the human genome in forensic biology, blood stain pattern analysis and forensic anthropology.3. Material covered in lectures will be illustrated through lab work.4. Highlight in most theories that was deal with biology system for live.5. Our aim is to provide students with opportunities to develop academically, professionally and personally: to broaden their ambitions, extend their attitudes, challenge their assumptions, and assist towards unlocking their potential to succeed in their studies and future lives.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Explain the analytical, laboratory and legal requirements of producing DNA profiles.2. Summarize what is meant by a basic biology science.3. Perform interpretation of DNA profiling results, including calculation of likelihood ratios.4. Critically evaluate DNA profiling results citing significant research in the field.5. Show an understanding of the scientific basis and utilisation of techniques of bone anthropometry and pathology in the study of human tissue.6. Demonstrate the ability to critically evaluate body fluid evidence and blood stain patterns.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>On completion of this module, students are expected to be able to:</p> <ol style="list-style-type: none">1 Demonstrate knowledge of the basic structures, functions and growth characteristics of cells.[13h]2 Demonstrate knowledge of the structure and function of the four principal tissue types.[13h]3 Demonstrate an understanding of Mendelian genetic inheritance. [15hrs] <p>Demonstrate understanding of the role of variation in speciation and evolution. [15 hrs]</p> <p>Evolution of the eukaryotic cell, membrane structure and membrane transport mechanisms, structure and function of the nucleus, ribosomes, endoplasmic reticulum, Golgi Body, lysosomes, mitochondria and chloroplasts. [15 h]</p>

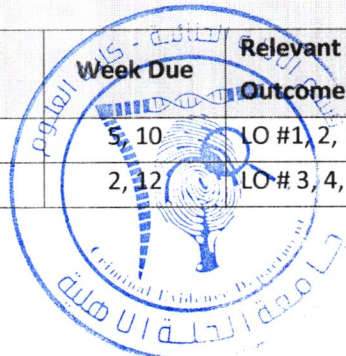


	Mitosis and meiosis. Structure and function of epithelial, connective, nervous and muscle tissue. Mendel's Laws, inheritance, genotype, phenotype, dominance, sex determination, sex-linkage, variation, speciation and evolution.. [15 hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>To describe the learning activities of the students and the teaching methods of the staff. Effective module design should result in a varied range of active learning experiences for students, including learning activities which are 'research-like'.</p> <p>Activities should, of course, motivate and encourage deep learning (reflection on wider meanings, rather than superficial memorisation of information). They should also be varied and flexible enough to accommodate different learning styles and orientations, and allow for inclusivity of students from different backgrounds and with different kinds of learning abilities.</p> <p>Learning activities therefore need to include reference to independent, interdependent (peer- supported) and online activities, as well as participation in different kinds of taught class.</p>

Student Workload (SWL) الحمل الدراسي للطلاب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعياً	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعياً	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

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



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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Course introduction; What is biology?
Week 2	The nature of life
Week 3	Atomic structure and chemistry of water
Week 4	Carbohydrates, proteins, and lipids
Week 5	Nucleic acids
Week 6	Exam Mid-term Exam
Week 7	Cells, Part I
Week 8	Cells, Part 2
Week 9	Energy & metabolism, Part I
Week 10	Energy & metabolism, Part 2
Week 11	Cellular respiration, Part I
Week 12	Cellular respiration, Part 2
Week 13	Photosynthesis
Week 14	DNA & its role in heredit
Week 15	EXAM
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Measurement
Week 2	Lab 2: Course intro; Life and the scientific theory
Week 3	Lab 3: Enzyme function I



Week 4	Lab 4: Enzyme function 2
Week 5	Lab 5: Microscope & cell structure
Week 6	Lab 6: Cell behavior
Week 7	Lab 7: Respiration
Week 8	Lab 8 : Photosynthesis
Week 9	Lab 9 : Restriction digest of plasmids
Week 10	Lab 10: Gene transformation
Week 11	Lab 11: Mitosis, meiosis, and gametogenesis
Week 12	Lab 12: Mendelian crosses
Week 13	Lab 13: Outcomes of evolution
Week 14	Lab 14: Blood Typing
Week 15	Exam

Learning and Teaching Resources

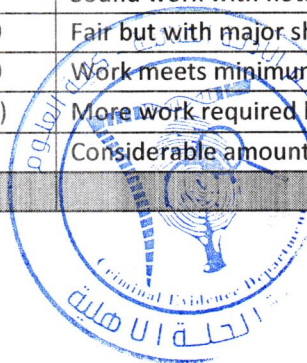
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Freece J, Urry L, Cain M, Wasserman S, Minorsky P, Jackson, R. (Eds) 9th Global Edition, 2011, Campbell Biology, Pearson Benjamin Cummings.	Yes
Recommended Texts	Butler, J. (2005) Forensic DNA Typing 2nd Ed. Elsevier (MA) ISBN: 9780121479527 Forensic Science – Jackson A.R. & Jackson J., Prentice Hall, ISBN: 130432512	No
Websites	https://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402/subject-content	

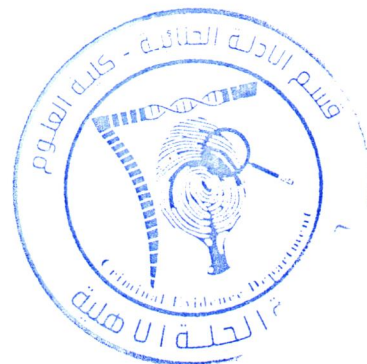
Grading Scheme

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	General Physics		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	MBO 11003		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	2
Administering Department	Forensic	College	Science
Module Leader	Fatima Mohammed Dridan	e-mail	fatima.mohammed@hilla-unc.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	M.s.c
Module Tutor	N.A	e-mail	fatima.mohammed@hilla-unc.edu.iq
Peer Reviewer Name		e-mail	fatima.mohammed@hilla-unc.edu.iq
Scientific Committee Approval Date	16/12/2025	Version Number	1.0

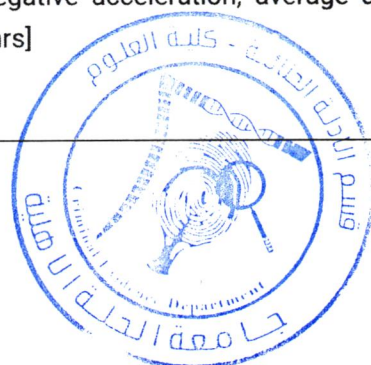
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

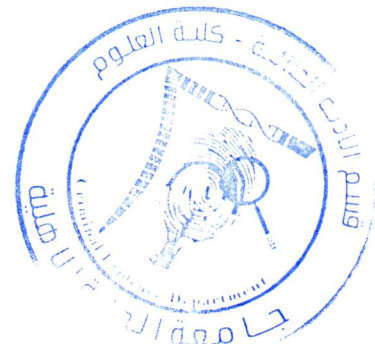
<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. To have knowledge about General Physics basic principles like Mechanics of motion, liquid mechanics and electricity.2. To get skills in solving mathematical problems that related to physics subjects.3. To get practical skills in managing physics experiments in the lab. and record measurements and then calculate required quantities.4. Analysis the physical information in syllabus and be able to make conclusions by joining between physical concepts.5. To be able to apply his knowledge in physics in market.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Save in memory basic principles and laws of physics.2. Produce scientific concepts by joining between physical principles.3. Joining physical concepts to produce more complicated concepts.4. The ability to make conclusions by analysis the physical information.5. The ability to apply all his knowledge to solve problems in reality.6. To be able to run the devices and apparatus in the lab.7. Assemble devices and make an experiment to prove physical relation.8. Discuss the results get from running experiment in the lab.9. Make reports from theory to conclusion about any physical concept proved in the lab.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Measurement units, Motion in one dimension, path and displacement, velocity and acceleration. [9 hrs]</p> <p>Free fall motion, gravity, projectile path. [8 hrs]</p> <p>Vector Analysis, Unit vector, Vector addition and subtraction, resultant vector and its direction. [10 hrs]</p> <p>Motion in two dimensions, concept of negative acceleration, average and instantaneous velocity and acceleration. [9 hrs]</p> <p>Revision problem classes [5 hrs]</p>



	<p>Newton laws of motion, principle of continuity, equilibrium, action and reaction, force analysis diagraph. [12 hrs]</p> <p>Circuits and electricity, Current, Voltage, Resistance. [10 hrs]</p> <p>Fluid Mechanics, Pascal principle, Archimedes principle, Pressure, Bernoulli equation in fluid flow. [9 hrs]</p>
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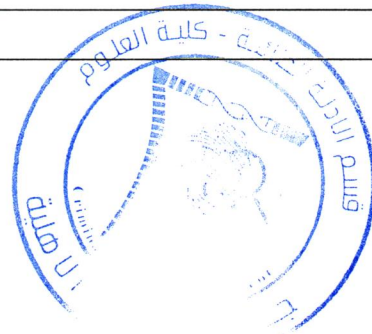
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and by considering type of simple experiments involving some sampling activities that are interesting to the students.</p>

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	72	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	78	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		



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

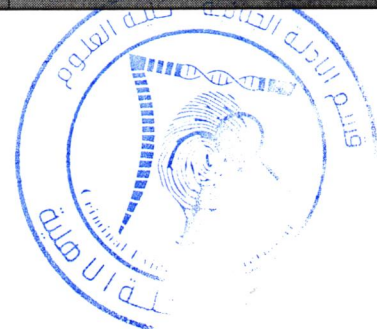
Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Physical unit systems and unit conversion
Week 2	Motion in one dimension: velocity and acceleration
Week 3	Free fall motion and gravity
Week 4	Vector analysis: vector addition and subtraction
Week 5	Unit vector and vector resultant calculation
Week 6	Motion in two dimension: velocity and acceleration calculations
Week 7	Mid-term Exam
Week 8	Newton first law of motion: object in equilibrium concept
Week 9	Newton second law of motion: acceleration and deceleration
Week 10	Newton third law of motion: action and reaction
Week 11	Electricity: current, voltage and resistance, Ohm's law
Week 12	Electric circuits: series and parallel circuits
Week 13	Fluid mechanics: pressure and Pascal Principle
Week 14	Archimedes principle
Week 15	Bernoulli equation in fluid flow
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to diagrams and report writing
Week 2	Lab 2: Surface tension
Week 3	Lab 3: Force equilibrium
Week 4	Lab 4: Static and dynamic friction
Week 5	Lab 5: Ohm's law
Week 6	Lab 6: Series and Parallel circuits
Week 7	Lab 7: Density of materials

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Applied Physics by Schaum 2013	No
Recommended Texts	Physics for scientists and engineers by Serway 2004.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering	

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	Introduction to Fuels and Fire Acceleration		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR1209		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	2
Administering Department	FOR	College	Science
Module Leader	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Peer Reviewer Name	M.Sc. Adel Sabah Abduljaleel	e-mail	Adel85hind89@gmail.com
Scientific Committee Approval Date	11/12/2025	Version Number	1.0

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



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<p>An experimental study of liquid fuel fires (Class B) in enclosures with Class A combustibles was conducted to 1) characterize the differences in fire dynamics and fire damage between ignitable liquid fuel fires in compartments versus in the open, and 2) to evaluate the reliability of fire patterns and fire debris sampling for ignitable liquid residue analysis. The experimental work included an evaluation of patterns within enclosure fires, including fuel spill patterns and clean burns and an analysis of calcination of gypsum wallboard. A reliable and accurate method of obtaining calcinations depth surveys with a new portable hand-held tool was developed. The utility of calcination depth surveys was evaluated with respect to assessing the compartment fire dynamics and fire origin. The impact of water spray on the accuracy of calcination depth measurements was also assessed. The persistence of ignitable liquid residue was evaluated in a controlled, small-scale environment and in full-scale enclosure fires to identify optimum sampling locations within a given scenario.</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. After reviewing this module , the student should be able to:2. • List the different kinds of ignition and fuel3. • Describe the various kinds of fuel and flames4. • Understand the concept of flammability, and describe how different aspects of flammability are measured5. • Discuss the means by which fire patterns are generated, and know which patterns are significant in origin determination6. • Understand the critical role of oxygen in fully involved compartment fires7. • Describe the three different kinds of fire models and their usefulness in fire investigation
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>Liquid fuel spill/pool fires represent the initiating fire hazard in many applications ranging from accidents at industrial plants using combustible liquids to residential arson fires involving flammable fuels.</p> <p>Given the relevancy of such fires and broad range of potential scenarios, it is important to understand how liquid fuel fires develop and how to accurately calculate the fire size based on knowledge of the fuel type, quantity and the surface it is poured on. In addition, it is important to quantitatively correlate fire size to spill area and burn patterns. [5h]</p> <p>This understanding will afford the fire protection and investigation communities the ability to properly assess the potential hazards and forensically evaluate damage from fuel spill fire events. [6h]</p>

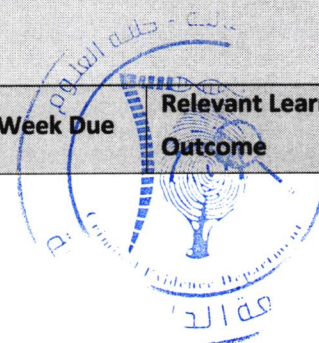


	<p>The purpose of this study is to expand the fundamental understanding of liquid fuel fire dynamics, establish the utility of forensic tools, and validate empirically-based correlations used to model spill fire scenarios.[11h]</p> <p>A multitude of small-, intermediate-, and large-scale noncombustible liquid spill and fuel spill fire tests were conducted using a total of six different liquid fuels and eight different substrates.[10h]</p> <p>The results of these tests provide insight into the differences in fire dynamics between pool and spill fires (i.e., thick and thin fuel depths), provide a methodology by which liquid fuel fire events can be assessed, and identify forensic indicators that can be used in the analysis of liquid fuel fire events. [10h]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The objectives of this research were achieved by way of small- and full-scale experiments combined with analytical testing and empirical-based analyses. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3.4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية			
	Time/Number	Weight (Marks)	Week Due Relevant Learning Outcome



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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	History of solid fuels
Week 2	Protection, Present scenario and consumption pattern of fuels
Week 3	Fundamental definitions, properties and various measurements
Week 4	Coal classification, composition and basis
Week 5	Different types of coal combustion techniques
Week 6	Coal gasification
Week 7	Exploration of crude petroleum
Week 8	Refinery equipment's
Week 9	Gaseous fuel
Week 10	Water gas, hydrogen gas
Week 11	Acetylene, other fuel gas
Week 12	Combustion technology, fundamentals of thermochemistry
Week 13	Mechanism and kinetics of combustion,
Week 14	Mechanism and kinetics of Combustion furnaces, Internal combustion engine
Week 15	Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly tut. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to Agilent VEE and PSPICE

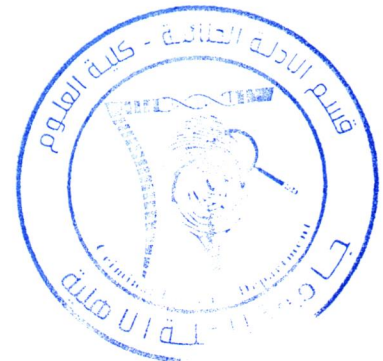


Week 2	Lab 2: Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 3	Lab 3: First-Order Transient Responses
Week 4	Lab 4: Second-Order Transient Responses
Week 5	Lab 5: Frequency Response of RC Circuits
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Filters

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Fire Dynamics and Forensic Analysis of Liquid Fuel Fires Paperback – August 9, 2012	Yes
Recommended Texts	Forensic Analysis of Fire Debris and Explosives	No
Websites	https://www.ojp.gov/pdffiles1/nij/grants/238704.pdf	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (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	Fundamental of Forensic Science		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	FOR1106			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	Semester of Delivery	1	
Administering Department	FOR	College	Science	
Module Leader	M.Sc. Adel Sabah Abduljaleel		e-mail	Adel85hind89@gmail.com
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	M.Sc.	
Module Tutor	M.Sc. Adel Sabah Abduljaleel		e-mail	Adel85hind89@gmail.com
Peer Reviewer Name	M.Sc. Adel Sabah Abduljaleel		e-mail	Adel85hind89@gmail.com
Scientific Committee Approval Date	10/12/2025	Version Number	1.0	

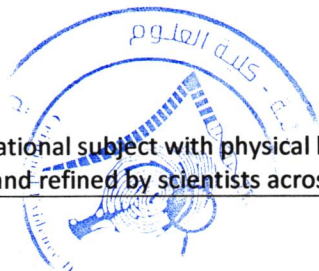
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<p>1-Forensic Science is basically the application of science to law. 2-Forensic science is used to investigate criminal cases involving a victim, such as assault, robbery, kidnapping; rape, murder and civil cases such as forgeries, fraud, or negligence.</p>
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>On successfully completing the module students will be able to:</p> <ol style="list-style-type: none">1. Show understanding of the role of physical forensic methods in forensic practice.2. Demonstrate knowledge of the primary evidence types, their transfer and persistence.3. Demonstrate understanding of emerging developments in forensic science.4. Consider a broad range of forensic techniques to determine the examination strategy, sequencing, and probative value.5. Demonstrate understanding of quality standards in respect of scene examination.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>A synopsis of the curriculum [15h]</p> <p>This module will develop students' appreciation of a range of physical techniques applied to the collection of bulk and trace evidence materials in forensic science. Students will look more deeply into aspects of physical evidence and will deal with the practical issues of item examination, legal process and general procedure associated with the collection and submission of a range of forensically-relevant materials.</p> <p>Inclusive module design [15h]</p> <p>The Division recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.</p> <p>The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:</p> <ol style="list-style-type: none">a) Accessible resources and curriculumb) Learning, teaching and assessment methods <p>Internationalisation [14h]</p> <p>Forensic science is an inherently international subject with physical laws discovered and techniques developed and refined by scientists across</p>

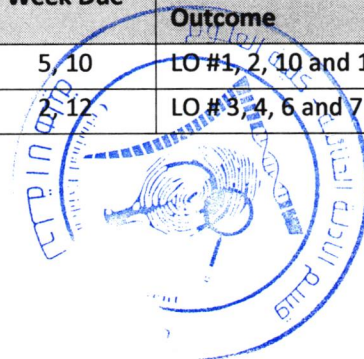


	<p>the globe. It is facilitated by well-defined conventions in terminology and mathematical modelling which allow complex concepts to be communicated across language barriers. This module introduces students to the work of these pioneers, as well as the fundamentals behind it and so enables them to interact with this community. Where possible, the reading list has been chosen, in part, to demonstrate the diversity of backgrounds of forensic scientists working in the field.</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.</p>

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	56	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	44	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

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



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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	مفهوم واهمية علم الادلة الجنائية
Week 2	التطور التاريخي للادلة الجنائية
Week 3	انواع الادلة الجنائية
Week 4	الادلة الجنائية والاثار المادية
Week 5	اهمية البصمة الواثية في تحقيق الشخصية
Week 6	البصمات واستخدام تقنية النانو في الكشف عنها
Week 7	لطب العدلي الشرعي
Week 8	الكيمياء الجنائية
Week 9	السموم الجنائية
Week 10	تزوير الجوازات وتزييف الاوراق النقدية
Week 11	فحص اثار الاسلحة والادوات
Week 12	مسرح الجريمة واجراءات المحافظة عليه
Week 13	الاداة الجنائية الالكترونية
Week 14	الهندسة الجنائية
Week 15	امتحان
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: انواع الادلة الجنائية
Week 2	Lab 2: اهمية البصمة الواثية في تحقيق الشخصية



Week 3	البصمات واستخدام تقنية النانو في الكشف عنها: Lab 3
Week 4	الكيمياء الجنائية: Lab 4
Week 5	السموم الجنائية: Lab 5
Week 6	تزيوير الجوازات وتزييف الاوراق النقدية: Lab 6
Week 7	مسرح الجريمة واجراءات المحافظة عليه: Lab 7

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Forensic Science: A very short introduction by Jim Fraser	no
Recommended Texts	Blood, Powder, and Residue (A rare behind-the-scenes look at the work of forensic scientists) by Beth A. Bechky	No
Websites	https://www.nap.edu/read/21772/chapter/7	

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.



نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English language	Module Delivery	
Module Type	Suplement	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	UNI 2-101		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	<u>1</u>		
Administering Department	FOR	College	Science
Module Leader	Ammar Hassan Obayes	e-mail	ammар_hassan@hilla-unc.edu.iq
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	Master of Arts
Module Tutor	Non	e-mail
Peer Reviewer Name	Non	e-mail
Review Committee Approval	16/3/2026	Version Number	



Relation With Other Modules

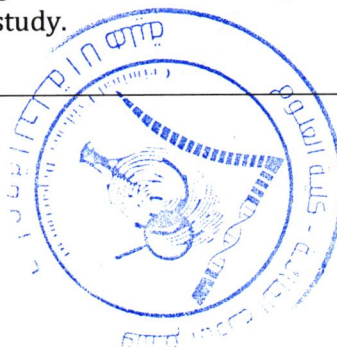
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none">1. Enable students to learn how to read and pronounce words correctly, and training them to identify the organization of ideas through selected passages.2. Training the students on different strategies of speaking skill.3. Enable the student to identify word building, meanings, and sentence structure.4. Enable students to understand the structures of writing and what is required to write a good academic essay.5. Enable students to identify their weaknesses and strengths by assess their tests.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1. Explanation and clarification of the lecture using the whiteboard and the use of video lectures.2. Making a group discussion during the lectures to discuss topics that require reflection and analysis.3. Presenting a set of critical thinking questions during the lectures such as what, how, when and why for specific topics.4. Giving students homework that requires explanations and solving through reasonable methods.5. Giving students homework that requires explanations in causal ways.
Indicative Contents المحتويات الإرشادية	<ul style="list-style-type: none">- The skills goals special to the course.- Ability to independently investigate and resolve an original problem .- Preparation for later advanced study.



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

Student Workload (SWL)

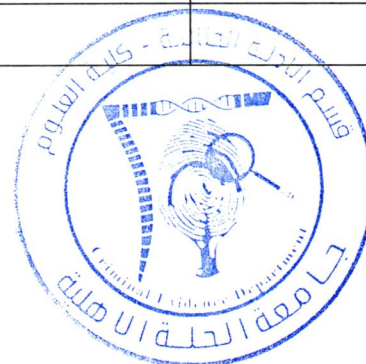
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation

تقييم المادة الدراسية

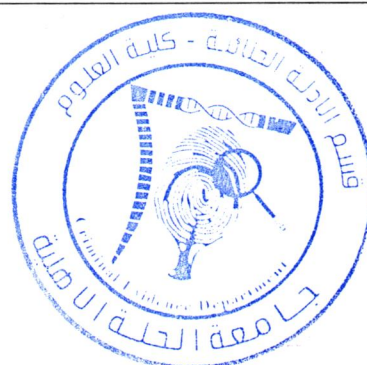
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #3,4, 8 and 9
	Assignments	2	10% (10)	2, 12	LO # 2,11and 12
	Report	1	5% (5)	7	
	Seminar	1	15% (15)	13	
Summative assessment	Midterm Exam	1 hr	10% (10)	14	LO # 1-13
	Final Exam	3hr	50% (50)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



Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Reading/ the passage "The world of IT"
Week 2	Reading/ the passage "Information on the Net"
Week 3	Reading/ the passage "Science and our world"
Week 4	Vocabulary Development/ word-building (2)
Week 5	Writing an academic essay
Week 6	How to write a formal email
Week 7	Reading - Identify the organization of ideas
Week 8	Speaking// practicing conversation
Week 9	Developing strategies of speaking skill
Week 10	Improving communicative skills
Week 11	Forms and functions of clauses in English
Week 12	Sentence structure
Week 13	A review of what was studied in the previous lectures with questions and discussion of typical answers
Week 14	Mid Exam
Week 15	Final Exam



Delivery Plan (Weekly Lab. Syllabus)

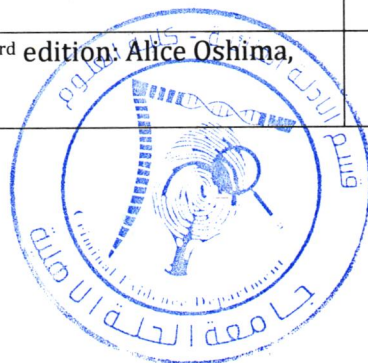
المنهاج الاسبوعي للمختبر

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

Learning and Teaching Resources

مصادر التعلم والتدريس

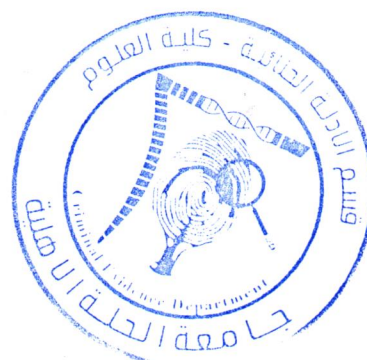
	Text	Available in the Library?
Required Texts	Headway- Academic skill-level 2: Sarah Philpot,2011	
Recommended Texts	Preparation course for the TOEFL TEST- Deborah Phillips, 2003.	
Recommended Texts	Headway- Upper intermediate- 3rd Edition: Liz and John Soars, 2005	
Recommended Texts	Introduction to Academic Writing – 3 rd edition: Alice Oshima, Ann Hogue	



APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F - Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB 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	Calculus 1		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	KUCA 006		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	
Administering Department	Forensic	College	Science
Module Leader	Fatima Mohammed Dhidan	e-mail	fatima.mohammed@hilla-unc.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	M.s.c
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Fatima Mohamed	e-mail	fatima.mohammed@hilla-unc.edu.iq
Scientific Committee Approval Date	16/12/2025	Version Number	1.0

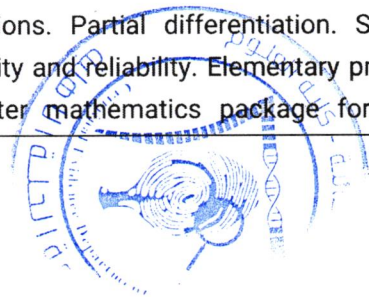
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none">1. This module gives students an understanding of the principles of calculus can be give improve in forensic program.2. To provide the student with the ability to apply introductory level mathematics to skills that deals with forensic science.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>On completion of this module, students are expected to be able to:</p> <ol style="list-style-type: none">1. Apply vectors, complex numbers and trigonometry to problems in mathematical program that could be used in forensics science.2. Apply matrix techniques and elementary probability theory to problems in forensic.3. Apply rules of calculus to solve forensic problems including differential equations.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p><u>Part A - primary information of calculus science</u></p> <p>On completion of this module, students are expected to be able to:</p> <ol style="list-style-type: none">1 Trigonometry: Trigonometric identities and their application in solving trigonometric equations. [5h]2 The combination of simple waveform using standard trigonometric formulae. Vectors: Simple vector algebra.[5h]3 The scalar and vector products. Complex numbers: The arithmetic of complex numbers. Rectangular and polar forms. [12h] <p>Section 2</p> <ol style="list-style-type: none">1 The Argand diagram. De Moivre's theorem and complex roots. Differential Calculus: Differentiation of elementary functions.2 The rules of differentiation: chain rule, product rule, quotient rule. Integral Calculus: Integration of elementary functions. Partial fractions.[12h] <p>Application to problems in forensic . Matrices: Simple matrix algebra. Determinants. Applications to the solution of simultaneous linear equations. Differential Equations: Solution of 1st order ODEs by separation of variables and integration factor methods.[12h]</p> <p>Power series for elementary functions. Partial differentiation. Statistics: Simple descriptive statistics. Probability and reliability. Elementary probability distributions. The use of a computer mathematics package for solving</p>



	<p>problems in engineering mathematics. [10 hrs]</p> <p><u>Part B - essential and details</u></p> <p>Fundamentals</p> <p>To publicist the key learning resources that are important or essential for those studying the module or to demonstrate the academic foundation of the module. To provide a short list, indicating the type and level of information that students are expected to consult. Further, in depth, guidance and a comprehensive list of reading and resources should be made available . [15 hrs]</p> <p>Normally a short list of books or articles in reference format (author, date, title, and publisher). If a core text or textbook exists, this should be indicated. Lists should be indicative, rather than a full bibliography.. [7 hrs]</p> <p>To identify where the whole module may be taken by students at a distance, either by arrangement with the Programme Director or because it forms part of a programme that is wholly or partly delivered virtually. If distance learning is possible, a second module descriptor will need to be created, to identify learning, teaching, assessment and contact methods/support for students in the distance learning version of the module.. [15 hrs]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>To describe the learning activities of the students and the teaching methods of the staff. Effective module design should result in a varied range of active learning experiences for students, including learning activities which are 'research-like'.</p> <p>Activities should, of course, motivate and encourage deep learning (reflection on wider meanings, rather than superficial memorisation of information). They should also be varied and flexible enough to accommodate different learning styles and orientations, and allow for inclusivity of students from different backgrounds and with different kinds of learning abilities.</p> <p>Learning activities therefore need to include reference to independent, interdependent (peer-supported) and online activities, as well as participation in different kinds of taught class.</p>



Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	51	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	49	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

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

Delivery Plan (Weekly Syllabus)	
المناهج الاسبوعي النظري	
	Material Covered
Week 1	The rate of change of function
Week 2	Coordinates
Week 3	Increments
Week 4	Equation and slop of straight line
Week 5	Functions and graphs
Week 6	Ways of combining functions
Week 7	Exam
Week 8	Derivative of a functions, velocity and acceleration



Week 9	Limits
Week 10	The continuity
Week 11	Infinity functions
Week 12	Derivative of algebraic functions, polynomial, rational and inverse functions
Week 13	Composite functions and their derivative, Chain rule
Week 14	Roll's theorem
Week 15	Exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly tutorial. Syllabus)	
المنهاج الاسبوعي	
	Material Covered
Week 1-2	The rate of change of function Coordinates
Week 3-4	Increments Equation and slop of straight line
Week 5-6	Functions and graphs Ways of combining functions
Week 7-8	Prepering\Exam
Week 9-10	Derivative of a functions, velocity and acceleration Limits The continuity
Week 11-12	Infinity functions Derivative of algebraic functions, polynomial, rational and inverse functions Composite functions and their derivative, Chain rule Roll's theorem
Week 13-15	Prepering\Exam

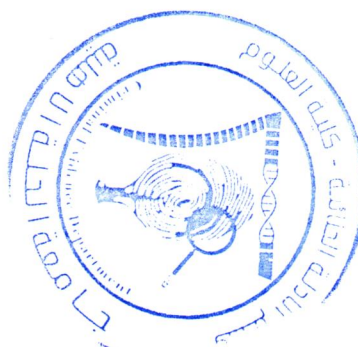
Learning and Teaching Resources	
مصادر التعلم والتدريس	
	Available in the
Text	



		Library?
Required Texts	STROUD, K.A. AND BOOTH, D.J., 2020, Engineering Mathematics, 8th ed, Red Globe Press.	Yes
Recommended Texts	SINGH, K., 2011, Engineering Mathematics Through Applications, 2nd ed, Palgrave.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب (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	Legal regulation of the criminal expert		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR009		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	ندى استبرق فاضل الزير	e-mail	Nada.est@hilla-unc.edu.iq
Module Leader's Acad. Title	MSC	Module Leader's Qualification	.
Module Tutor	ندى استبرق فاضل الزير	e-mail	Nada.est@hilla-unc.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/3/2026	Version Number	1.0

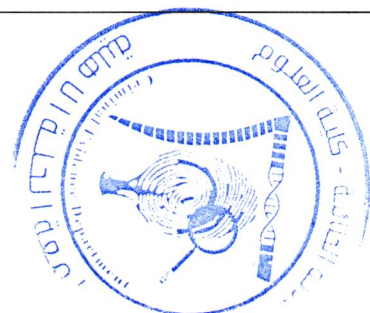
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	تزويد الطالب بالمعلومات القانونية المتعلقة بعمله الفني بيان النصوص القانونية التي تنظم عمل خبير الادلة الجنائية تبصير الطالب بالمسؤولية الجزائية والمدنية والانضباطية التي تترتب على مخالفته للقانون
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	اعداد خبير جنائي قادر على فهم وتطبيق القانون بالشكل السليم اعداد ملاكات متكلمة من الناحية القانونية والفنية
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	اتباع الاساليب القانونية المقارنة مع التشريعات العراقية وذلك من خلال التطبيقات العملية والمناقشات فضلا عن العصف الذهني

Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	102	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		



Module Evaluation

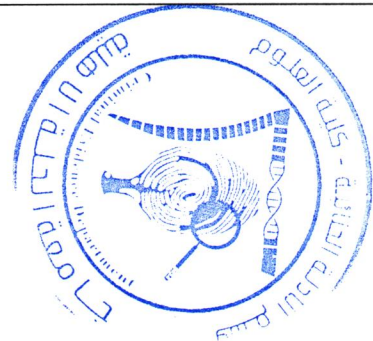
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	التعريف بالخبير
Week 2	خصائص الخبرة الجنائية
Week 3	شروط الخبير الجنائي
Week 4	العلاقة بين الخبير والشهادة
Week 5	الطبيعة القانونية لعمل الخبير الجنائي
Week 6	المسؤولية القانونية للخبير الجنائي
Week 7	المسؤولية المدنية للخبير
Week 8	المسؤولية الانضباطية
Week 9	علاقة الخبرة بالبحث والتحقيق
Week 10	كيفية انتداب الخبرة
Week 11	الحماية القانونية للخبير
Week 12	القيمة القانونية للخبرة
Week 13	الامتحان الفصلي
Week 14	تطبيقات عملية للخبير في مجال المهارات المعرفية للخبير الجنائي
Week 15	تطبيقات عملية للخبير في مجال المهارات المعرفية للخبير الجنائي
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

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

Learning and Teaching Resources

مصادر التعلم والتدريس

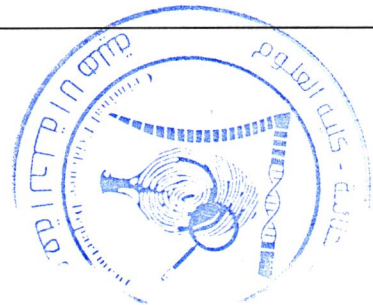
	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme

مخطط الدرجات

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

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

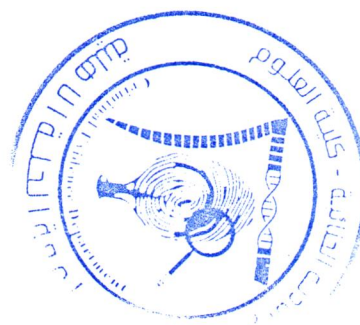


MODULE DESCRIPTION FORM

نموذج وصف مادة اللغة العربية

Module Information			
معلومات المادة الدراسية			
Module Title	اللغة العربية		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	MPH12011		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	
Administering Department	MPH	College	SCI
Module Leader	م.د. عياد حمزه شهيد لطيف	e-mail	Gan162gna@gmail.com
Module Leader's Acad. Title	lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	None	e-mail	none
Scientific Committee Approval Date	1/3/2026	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

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1- تعلم العربية السليمة كونها اللغة الرسمية للوطن 2- اللغة جوهر الهوية ورمزها 3- اللغة تختلف عن اللهجة، فالأولى عالمية والثانية محلية 4- توظيف المفردات الفصيحة في الصياغة الأكاديمية للبحوث العلمية مترجمة بنظيرها الفصح 5- التمكن من كتابة البحوث والمقالات ذات المحتوى العلمي الصرف باللغة العربية الفصحى 6- تجنب الأخطاء الشائعة في الكتابة واختيار المفردات الصائبة 7- إثراء الخزين المعجمي لدى الطالب للمساعدة في بناء كاريزما التواصل الكلامي 8- الاطلاع على نماذج من الأدب العربي شعراً ونثراً لما لها من أساس في بناء الجانب الثقافي المتنوع لدى الطالب 9- كتابة الأعداد بتمكن فضلاً عن الكتابة الصحيحة في صياغة الطلبات الرسمية 10- التعرف على الدرس الصوتي في اللغة العربية وعلاقته بعلم الفيزياء
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>عند انتهاء مفردات المادة الدراسية يكون الطالب متمكناً من:</p> <ol style="list-style-type: none"> 1- الكتابة السليمة خالية من الأخطاء 2- التعبير العلمي الأكاديمي الصحيح 3- استعمال المفردات الفصيحة توظيفاً ونطقاً 4- إضافة رصيد لغوي ومفاهيم جديدة لمعاني الكلمات 5- القدرة على المخاطبة الإدارية في الطلبات الرسمية
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<ol style="list-style-type: none"> 1- لكل تخصص لغته التي ترمي إليه، وتدل عليه، ولغة كل علم تنبع من طبيعة كنهه، فالأختصاصات العلمية لها معجم خاص بها يعبر عن جوهرها ومضمونها، فضلاً عن المصطلحات الخاصة بها التي تدل عليها، وكذلك المصادر العلمية التي يُرجع إليها، والحال كما في اللغة الأدبية؛ فهي أيضاً لها مفرداتها وطريقة كتابتها والتعبير بها وعبرها، ومصطلحاتها الخاصة بها التي تعبر عنها وتدل عليها. [4 hrs] 2- المعاجم - بشكل عام - على اختلاف موارها تمثل محتوى وكفها لمفردات أي لغة مقترنة بالشرح والتفسير لتلك المفردات، أما المعاجم في اللغة العربية فهي واسعة ومتنوعة؛ فهناك معاجم غير معجمات اللغة، فالعربية فيها أول معجم جغرافي في التاريخ، معجم البلدان لـ (ياقوت الحموي)، فضلاً عن المعاجم المتخصصة في جزئية معينة، مثل معجم البلاغة، فضلاً عن تنوع المدارس في تأليف المعاجم وتبويبها وطريقة البحث عن المفردة فيها. [4 hrs] 3- العلامة تدرج ضمن حقل علم السيمياء أو السيميائية، وعلامات الترقيم من المواضيع المهمة بالأخص في البحوث الأكاديمية، بغض النظر عن التخصص، سواء كان التخصص علمياً، أو إنسانياً، من هنا تأتي أهمية علامات الترقيم؛ فلها دور سيميائي، ودلالي مهم في الكتابة النصية وفي بناء النص، فهي تُسهّل الفهم على القارئ، وتوضح المعنى المقصود، عبر القراءة والتلفظ بالعبار، فعلامات الترقيم خير وسيلة لإظهار الصراحة وبيان الوضوح في الكلام المكتوب؛ لأنه يدل الناظر إلى تلك العلامات الاصطلاحية وعلى العلاقات التي تربط أجزاء الكلام بعضها ببعض بوجه عام، وأجزاء كل جملة بوجه خاص، وكما يقول المتخصصون عن علامات الترقيم: بأن الوقف ليس مستقلاً، وإنما هو من توابع التفكير، أي: إن السكتات المقررة بمقادير مضبوطة في مواضع معينة، ليست مجرد محطات تنفسية بالمعنى البيولوجي للتنفس، وإنما في المقام الأول وقات معنوية. فالعبارة من الناحية اللغوية ليست بأن يستعيد القارئ نفسه، بل المهم أن يتعاطى القارئ السكت بمقادير معلومة، وفي مواضع محددة من السلسلة المنطوقة رفعا للبس، وصوناً لمقصد المتكلم عن التبديل، فهذه العلامات تجسيد لمشاعر الكاتب وقصدياته فيها [6 hrs] 4- الأسلوب الكتابي يمثل بضمه للكاتب الذي يصدر عنه، ويتجسد عند القارئ، ولكل كاتب أسلوبه الخاص به،

ينعكس ذلك في نتاج الكاتب، وللأسلوب أنواع مختلفة، فهناك الأسلوب العلمي، والأسلوب الأدبي، والأسلوب الخطابي، ولكل نوع خصائصه، وقالبه الذي يتكون فيه. [4 hrs]

5- الأحداث التي تقتزن بالزمن تمثل الأفعال، والأفعال في العربية تناظر الأزمنة في اللغات الأخرى من جانب معين، أو من جزئية معينة، والعربية تحتوي على عدد كبير من الجذور، جنور الأفعال، ففي العربية أفعال ثلاثية ورباعية وخماسية وسداسية، والفعل جزء مهم من اجزاء الكلام الأساسية، فضلا عن الجانب الصوتي في هذه الجذور، فعلم (الأصوات الفيزيائي) من العلوم المهمة في اللغة العربية، إذ يُعد علم (الأصوات الأكوستيكي) علما أقرب إلى الفيزياء منه للعلوم الإنسانية، وهو يمثل المرحلة الوسطى بين علم الأصوات النطقي وعلم الأصوات السمعي، وعلاقته مع اللغة العربية انطلاقا من البذرة الأولى في دراسة مخارج الحروف فيزيائيا وداليا. [4 hrs]

6- الكلام عن الشعر لا ينتهي؛ فالشعر تجسيد لمشاعر الفرد المتمثل بالشاعر، والمشاعر الجمعية للإنسانية جمعاء، فهو موجود لدى كل بني البشر، والشعر العربي القديم كان بمثابة نشيدا وطنيا لهم، يمثل هويتهم الثقافية الرصينة ويمثل سجلا لتاريخهم وأجدادهم، على اختلاف اغراضه من غزل ومدح وثناء وغير ذلك، وبحور الشعر في الشعر العربي مبنية بناء صوتيا فريدا عبر التفعيلات التي وضعها الخليل بن أحمد الفراهيدي ووضع فلسفتها وكنهها وقواعدها، والشعر رصيد ثقافي، وحجة في الكلام، وزينة ورونقا يضاف على شخصية الفرد والمجتمع بشكل عام. [4 hrs]

7- الهزمة من المواضيع الاجرائية لدى الفرد الكاتب، بغض النظر عن التخصص، فيحتاجها كل فرد ناطق كاتب بها، فلها قواعدها التي تصدر عنها، وتُكتب بالشكل السليم منها، فموضوع رسم الهزمة من الاهمية بمكان؛ فرسمها يغير من المعنى، فلا بد من وضعها ورسمها بالشكل الصحيح لتوخي التعبير الدقيق عن المعنى المقصود. [4 hrs]

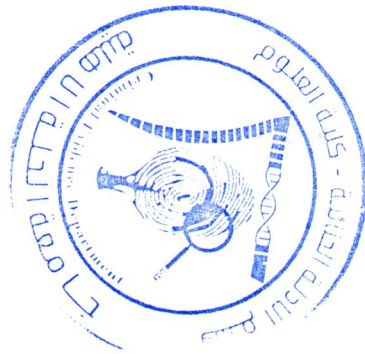
8- المفاعيل في اللغة العربية، من الموضوعات المهمة في درس اللغة العربية، ولا بد لكل دارس من معرفتها بشكل عام، وهناك آراء مختلفة بين البلاغيين والنحويين عن المفاعيل، هل ان تلك المفعولات فضلة، أم أنها ركن رئيس في الجملة؛ فالنحويون يرون انها فضلة في الجملة، وأن ركني الجملة الأساسيين هما: الفعل، والفاعل، وأما البلاغيون فيرون: إنها ليست فضلة، وإنما هي ركن أساسي في الجملة؛ لأن كل كلمة تُدَل على معنى في الجملة، وإذا ما دلت على معنى فلا تُعد فضلة، وإنما هي ركن رئيس في الجملة وبنائها، ورأي البلاغيين أقرب للصواب من رأي النحويين، فدراستها في العربية لغير المختصين مما يضيف لهم خزينا تعبيريا متنوعا. [4 hrs]

9- من المعروف وجود ظاهرة الأخطاء اللغوية نحوية كانت أو املانية أو اسلوبية، عند متحدثي اللغة العربية وبالأخص عند غير المختصين بها ولا سيما من يعملون في مجال الاعلام، وهذه الظاهرة اتسعت وزاد انتشارها في العصر الحديث، فأخذت هذه الأخطاء تغزو مجالات الدراسة جميعها، من ذلك موضوع (العدد) في اللغة العربية، فنجد كثيراً من الطلبة وكذلك من عامة الناس يستعملون الأرقام بدلاً من كتابتها بالحروف؛ وذلك لتجنب الوقوع في الخطأ وهذا دليل ضعف لا يليق بالدارس أياً كان تخصصه؛ ولهذا فموضوع العدد وقواعد كتابته في اللغة العربية موضوع لا غنى عنه في زمن لغة الأرقام. [4 hrs]

10- هناك مجموعة من الالفاظ متداولة بشكل كبير، تُستعمل في غير مكانها الصحيح، وفي غير ما وضعت له وهذه الالفاظ تُستعمل في المخاطبات الرسمية الادارية بالمعنى غير الصحيح او الدقيق الذي تحمله تلك الالفاظ من معاني، فضلا عن أهمية توخي الدقة في هذه الالفاظ توظيفا لها في الطلبات الرسمية التي تُقدم على اختلاف موضوعاتها، فالطلب لا بد من ان يكون مختصرا مركزا، يعطي الفكرة الموجزة، والهدف المقصود منه ازاء صاحب الادارة الذي تُقدم اليه الطلبات، وما في ذلك من ايجابيات العمل في التخفيف واختصار للجهد والوقت في تنفيذ المهام الادارية الموكلة الافراد على اختلاف درجاتهم. [4 hrs]

Indicative Contents

المحتويات الإرشادية



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies صناعة شخصية متكاملة للطلاب الجامعي من حيث التخصص العلمي الدقيق والتخصص المساند

Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	42	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation

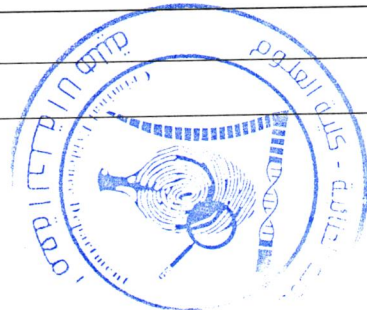
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	الفرق بين اللغة العلمية واللغة الادبية
Week 2	المعاجم العربية وانواعها
Week 3	علامات الترقيم
Week 4	الاسلوب
Week 5	الأفعال - أنواعها وتقسيماتها
Week 6	نماذج مختارة من الشعر العربي القديم - الشعر الاسلامي - الشعر الاموي
Week 7	Mid-term Exam
Week 8	رسم الهمزة / همزة الوصل وهمزة القطع



Week 9	كتابة الهمزة بداية الكلام وآخره
Week 10	المبتدأ والخبر – مهارات كتابة العدد
Week 11	المفاعيل / المفعول به – المفعول لأجله
Week 12	المفعول معه – المفعول فيه – المفعول المطلق
Week 13	النثر العربي
Week 14	الأخطاء الشائعة – طريقة كتابة الطلبات الرسمية
Week 15	نماذج مختارة من الشعر العباسي والشعر الحديث
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

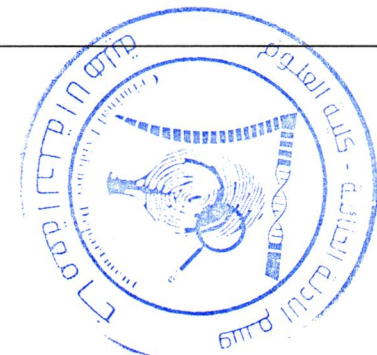
	Texts	Available in the Library?
Required Texts	كتاب: العربية الجامعية لغير المتخصصين / د. عبده الراجحي كتاب: النحو التطبيقي / د. عبده الراجحي	كلا
Recommended Texts	الصرف التطبيقي / د. عبده الراجحي النحو الوافي / عباس حسن تاريخ الادب العربي / شوقي ضيف	كلا
Websites	شبكة الفصيح لعلوم اللغة العربية	

Grading Scheme

مخطط الدرجات

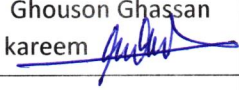
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	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	General Biology 2		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR1217		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	FOR	College	Science
Module Leader	Ghouson Ghassan kareem	e-mail	Ghusun_ghassan@hilla-unc.edu.iq
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSC
Module Tutor	Ghouson Ghassan kareem	e-mail	E-mail
Peer Reviewer Name	Ghouson Ghassan kareem 	e-mail	Ghusun_ghassan@hilla-unc.edu.iq
Scientific Committee Approval Date	14/012/2025	Version Number	1.0

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



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

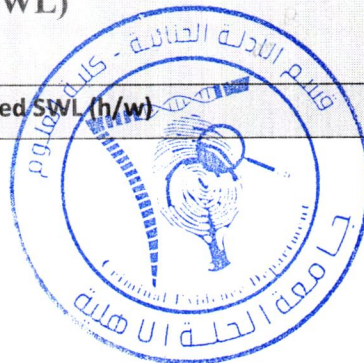
<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. This module gives students an understanding of the science and techniques that underpin basic biology.2. Topics covered will include identification of3. Material covered in lectures will be illustrated through lab work.4. Highlight in most theories that was deal with biology system for live.5. Our aim is to provide students with opportunities to develop academically, professionally and personally: to broaden their ambitions, extend their attitudes, challenge their assumptions, and assist towards unlocking their potential to succeed in their studies and future lives.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Explain the life and Human , laboratory and legal requirements of producing DNA profiles.2. Summarize what is meant by a basic biology science.3. Perform interpretation of DNA profiling results, including calculation of likelihood ratios.4. Critically evaluate DNA profiling results citing significant research in the field.5. Show an understanding of the scientific basis and utilisation of techniques of bone anthropometry and pathology in the study of human tissue.6. Identify the tissues and organs in the human body
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A - primary information of biology science</u></p> <p>On completion of this module, students are expected to be able to:</p> <ol style="list-style-type: none">1 Demonstrate knowledge of the basic Cell Reproduction , Genetics , Biotechnology, Tissue & Organs in the Human Body , Immunity and Disease2 Demonstrate knowledge of the structure and function of the four principal tissue types.3 Demonstrate an understanding of Mendelian genetic inheritance. [15 hrs]4 Demonstrate understanding of the role of variation in Ecology. [15 hrs]5 Evolution of the Genetics , Biotechnology. [16 h]6 Demonstrate an understanding type of Tissue & Organs in the Human Body7 Demonstrate an understanding Immunity and Disease. [15 hrs] <p><u>Part B - essential and details</u></p> <p>Fundamentals</p> <p>To publicise the key learning resources that are important or essential for those</p>



	<p>studying the module or to demonstrate the academic foundation of the module. To provide a short list, indicating the type and level of information that students are expected to consult. Further, in depth, guidance and a comprehensive list of reading and resources should be made available . [15 hrs]</p> <p>Normally a short list of books or articles in reference format (author, date, title, and publisher). If a core text or textbook exists, this should be indicated. Lists should be indicative, rather than a full bibliography.. [7 hrs]</p> <p>To identify where the whole module may be taken by students at a distance, either by arrangement with the Programme Director or because it forms part of a programme that is wholly or partly delivered virtually. If distance learning is possible, a second module descriptor will need to be created, to identify learning, teaching, assessment and contact methods/support for students in the distance learning version of the module.. [15 hrs]</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>To describe the learning activities of the students and the teaching methods of the staff. Effective module design should result in a varied range of active learning experiences for students, including learning activities which are ‘research-like’. Activities should, of course, motivate and encourage deep learning (reflection on wider meanings, rather than superficial memorisation of information). They should also be varied and flexible enough to accommodate different learning styles and orientations, and allow for inclusivity of students from different backgrounds and with different kinds of learning abilities.</p> <p>Learning activities therefore need to include reference to independent, interdependent (peer- supported) and online activities, as well as participation in different kinds of taught class.</p>

Student Workload (SWL) الحمل الدراسي للطلاب			
Structured SWL (h/sem)	86	Structured SWL (h/w)	7



الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Cell Reproduction
Week 2	Introduction to Genetics
Week 3	Chromosomes and Human Genetics
Week 4	DNA , Genes and Biotechnology
Week 5	Principles of Ecology
Week 6	Exam Mid-term Exam
Week 7	Tissue , Part 1
Week 8	Tissue , Part 2
Week 9	Organs and Organs System
Week 10	Circulation – Heart and Blood Vessels and Blood
Week 11	Respiration , Digestion System , Urinary System
Week 12	Muscular , Skeleton System



Week 13	Nervous System , Sensory System
Week 14	Immunity and Disease
Week 15	EXAM
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

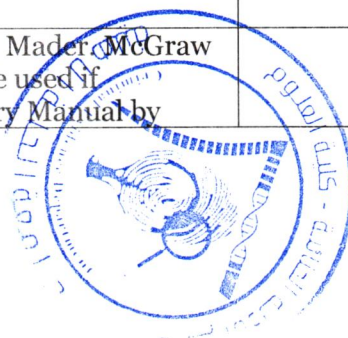
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Identify the Cell Reproduction
Week 2	Lab 2: Identify the Genetics
Week 3	Lab 3: Identify the Chromosomes and Human Genetics
Week 4	Lab 4: Identify the DNA , Genes and Biotechnology
Week 5	Lab 5: Identify the Principles of Ecology
Week 6	Lab 6: EXAM
Week 7	Lab 7: Microscopic observation of Tissues part 1
Week 8	Lab 8 : Microscopic observation of Tissues part 2
Week 9	Lab 9 : Identify the Organs and Organs System and understand their functions
Week 10	Lab 10: Identify the Circulation – Heart and Blood Vessels and Blood and type of Blood and understand their functions
Week 11	Lab 11: Identify the Respiration , Digestion System , Urinary System and understand their functions
Week 12	Lab 12: Identify the Muscular , Skeleton System and understand their functions
Week 13	Lab 13: Identify the Nervous System , Sensory System and understand their functions
Week 14	Lab 14: Identify type of Disease relationship with immunity
Week 15	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	FReece J, Urry L, Cain M, Wasserman S, Minorsky P, Jackson, R. (Eds) 9th Global Edition, 2011, Campbell Biology, Pearson Benjamin Cummings.	Yes
Recommended Texts	Human Biology, 12th edition by Sylvia Mader, McGraw Hill Publishing Co., 2008. (10th can be used if necessary) Human Biology, Laboratory Manual by	No



	Sylvia Mader, 12 th edition, McGraw Hill, 2008. Optional Texts: Anatomy & Physiology Coloring Workbook & Study Guide, 9 th edition by Elaine Marieb	
Websites	https://www.aqa.org.uk/subjects/science/as-and-a-level/biology-7401-7402/subject-content	

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Organic Chemistry		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FOR1228		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	
Administering Department	FORN	College	SC
Module Leader	Aqeel Alaa Hussein	e-mail	aqeelalaa@science.uoqasim.edu.iq
Module Leader's Acad. Title	Asst. Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/09/2023	Version Number	1.0

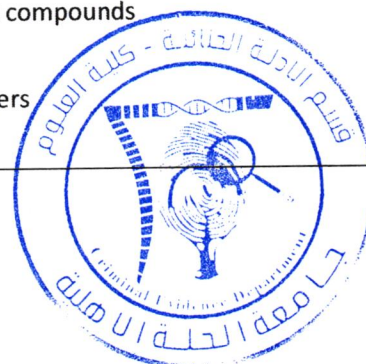
Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	General Chemistry	Semester	1
Co-requisites module	None	Semester	



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

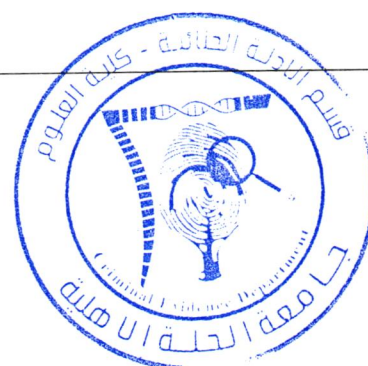
<p>Module Aims أهداف المادة الدراسية</p>	<p>1. On completion of this module students should be able to:</p> <ol style="list-style-type: none">1.Understand the structures of organic molecules and recognize and name examples of them.2.Predict the properties and reactions of a molecule from its structure.3.Discuss the reactions of common organic compounds.4.Design the synthesis of a simple molecule from available starting materials.5.Understand the molecular basis of life.6.Safely perform a simple chemical synthesis in the laboratory. <p>2. 7.Understand the structures of organic molecules and recognize and name examples of them.</p> <ol style="list-style-type: none">8.Predict the properties and reactions of a molecule from its structure.9.Discuss the reactions of common organic compounds.10.Safely perform a simple chemical synthesis in the laboratory.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>On successfully completing the module you will be able to...</p> <ol style="list-style-type: none">1. Evaluate and choose appropriate reducing or oxidising agents for selective functional group transformations2. Design protecting group strategies to enable chemoselective transformations to be carried out3. Perform retrosynthetic analysis on complex organic molecules4. Devise multi-step syntheses of complex organic molecules5. Discuss the mechanisms of important organic transformations6. Explain how synthetic procedures can be modified to allow the simultaneous generation of a wide range of structurally related compounds and address environmental issues
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Module content: First part;[43h]</p> <ul style="list-style-type: none">• identify and draw organic compounds• provide the IUPAC name for some organic compounds• classify alcohols• explain the properties of alcohols and ethers



	<p>Second part:[43]</p> <ul style="list-style-type: none"> • Some organic chemistry fundamentals, basic concepts and terminology • Naming and classification of organic compounds • Basic reactions of alcohols, ethers and carbohydrates • Natural polysaccharides: modification and utilization in various applications • Group work (including presentation and evaluation of the other group works)
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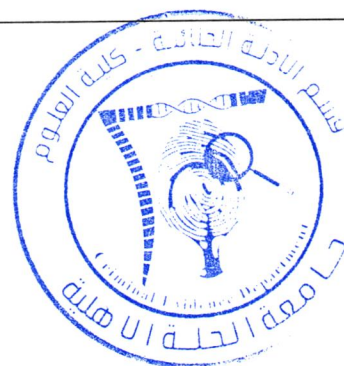
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>This module builds upon the entry-level knowledge of students covered in A-Level Chemistry. It introduces basic chemical concepts within the context of Organic Chemistry, and starts to develop the more specialist knowledge of organic reactions required for later modules. The latter will be further developed in the Organic Chemistry 2 module.</p> <p>The module will include:</p> <ol style="list-style-type: none"> 1. General concepts in organic chemistry for predicting atom and electronic structure of molecules, stability, reactivity and molecular properties (bond strength, pH etc.) 2. General concepts and mechanisms underlying organic reactions and ability to draw the mechanism for a given reaction or to give reagents required for an organic reaction.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	89	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		



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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	An Introduction to Organic Chemistry
Week 2	Nomenclature of hydrocarbon
Week 3	Nomenclature of hydrocarbon and stereochemistry
Week 4	Hydrocarbons
Week 5	Unsaturated Hydrocarbons
Week 6	Exam
Week 7	Aromatic Hydrocarbons
Week 8	Organic Halogen Compound
Week 9	Alcohols and Phenols
Week 10	Ethers, Aldehydes and ketones
Week 11	Cyclic compound
Week 12	Carboxyl acid, Esters and Sulfonic acid
Week 13	Nitro compounds, Amines and Amides
Week 14	Exam
Week 15	Review Week
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Material Safety Data Sheet (MSDS)
Week 2	Lab 2: Determination of melting points
Week 3	Lab 3: Determination of boiling points
Week 4	Lab 4: Recrystallization
Week 5	Lab 5: Density of Some Organic Compounds
Week 6	Lab 6: exam
Week 7	Lab 7: Identification tests of Alkanes, Alkenes, Alkynes and Aromatic
Week 8	Lab 8: Identification tests of primary, secondary and ternary alcohol
Week 9	Lab 9: Identification tests of Ketones and Aldehydes
Week 10	Lab 10: Identification tests of flash point
Week 11	Lab 11: exam theoretical
Week 12	Lab 12: exam practical
Week 13	Application by identification organic compound
Week 14	Application by identification organic compound
Week 15	Reiew before final exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	J. Clayden, N. Greeves and S. Warren, Organic Chemistry (Second Edition), Oxford University Press, 2012, ISBN 0-19-927029-5 (essential core text)	Yes
Recommended Texts	C. Willis and M. Wills, Organic Synthesis, (Oxford Chemistry Primer 31), Oxford University Press, 1995, ISBN 0-19-855791-4	No
Websites	ELE page: https://vle.exeter.ac.uk/course/view.php?id=9255	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
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(50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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