نموذج وصف البرنامج الأكاديمي





اسم الجامعة: جامعة كلكامش

الكلية/ المعهد: كلية العلوم

القسم العلمي: الفيزياء الطبية

اسم البرنامج الأكاديمي او المهني: بكالوريوس

اسم الشهادة النهائية: بكالوريوس في الفيزياء الطبية

النظام الدراسي: بولونيا

تاريخ اعداد الوصف:

التوقيع :

اسم رئيس القسم: ا.م.د. محمد عبد الرضا حسين

التاريخ :

التوقيع :

اسم المعاون العلمي:

التاريخ :

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي:

التاريخ

التوقيع



مصادقة السيد العميد

أ.د. علي هادي عبيد



١. رؤية البرنامج

التميز في إعداد كوادر علمية متخصصة في الفيزياء الطبية تمتلك القدرة على توظيف المعرفة العلمية والتقنيات الحديثة في خدمة القطاع الصحي والبحثي.

٢. رسالة البرنامج

تقديم برنامج أكاديمي متكامل يجمع بين الجوانب النظرية والتطبيقية في الفيزياء الطبية، لإعداد خريجين مؤهلين علمياً ومهنياً قادرين على مواكبة التطور العلمي وتلبية احتياجات سوق العمل

٣. اهداف البرنامج

- إعداد كوادر متخصصة في الفيزياء الطبية والتطبيقات الصحية .
- تدريب الطلبة على الأجهزة الطبية وقياس الإشعاع .
- دعم البحث العلمي التطبيقي في المجال الطبي .
- ربط القسم بالمؤسسات الصحية والمستشفيات .
- تأهيل الخريجين للعمل في القطاعين العام والخاص .

٤. الاعتماد البرامجي

معتمد من قبل وزارة التعليم العالي والبحث العلمي في جمهورية العراق

٥. المؤثرات الخارجية الأخرى

لا يوجد

٦. هيكلية البرنامج

هيكل البرنامج	عدد المقررات	وحدة دراسية	النسبة المئوية	ملاحظات *
متطلبات المؤسسة	٨	١٤	9.52%	اساسي
متطلبات الكلية	8	٢٤	16.33%	اساسي
متطلبات القسم	44	١٠٩	74.15%	اساسي + اختياري

التدريب الصيفي	**اختياري**			
أخرى				

* ممكن ان تتضمن الملاحظات فيما اذا كان المقرر أساسي او اختياري .

٧. وصف البرنامج

السنة / المستوى	رمز المقرر أو المساق	اسم المقرر أو المساق	الساعات المعتمدة	
			نظري	عملي
اولى		الكهربائية	٢	٢
اولى		كيمياء عام	٣	٢
اولى		احياء عام	٣	٢
اولى		ديمقراطية وحقوق الانسان	٢	٠
اولى		اساسيات علم الحاسوب	١	٢
اولى		الرياضيات	٤	٠
اولى		الميكانيك	٣	٢
اولى		المغناطيسية	٣	٢
اولى		برمجة	٣	٢
اولى		لغة عربية	٢	٠
اولى		لغة انكليزية	٢	٠
اولى		فيزياء عام	٣	٢
الثانية		جرائم نظام البعث في العراق	٢	٠
الثانية		معادلات تفاضلية	٣	٠
الثانية		بصريات	٣	٢
الثانية		فيزياء ذرية	٣	٢
الثانية		كهرومغناطيسية	٣	٠
الثانية		ثرموداينمك	٣	٢
الثانية		علم المواد	٤	٠
الثانية		فيزياء الليزر	٣	٢
الثانية		لغة عربية 2	٢	٠
الثانية		لغة انكليزية2	٢	٠
الثانية		تطبيقات علم الحاسوب	١	٢
الثانية		تصوير طبي	٣	٢

الثانية		فيزياء طبية 1	٢	٢
الثالثة		فيزياء موجية	٣	٠
الثالثة		متحسسات بايولوجية	٣	٠
الثالثة		ميكانيك الكم	٤	٠
الثالثة		تقنيات العلاج الطبيعي	٣	٠
الثالثة		الكترونيات رقمية	٢	٢
الثالثة		فسلجة	٣	٢
الثالثة		منهجية البحث العلمي	١	٠

٨. مخرجات التعلم المتوقعة للبرنامج

المعرفة

سيكون الخريجون قادرين على إظهار مفهوم متوازن حول كيفية تطور المعرفة العلمية، بما في ذلك التطور التاريخي للنظريات والقوانين الأساسية.

القيم

•المسؤولية المهنية
القدرة على تحمل المسؤولية في العمل الطبي والبحثي مع مراعاة سلامة المرضى والمجتمع.

•العمل بروح الفريق
تنمية التعاون مع الزملاء والأطباء والكوادر الصحية لتحقيق أهداف مشتركة.

•احترام أخلاقيات المهنة
الالتزام بمبادئ حقوق الإنسان، سرية المعلومات، واحترام المريض.

•خدمة المجتمع
المشاركة في المبادرات والأنشطة التي تسهم في تحسين المستوى الصحي للمجتمع.

•التعلم المستمر
تبني عقلية منفتحة للتطوير الذاتي ومواكبة التطورات العلمية والتكنولوجية

٩. استراتيجيات التعليم والتعلم

- استراتيجية العصف الذهني
- استراتيجية العمل الجماعي
- استراتيجية المناقشة
- -استراتيجية دراسة حالة
- -استراتيجية التدريس الاستقرائي
- -استراتيجية الخرائط المفاهيمية
- -استراتيجية التعلم الذاتي

- -استراتيجية التعليم الإلكتروني
- استراتيجية المذاكرة
- استراتيجية الاستنتاج
- استراتيجية الممارسة المتباعدة
- استراتيجية التبديل بين الأفكار
- -استراتيجية تقديم الأمثلة

١٠. طرائق التقييم

أ- الاختبارات اليومية
ب- الاختبارات الفصلية
ج- التقارير الأسبوعية
د- الحضور اليومي والمشاركة
ه- اختبارات عملية في المستشفيات
و- بحث التخرج

١١. الهيئة التدريسية

أعضاء هيئة التدريس

الرتبة العلمية	التخصص		المتطلبات/المهارات الخاصة (ان وجدت)		اعداد الهيئة التدريسية	
	عام	خاص			ملاك	محاضر
مدرس	١				١	
مدرس مساعد	٢				٢	

التطوير المهني
توجيه أعضاء هيئة التدريس الجدد
-عمل سمنرات وعروض تقديمية أسبوعيا لتطوير مهارة أعضاء التدريس في القاء المحاضرات او البحوث العلمية وطرق التواصل الفعال مع الحضور. -حثهم على المشاركة في دورات ومؤتمرات علمية وغيرها من الأنشطة العلمية والورش الاكاديمية. - دعمهم للمشاركة في المؤتمرات الخارجية واعمال خدمة المجتمع المختلفة..
التطوير المهني لأعضاء هيئة التدريس
- الاسهام في إقامة مؤتمر الكلية الدولي السنوي خلال عرض أعمالهم أو الاشراف على تنظيمه. – تحسين الأداء الشخصي للكادر التدريسي وتعزيز تقدمهم الوظيف ي لتحافظ على كفاءة الصيادلة وترقية معارفهم ومهاراتهم ضمن نظام الرعاية الصحية بالإضافة الى دورهم في العمل الاكاديمي. - المشاركة الفاعلة بإقامة وحضور أنشطة التطوير المهني المستمر مثل ورش العمل والندوات والندوات او تنظيم ملتقى علمي او محاض رات توعوية.

١٢. **معيار القبول**
القبول مركزي من وزارة التعليم العالي والبحث العلمي بالاعتماد على درجات الطالب في الصف السادس الاعدادي .كما توجد قنوات متعددة للقبول وتشمل القبول العام، قناة المتميزين، ذوي الشهداء.

١٣. **أهم مصادر المعلومات عن البرنامج**
١. المصادر المشتركة للمناهج بالتوأمة مع الجامعة المستنصرية ٢. المكتبة العلمية في الكلية ٣. الأنترنت ٤. البحوث العلمية ٥. الموقع الالكتروني لوزارة التعليم العالي والبحث العلمي.

١٤. خطة تطوير البرنامج
أ- تحديث وتطوير المناهج حسب متطلبات سوق العمل من خلال عمل اللجان المختصة بتحديث المناهج ب- عمل استبيانات بصورة دورية للجهات المستفيدة من الطلبة والمجتمع وارباب العمل في المستشفيات حول رسالة واهداف الكلية والمناهج الدراسية وطرق التعليم والتقييم.

ج- الانفتاح على المجتمع وتقديم النشاطات التطوعية

د- توجيه بحوث الطلبة نحو المشاريع التطبيقية والتي تعالج مشاكل المجتمع

مخطط مهارات البرنامج																	
			مخرجات التعلم المطلوبة من البرنامج														
السنة / المستوى	رمز المقرر	اسم المقرر	اساسي أم اختياري	المعرفة						المهارات						القيم			
				أ١	أ٢	أ٣	أ٤	ب١	ب٢	ب٣	ب٤	ج١	ج٢	ج٣	ج٤
اولى		الكهربائية	اساسي												
اولى		كيمياء عام	اساسي												
اولى		احياء عام	اساسي												
اولى		ديمقراطية وحقوق الانسان	اساسي												
اولى		اساسيات علم الحاسوب	اساسي												
اولى		الرياضيات	اساسي												
اولى		الميكانيك	اساسي												
اولى		المغناطيسية	اساسي												
اولى		برمجة	اساسي												

اولى		لغة عربية	اساسي												
اولى		لغة انكليزية	اساسي												
اولى		فيزياء عام	اساسي												
الثانية		جرائم نظام البعث في العراق	اساسي												
الثانية		معادلات تفاضلية	اساسي												
الثانية		بصريات	اساسي												
الثانية		فيزياء ذرية	اساسي												
الثانية		كهرومغناطيسية	اساسي												
الثانية		ثرموداينمك	اساسي												
الثانية		علم المواد	اساسي												
الثانية		فيزياء الليزر	اساسي												
الثانية		لغة عربية 2	اساسي												
الثانية		لغة انكليزية2	اساسي												
الثانية		تطبيقات علم الحاسوب	اساسي												

الثانية		تصوير طبي	اساسي											
الثانية		فيزياء طبية 1	اساسي											
الثالثة		متحسسات بايولوجية	اساسي											
الثالثة		ميكانيك الكم	اساسي											
الثالثة		تقنيات العلاج الطبيعي	اساسي											
الثالثة		الكترونيات رقمية	اساسي											
الثالثة		فسلجة	اساسي											
الثالثة		منهجية البحث العلمي	اساسي											

- **يرجى وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرنامج الخاضعة للتقييم**

نموذج وصف المقرر

المستوى الاول (الفصل الاول)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electricity**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MPH11304**				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	1st	
Administering Department	Type Dept . code		**College**	science	
Module Leader	Ali Hadi Abdalmuniem		**e-mail**	ali.h.abdulmuneim@gu.edu.iq	
Module Leader's Acad. Title	Ali hadi		**Module Leader's Qualification**		
Module Tutor	----------		**e-mail**	ali.h.abdulmuneim@gu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	ali.h.abdulmuneim@gu.edu.iq	
Scientific Committee Approval Date	25\7\2025		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Electric charge and using charge in addition coulmb law will be stated and its expression derived and used in calculations along with this electric field dipole
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Plane distribution derive the expression for calculating capacitance explaine the physical basis of ohms law and used ohms law
Indicative Contents المحتويات الإرشادية	**Part A. The layers of the Atmosphere (8 hr.)** **Part B. Atmospheric parameters (2 hr.)** **Part C. Variation of the Seasons (4 hr.)** The main strategy that will be adopted in delivering these modules 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

	Part D. Atmospheric moisture (6 hr) **Part E. Cloud formation (2 hr)** **Part F. Air pollution (4 hr)** **Part G. Human Classifications (2 hr)**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Plane distribution derive the expression for calculating capacitance explaine the physical basis of ohms law and used ohms law

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	75	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Electric charge, Charge is conserved, Electric Charge and the Structure of Matter
Week 2	Conductors, Insulators, and Induced Charges, Charging an object
Week 3	Coulomb's law.
Week 4	Electric field, A point charge in an electric field, A dipole in an electric field.

Week 5	Flux of the electric field, Gauss's law.
Week 6	Gauss's law and Coulomb law, An insulated conductor.
Week 7	Electric potential, Potential and the electric field, A group of point charges.
Week 8	Potential due to a dipole, Electric potential energy.
Week 9	Capacitance, Calculating Capacitance.
Week 10	Energy storage in an electric field, Parallel plate capacitor with dielectric.
Week 11	Dielectrics and atomic view.
Week 12	Current and current density, Ohm's law-A microscopic view.
Week 13	Electromotive force, Calculating the current.
Week 14	Potential difference.
Week 15	Multi loop circuits.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction, Measurement, graph drawing and lab safity
Week 2	Lab 1: Introduction, Measurement, graph drawing and lab safity
Week 3	Lab 2: Verification of Ohm's Low
Week 4	Lab 2: Verification of Ohm's Low
Week 5	Lab 3: A graphical Method for Calculating Ammeter Resistance
Week 6	Lab 3: A graphical Method for Calculating Ammeter Resistance
Week 7	TEST
Week 8	Lab 4: Calculating the Value of Unknown Resistance
Week 9	Lab 4: Calculating the Value of Unknown Resistance
Week 10	Lab 5: The Ratio Between Lamp Power Dissipation and Resistance Power Dissipation
Week 11	Lab 5: The Ratio Between Lamp Power Dissipation and Resistance Power Dissipation
Week 12	TEST

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Physics/John D. Cutnell & Kenneth W Johnson—9th ed.	
Recommended Texts	Fundamentals of Physics Extended 9th-HQ-Ha	
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

نموذج وصف المقرر

المستوى الاول (الفصل الاول)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**General Biology**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MPH11302**				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MBO		**College**	Science	
Module Leader	Asst. Lect.Abdulrahman aeed salih		**e-mail**	Abdulrahmanaeed89@gmail.com	
Module Leader's Acad. Title	Asst. Lecturer		**Module Leader's Qualification**	Asst. Lect.	
Module Tutor	----------		**e-mail**	----------	

Peer Reviewer Name	Dr. Saad Hussein	**e-mail**	saad_2019@ku.edu.iq
Scientific Committee Approval Date	9/2024	**Version Number**	ق/أ.م/ 805

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Give a general understanding of the types, divisions, and components of organisms. 2. Understand the effect of organisms on humans and their environments. 3. Gain practical knowledge of the classification of organisms 4. Complete the reports, seminars, and presentations to develop the student's skills.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the most important differences between animals, plants, and microorganisms 2. Identify the processes of evolution in the organisms and the theories of their emergence 3. Statement the divisions of the plant kingdom and the animal kingdom 4. Identify the types of animal and plant tissues 5. Identifying the interdependent relationship between animals and plants.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>Part A - Life and science</u> Life - Characteristics of life, The scientific method, Development of the scientific attitude, Biology today, Biology as a science. [22 hrs.] <u>Part B - Different forms of life</u> The kingdoms of organisms - The animals, plants, and Monera, Their structure, Components, Functions, and Classification. [10 hrs.] Revision problem classes. [6hrs.] <u>Part C - Chemistry of life</u> Matter and elements - How elements differ, Structure of matter, Chemical bonding, Ionic bonding, Inorganic compounds, and Organic compounds. [22 hrs.] <u>Part D – Cells in Life</u>

	Cells - The cell theory, The cell and its parts, Prokaryotic, and eukaryotic cells, Compare and contrast between plant and animal cells, The cell membrane/Wall, The cell membrane/Wall structure and function, and The transport of materials across the membrane. [19 hrs.] <u>Part D – Cell life cycle</u> Cell Cycle - Control of cycle, Interphase (Gap I phase, Synthesis phase, and Gap II phase), Mitosis (Prophase, Metaphase, Anaphase, and Telophase), Meiosis. [21 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Many strategies will be used in this module to encourage students to learn such as participation in the exercises, seminars, lab experiments, and workshops, as well as using educational videos and electronic to refine and expand their critical thinking skills. This will be achieved through classes, interactive tutorials, and by considering types of simple experiments involving some interesting sampling activities for the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراس المنتظم للطالب اسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	100	**Unstructured SWL (h/w)** الحمل الدراس الغ ي منتظم للطالب اسبوعيا	6.66
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	5% (5)	4, 8	LO #1, 2, 3, 5,6, and 7
	Assignments	2	10% (10)	5, 10	LO # 2, 4, 6, 8, and 9
	Projects / Lab.	1	20% (20)	Continuous	
	Report	1	5% (5)	13	LO # 12
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-6
	Final Exam	2 hr	50% (50)	15	All
Total assessment			100% (100 Marks)	Total assessment	100% (100 Marks)

Delivery Plan (Weekly Syllabus) المنهاج االسبوعي النظري	
	Material Covered
Week 1	Introduction to the life science
Week 2	The characteristics of life
Week 3	The characteristics of organisms
Week 4	The kingdom of organisms
Week 5	Classification of Animal and plant Kingdoms
Week 6	Kingdom Monera
Week 7	Mid-term Exam
Week 8	Chemistry of life (1)
Week 9	Chemistry of life (2)
Week	Cell structure and function (1)

10	
Week 11	Cell structure and function (2)
Week 12	Cell life cycle
Week 13	Mitosis
Week 14	Meiosis
Week 15	**Final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1,2	Lab 1,2: Microscope and cell structure
Week 3,4	Lab 3,4: Cell behavior
Week 5,6	Lab 5,6: Respiration
Week 7,8	Lab 7,8: Photosynthesis
Week 9,10	Lab 9,10: Mitosis
Week 11,12	Lab 11,12: Meiosis
Week 13,14	Lab 13,14: Gametogenesis
Week 15	Lab 15: A preparatory week before the final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Biology: Concepts and Connections; Campbell, Reece, Taylor, and Simon; Latest edition 2018	No
Recommended Texts	The Science of Biology by Sadava, Hillis, Heller and Berenbaum 9th ed. 2011	No
Websites	https://www.coursera.org/browse/biology-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

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**General Chemistry**			**Module Delivery**	
Module Type	**Basic**			☐ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MPH11303**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MBO		**College**	SC	
Module Leader	Asmiel Sadeq Khashan		**e-mail**	asmiel.s.khashan@gu.edu.iq	
Module Leader's Acad. Title	Dr.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	---------		**e-mail**	---------	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	9/2024		**Version Number**	805 /ق.أ.م	

Relation with other Modules العلاقة مع المادة الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية أهداف

Module Aims أهداف المادة الدراسية	1-To develop skills and understanding of different types of elements through the application of techniques. 2. To understand metals, physical and chemical properties. 3. This course deals with the basic concept of general chemistry. 4. To understand periodic table and distribution elements on it
Module Learning Outcomes مخرجات التعليم للمادة الدراسية	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.
Indicative Contents المحتويات الارشادية	Indicative content includes the following. 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. [14 hrs] 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. [13 hrs] Periodic table with highlight in the orientations of molecules to show different and variance in properties. [12hrs] . Revision problem classes [6hrs] Part B-Analogue chemistry 3-Fundamentals Electron configuration, oxidation number, The ratios of forming molecules. [15hrs] Components and active site. [8 hrs] Identification of general properties [7 hrs]

Learning and Teaching Strategies
استراتيجية التعليم والتعلم

Strategies	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. 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.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراس المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراس الغير منتظم للطالب خلال الفصل	100	**Unstructured SWL (h/w)** الحمل الدراسي الغير منتظم للطالب اسبوعيا	6.66
Total SWL (h/sem) الحمل الدراسي الكل 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	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	Cells, Part I
Week 7	Exam Mid-term Exam
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 heredity
Week 15	**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 1
Week 15	Final 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 الذرجاث

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** – Excellent	أمتياز	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 المقرر

المستوى الاول (الفصل الاول)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Magnetism**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MPH12306				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2nd	
Administering Department	Type Dept. Code		**College**	science	
Module Leader	Dr. Ali hadi		**e-mail**	ali.h.abdulmuneim@gu.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	ali.h.abdulmuneim@gu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	ali.h.abdulmuneim@gu.edu.iq	
Scientific Committee Approval Date	25\7\2025		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This unit is designed to provide experiences for the student that will lead him/her into an understanding of the similarities and differences among electric, magnetic, and gravitational fields. The inquiry projects used here will support instruction in electrical circuits, gravitational dynamics, and electromagnetic phenomena of all sorts. The students will know how to demonstrate magnetic field and interaction using magnets, and current-carrying wire, show the influence of the magnetic field by a moving charge using a oscilloscope, and
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define the terms: magnetic field, magnetic flux and flux density 2. Explain and draw magnetic field lines associated with current carrying conductors, and explain the principles of instruments based in it; 3. Explain the principles of an oscilloscope; 4. State, explain and use Faraday's law of electromagnetic induction; 5. Derive expression for force on a current-carrying wire in a magnetic field 6. Relate the force (F) to velocity (v), charge (q) and magnetic field (B) How electromotive force induced
Indicative Contents المحتويات الإرشادية	**Part A. The layers of the Atmosphere (8 hr.)** **Part B. Atmospheric parameters (2 hr.)** **Part C. Variation of the Seasons (4 hr.)** Indicative content includes the following.

	Part D. Atmospheric moisture (6 hr) **Part E. Cloud formation (2 hr)** **Part F. Air pollution (4 hr)** **Part G. Human Classifications (2 hr)**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	75	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	➢ The magnetic field 1- Magnetism The magnetic field
Week 2	➢ Magnetic field lines Magnetic flux
Week 3	➢ Calculating the magnetic field.
Week 4	➢ Motion of charged particles in magnetic fields
Week 5	➢ The Torque on a Current-Carrying Coil.

Week 6	Ampere's law➢ Applications of ampere's law
Week 7	➢ Magnetic field of current 1- Sources of magnetic field Magnetic field of moving charge.
Week 8	➢ Magnetic field of current element ➢ Biot- Savart law.
Week 9	➢ Magnetic field of a long straight conductor 1- Force between parallel Conductors
Week 10	➢ Magnetic field of circular loop.
Week 11	➢ Induced electromotive force Faraday's law.
Week 12	➢ Induced electric fields Lens's law.
Week 13	➢ Inductance 1- Mutual and self-inductance Energy in an inductor
Week 14	➢ R-L circuit
Week 15	➢ L-C circuit

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Biot -Savart Law, the relation between current and magnetic field
Week 2	Lab 2: Biot -Savart Law, the relation between magnetic field and distance.
Week 3	Lab 3: Magnetic Field Induced by a Current-Carrying Wire
Week 4	Lab 4: Current Balance
Week 5	Lab 5: The Transformer
Week 6	Lab 6: Capacitive Reactance
Week 7	Lab 7: Inductor in AC circuits

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Physics/John D. Cutnell & Kenneth W. Johnson 9th ed.	

Recommended Texts	Fundamentals of Physics Extended 9th-HQ-Halliday	
Websites	https://engineeringinterviewquestions.com/electrostatic-electrical-engineering-multiple-choice-questions-and-answers/	

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

نموذج وصف المقرر

المستوى الاول (الفصل الاول)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics**			**Module Delivery**	
Module Type	**Basic**			☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**MPH11301**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	**1**		**Semester of Delivery**		**1**
Administering Department	**MPH**		**College**	**Medical Physics**	
Module Leader	**Dr. Mohammed A. Hussien**		**e-mail**	**Mohammed.a.hussien@gu.edu.iq**	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**		**Ph.D.**
Module Tutor			**e-mail**	**Mohammed.a.hussien@gu.edu.iq**	
Peer Reviewer Name			**e-mail**	**Mohammed.a.hussien@gu.edu.iq**	
Scientific Committee Approval Date	**9/2024**		**Version Number**	**1**	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**1. Identify the properties of mathematical functions and their opposites.** **2. Familiarity with the properties of polynomials, exponential and logarithmic functions, trigonometric functions and their opposites.** **3. Recognize the concept of differential functions and their relationship to speed and the rate of their change with time (acceleration).** **4. Identify the integration of the functions and methods of Integration.** **5. Knowledge of applications of integral in geometry.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. **Recognize properties of functions and their inverses.** 2. **Recall and use properties of polynomials, rational functions, exponential, logarithmic, trigonometric and inverse-trigonometric functions.** 3. **Apply differentiation procedures to solve related rates and extreme value problems.** 4. **To understand the term integration.** 5. **To distinguish between definite and indefinite integration.** 6. **To describe the area and volume by means of integration.**

Indicative Contents المحتويات الإرشادية	**Indicative content includes the following:** **PART (A): DERIVATIVES** **1. The mathematical functions (Limits, Logarithmic, Geometrical, Exponentials)** **2. To know the methods of differentiation of functions accurately.** **3. To know the relationship between the function term and its differential.** **4. The applications of Derivatives (Slope, Velocity, Acceleration, Maxima and Minima points) (18 h)** **PART(B): POWER SERIES** **1. Finding the power series of mathematical functions.** **2. Logarithmic, Geometrical and Exponentials power series. (4 h)** **PART (C): INTEGRATION** **1. Methodes of direct integration of the functions.** **2. Integration by Substitution** **3. To extract the area and volume through integration** **4. To use integration methods to find complex integrals. (8 h)**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**. Following up the scientific development of mathematics by reviewing modern curricula.** **• Follow-up and development of academic courses and compare them with other universities.** **• Using the latest teaching aids to motivate the student to learn and understand.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**67**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**58**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	10% (10)		
	Assignments	5	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 h	10% (10)		
	Final Exam	3 h	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Laws of Derivatives
Week 2	The Limits

Week 3	**L' Hopital rule**
Week 4	**Derivative of exponential and logarithmic Functions**
Week 5	**Derivative of power and Geometric Functions**
Week 6	**The Line equation and Slope**
Week 7	**Derivative Application: Curve Slope**
Week 8	**Derivative Application: velocity and acceleration**
Week 9	**Derivative Application: Maxima and Minima**
Week 10	**power series-1**
Week 11	**power series-2**
Week 12	**Direct Integrations**
Week 13	**Integration by Substitution**
Week 14	**Integration Applications**
Week 15	**Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Thomas & Finney "Calculus and Analytic Geometry" (2005), 11th edition, Addison Wesley.**	
Recommended Texts	**Howard Anton,IrI Bivens & Stephen Davis "Calculus"(2009),9thedition,John Wiley & Sons,N.C**	
Websites	**Various lectures and lecture notes on the internet.**	

Grading Scheme
مخطط الدرجات

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

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

نموذج وصف المقرر

المستوى الاول (الفصل الثاني)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mechanics**			**Module Delivery**	
Module Type	**Core**			☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**MPH12305**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	**1**		**Semester of Delivery**	**2**	
Administering Department	**MPH**		**College**	**Medical Physics**	
Module Leader	**Mohammed A. Hussien**		**e-mail**	**Mohammed.a.hussien@gu.edu.iq**	
Module Leader's Acad. Title	**Assistant Professor**		**Module Leader's Qualification**	**Ph.D.**	
Module Tutor			**e-mail**	**Mohammed.a.hussien@gu.edu.iq**	
Peer Reviewer Name			**e-mail**	**Mohammed.a.hussien@gu.edu.iq**	
Scientific Committee Approval Date	**9/2024**		**Version Number**	**1**	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	**The Aims of the Cours** **6. Providing the student with cognitive skills about the basic concepts of mechanics physics.** **7. Introducing students to the most important principles of mechanics and properties of matter.** **8. Introduce the student to the mechanical properties and methods of their application.** **9. Providing the student with knowledge of how to calculate the laws of dynamics and forces.** **10. Introducing the student to mechanical systems**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1- Enabling students to obtain knowledge and understanding of the topics of body mechanics and movement.** **2- Enable students to obtain knowledge and understanding of body mechanics applications and conduct various practical experiments.** **3- Enable students to obtain knowledge and understanding of the use of basic physical laws in mechanics and their use in solving problems.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A Mechanic Introduction** **Fundamental of Mechanics Concept and analysis, Scale Conversion and analysis of coordinates [15 hrs]** **Vectors analysis and Types of Vectors Product Operations. [10 hrs] Motion Types and Acceleration in. [15 hrs]** **Free Fall in mechanics, Fundamental of acceleration and Constant Acceleration [15 hrs], Free Fall in mechanics, Fundamental of acceleration and Constant Acceleration. [15 hrs]** **The Projection, Range of the Projection and mechanic coordinates of Projection [15 hrs]** **, Circular Motion in Two Dimension and Circular motion in three dimension [15hrs] The Force, Types of force, Analysis of the forces in coordinates and Distance [15hrs]** **The Work, Mechanical analysis of work, Energy, Types of Energy and Conservation Energy [15 hrs]** **Part B-[10hrs], The General of Gravitation Law and Application in Mechanical problem [15hrs] Introduction of Biomechanics and Types of biomechanics in human body [10 hrs.] Prosthetic limb mechanics and Types of Prosthetic limb**

	in human body [15hrs] **Solve Applications in Prosthetic limb [10hrs]**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1- Method of giving lectures, explanation and clarification.** **2- Student groups.** **3- E-learning within the university.** **4- Application of education.** **5- Experiential learning.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**60**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**115**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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**	**5**	**10% (10)**		
	Assignments	**5**	**10% (10)**		
	Projects / Lab.	**1**	**10% (10)**		
	Report	**1**	**10% (10)**		
Summative assessment	**Midterm Exam**	**2 h**	**10% (10)**		
	Final Exam	**3 h**	**50% (50)**		
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Material Covered	
Week 1	**Introduction, Fundamental of mechanic and Matter Properties**
Week 2	**Scale Systems, System scale conversion and Concept mechanical coordinates.**
Week 3	**The Vectors, Type vectors, Operations vectors and Physics laws of Operation**
Week 4	**The Motion, Type of motion, Concept mechanics in Straight Line.**
Week 5	**Free Fall in mechanics, Fundamental of acceleration and Constant Acceleration**
Week 6	**The Motion in coordinates, Motion in Two Dimension and Motion in three dimensions**
Week 7	**The Projection, Range of the Projection and mechanic coordinates of Projection**
Week 8	**Circular Motion in Two Dimension and Circular motion in three dimensions**
Week 9	**The Force, Types of force, Analysis of the forces in coordinates and Distance**
Week 10	**The Work, Mechanical analysis of work, Energy, Types of Energy and Conservation Energy**
Week 11	**Newton law: Application in Mechanical problem and the Friction Forces**
Week 12	**The General of Gravitation Law and Application in Mechanical problem**
Week 13	**Prosthetic limb mechanics and Types of Prosthetic limb in human body**
Week 14	**Prosthetic limb mechanics and Types of Prosthetic limb in human body**
Week 15	**Exam**

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

Week 1	Mathematical Application
Week 2	Mathematical Application
Week 3	Lab 1: Introduction graphical drawing
Week 4	Lab 1: Introduction graphical drawing
Week 5	Mathematical Application
Week 6	Mathematical Application
Week 7	Lab 2: Simple Pendulum
Week 8	exam-1Lab 2: Simple Pendulum
Week 9	Mathematical Application
Week 10	Mathematical Application
Week 11	Lab 3: Hook's Law
Week 12	Lab 3: Hook's Law
Week 13	Mathematical Application
Week 14	Mathematical Application
Week 15	exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Advanced Mechanics by Eric Poisson, 2008, 164	
Recommended Texts	Booch A. Gorege, Mechanics and Material Properties 16th Edition ,1,Welly, 2020.	
Websites	Various lectures and lecture notes on the internet.	

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

نموذج وصف المقرر

المستوى الاول (الفصل الاول)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ديمقراطية وحقوق انسان			**Module Delivery**	
Module Type	**BASIC**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**SCI123**				
ECTS Credits	**2**				
SWL (hr/sem)	١٥				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MBO		**College**	SC	
Module Leader	Dr. Zainb Kadim		**e-mail**		
Module Leader's Acad. Title	LECTURE		**Module Leader's Qualification**	Phd	
Module Tutor	DR.MUHAMMED ABDULRIDHA		**e-mail**		
Peer Reviewer Name	DR.ALI HADI		**e-mail**		
Scientific Committee Approval Date	1/11/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	من أجل تثقيف الجيل الجديد حول الديمقراطية، لما لهذه المفاهيم من أهمية كبيره.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	معرفة الحقائق حول مفهوم الديمقراطية وكيفية تطبيق هذا المفهوم على A١: أ- المعرفة والفهم مستوى الدول ب-يقارن الطالب ويحلل واقعه ١ ب- B:ب- المهارات الخاصة بالموضوع باله وكيفية تطبيق هذه المفاهيم دوليا لمعرفة نقاط الضعف وسلبيات التطبيق الديمقراطية في بلاده.
Indicative Contents المحتويات الإرشادية	أن يستخدم الطالب هذه المفاهيم الخاصة بالمادة التي تعلمها في حياته العملية والمهنية.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	الإستراتيجية الرئيسية التي سيتم اعتمادها في تقديم هذا المقرر ، في تشجيع مشاركة الطلاب في التمارين وفي الوقت نفسه تحسيس وتوسيع مهارات التفكير النقدي لديهم . سيتم تحقيق ذلك من خلال الفصول الدراسية والبرامج التعليمية التفاعلية .

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	٦٢	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	٤
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	١٥	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	٥
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	١٠% (5)	4, 8	LO # 1,2,3,5,6, and 7
	Assignments	2	10% (10)	10, 14	LO # 8, 9, 11,12 and 13
	Projects / Lab.	1	١٠% (20)	Continuous	
	Report	1	١٠% (5)	15	LO # 4,14
Summative assessment	**Midterm Exam**	2hr	10% (10)	9	LO # 1-8
	Final Exam	2hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	مفهوم الحقوق)تعريفها – خصائصها – فئاتها (
Week 2	حقوق الانسان في الشرائع الإلهية (المسيحية واليهودية والإسلامية)
Week 3	(مصادر حقوق الانسان)مصادر دولية

Week 4	BNational(مصادر حقوق الانسان)مصادر
Week 5	ضمانات حقوق الانسان –الضمانات على المستوى الوطني
Week 6	ضمانات حقوق الانسان على المستوى الدولي
Week 7	امتحان نصف الفصل
Week 8	مفهوم الديمقراطية – أشكال الديمقراطية–الديمقراطية المباشرة
Week 9	الديمقراطية البرلمانية–مفهوم النظام التمثيلي–مرتكزات النظام النيابي
Week 10	اشكال النظام البرلماني –نظام المجالس–النظام الرئاسي
Week 11	النظام البرلماني
Week 12	البرلمان – الية النظام البرلماني–الانتخاب مفهوم الانتخاب
Week 13	مفهوم الديمقراطية شبه المباشرة –مظاهرا لديمقراطية شبه المباشرة
Week 14	تنظيم العملية الانتخابية
Week 15	أسبوع تحضيري قبل الامتحان النهائي

Learning and Teaching Resources
مصادر التعلم والتدريس

Text		Available in the Library?
Required Texts	الكتب المقررة المطلوبة /كتاب حقوق الانسان للدكتور حميد حنون خالد	
Recommended Texts	نظرات إسلامية في اعلان حقوق الانسان للسيد محمد محمد صادق الصدر استنادا الى كتاب وزارة التعليم العالي والبحث العلمي /دائرة الدراسات و التخطيط والمتابعة / قسم الدراسات والتخطيط ذي العدد ت م ٧٦٥٩/٣ في ٢٠٢٣/١٠/١٩	
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

نموذج وصف المقرر

المستوى الاول (الفصل الاول)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Fundamental of Computer Science**			**Module Delivery**	
Module Type	**BASIC**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**SCI131**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	MBO		**College**	SC	
Module Leader	MSC.RASOOL NOORI		**e-mail**	Rasool.noori@gu.edu.iq	
Module Leader's Acad. Title	LECTURE		**Module Leader's Qualification**	MSC	
Module Tutor	DR.MUHAMMED ABDULRIDHA		**e-mail**		
Peer Reviewer Name	DR.ALI HADI		**e-mail**		
Scientific Committee Approval Date	1/11/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The computer course includes in the theoretical side the basics of computers, as well as a brief historical summary on the development and generations of computers also Computer Types. A detailed explanation of the Computer Components (Hardware and Softw (Decimal & Binary); the last axis comes about introducing the student to the Internet and the Intranet. As for the practical side, the student is taught the ready-made basic programs that include Microsoft Office and the Windows operating system, as the course includes practical hours, so the most important output is the mastery in dealing with the calculator as an easy tool to work with.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The learning outcomes of studying medical image analysis include: 1. Defining computer components (hardware and software) to the students. 2. Explaining input and output devices to the students. 3. Enabling students to recognize different types of memory. 4. Teaching students about number systems and how to convert between decimal and binary. 5. Defining the Internet and Intranet to students and discussing the similarities and differences between the two. 6. Providing hands-on experience with basic programs, including Microsoft Office and the Windows operating system, to students.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A Introduction to Computer, Definition of Computer, Computer History, Generations of Computers, Categories of Computer. [4 hrs] Part B Computer Components, Software. [4 hrs] Part C Computer Components, Hardware, Input Devices, Output Devices, Components of the System Unit, Central Processing Unit (CPU), Memory. [4 hrs] Part D Hardware, Cache Memory, Primary, Memory (Main Memory) Random Access Memory, Read Only Memory, Secondary Memory, Memory Units, Storage Devices. [8 hrs] Part E Numbers Systems, Decimal Number System, Binary Number System, Convert Decimal to Binary System, Examples, Convert Binary to Decimal System, Examples. . [6 hrs] Part F Defining Internet and Intranet, Types of Computer Network, Computer network. [4 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	In order to enable students to learn computer skills effectively, here are some strategies that can be employed: 1. Provide hands-on activities: Incorporate hands-on activities, projects, and exercises to engage students actively in the learning process. Practical application of concepts helps students understand how computers work and reinforces their understanding. 2. By using visual aids and interactive resources: Utilize visual aids, diagrams, charts, and interactive resources like educational software, simulations, and coding platforms to make abstract concepts more tangible and engaging. 3. Foster a collaborative learning environment: Encourage students to work in teams or pairs on projects or coding exercises. Collaborative learning allows students to share ideas, help one another, and learn from different perspectives. 4. Personalize the learning experience: Recognize that students have different learning styles and paces. Provide opportunities for individualized learning, allowing students to progress at their own speed and explore topics of interest to them. Tailor the learning experience to accommodate diverse learning needs. 5. Encourage exploration and experimentation: Encourage students to explore and experiment with different programming languages, tools, and technologies. Let them pursue their own coding projects and interests. This fosters curiosity and self-directed learning. 6. Connect with real-world applications: Demonstrate how computer skills are applied in various fields and industries. Show examples of how coding is used in creating websites, mobile apps, robotics, or data analysis. Connecting computer skills to real-world applications can motivate students and help them understand the practical significance of what they are learning. 7. Through updated with technology trends: Stay abreast of the latest technology trends, tools, and programming languages. Integrate relevant and up-to-date content into the curriculum to ensure students are learning skills that are in demand in the job market. It is important to create a supportive and inclusive learning environment where students feel encouraged to ask questions, take risks, and explore their interests. By implementing these strategies, we can help students develop a solid foundation in computer skills and foster their passion for technology.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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	5% (5)	4, 8	LO # 1,2,3,5,6, and 7
	Assignments	2	10% (10)	10, 14	LO # 8, 9, 11,12 and 13
	Projects / Lab.	1	20% (20)	Continuous	
	Report	1	5% (5)	15	LO # 4,14
Summative assessment	**Midterm Exam**	2hr	10% (10)	9	LO # 1-8
	Final Exam	2hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Computer, Definition of Computer
Week 2	Computer History, Generations of Computers,

Week 3	Categories of Computer.
Week 4	Computer Components, Software
Week 5	Computer Components, Hardware, Input Devices
Week 6	Computer Components, Hardware, Output Devices
Week 7	Computer Components, Hardware, Components of the System Unit, Central Processing Unit (CPU), Memory
Week 8	**Hardware, Cache Memory, Primary, Memory (Main Memory)**
Week 9	Hardware, Random Access Memory, Read Only Memory
Week 10	Hardware, Secondary Memory, Memory Units, Storage Devices
Week 11	Numbers Systems, Decimal Number System, Binary Number System
Week 12	Numbers Systems, Convert Decimal to Binary System, Examples
Week 13	Numbers Systems, Convert Binary to Decimal System, Examples
Week 14	Defining Internet and Intranet, Types of Computer Network, Computer network
Week 15	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Windows 10: An introduction to windows 10, The start menu, Notification pane and action center.
Week 2	Lab 2: Cortana, Microsoft edge, Use multiple desktops, Tablet mode, The settings App.
Week 3	Lab 3: Microsoft word 2016: An introduction to Microsoft Word 2016, Starting Word, The Home Ribbon: Using Paragraph Styles, Bold, Italic & Underlined, Superscript & Subscript, Highlighting Text, Text Colour, Text Justification, Paragraph Indents, Bullet Lists, Numbered Lists, Cut, Copy & Paste.
Week 4	Lab 4: The Insert Ribbon: Inserting Symbols, Equations, Cover Pages, Adding Images, Adding Effects to Images, Cropping Images, Wrap Text around Images, Adding Tables, Formatting Tables, Add a Column, Insert a Row, Resizing Rows & Columns, Headers and Footers, Inserting Headers & Footers, Editing Headers & Footers.
Week 5	Lab 5: Page Numbering: The Design Ribbon (Page Borders, Page Color, Watermarks, Page Numbering: The Page Layout Ribbon, Page Setup, The References Ribbon, The Mailings Ribbon, The Format Ribbon, File Backstage, Saving Documents, Saving as a Different Format, Opening Saved Documents, Printing Documents.
Week 6	Lab 6: Microsoft Excel 2016: An introduction to Microsoft Excel 2016, Starting Excel, The Home Ribbon, The Insert Ribbon, The Page Layout Ribbon, The Formulas Ribbon, The Data Ribbon, The Review Ribbon, The View Ribbon, File Backstage, Introduction to a Spreadsheet, Entering Data.
Week 7	Lab 7: Simple Text Formatting, Text Orientation, Resizing Rows and Columns, inserting Rows & Columns, Cut, Copy & Poste, Sorting Data,

	Formatting Spreadsheet, Cell Alignment, Text Format, Cell Borders, Using Formulas, Using Functions, Count, Count IF, Auto Sum, Average, Max & Min, lF Function, Adding Charts, Change Chart Type.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Ata Elahi, "Computer Systems, Digital Design, Fundamentals of Computer, Architecture and Assembly Language", Springer International Publishing AG 2018. 2- Peter Norton "Introduction to Computers", sixth Edition, 2008, ISBN-13:978-0-07-059374-9. 3- B. Hemanta, Computer Fundamental, Stratford College London, pp.1-20 4- R Mansfield, "Mastering VBA for Microsoft Office", 2019, 944 Pages.	
Recommended Texts	1- Steven Freund, Gary B. Shelly, Thomas J. Cashman, Misty Vermaat, Introduction to Computers, Eighth Edition, 2012, ISBN10 143908131X, ISBN13 9781439081310	
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

نموذج وصف المقرر

المستوى الاول (الفصل الاول)

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	اللغة العربية			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	SCI133				
ECTS Credits	٢				
SWL (hr/sem)	٥٠				
Module Level	المرحلة الاولى		**Semester of Delivery**	الفصل الثاني	
Administering Department	الفيزياء الطبية		**College**		
Module Leader	Asst. Lec. Abd-Alhussein Ali		**e-mail**		
Module Leader's Acad. Title	Asst. Lec.		**Module Leader's Qualification**	اللغة العربية	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	25/7/2025		**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 Objectives أهداف المادة الدراسية	.تعريف الطالب باللغة العربية الصحيحة وتراكيبها والفاظها واساليبها. .مساعدة الطالب على القراءة الصحيحة وحسن التعبير. تعريف الطالب بكيفية البحث والأستقصاء واستخراج المعلومة من مصادرها الرسمية التعرف على علامات الترقيم واستخدامها بشكل صحيح وفقا للقواعد اللغوية .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	أ- الأهداف المعرفية ١تعريف الطلبة بأنواع الهمزة وطريقة كتابتها ٢- تعريف الطلبة بأجناس الجملة العربية وكيفية التمييز بينها ٣تمكين الطلبة من قراءة النص القرآني قراءة المتأمل للنص الباحث عن اسراره اللغوية ٤تطوير ملكة تذوق النصوص العربية عند التعامل الشعر عامة والقرآن خاصة ٥تمكين الطلبة من فهم آلية القواعد ألاعرابية في تمكين المعنى المراد ٦- تعريف الطلبة باللغة القرآنية من خلال الحكم والعبر المستفادة من النص القرآني ب - الأهداف المهاراتية الخاصة بالمقرر. ١- تنمية القدرة على النطق الصحيح ٢- تنمية القدرة على الكتابية اللغوية الصائبة ٣- تنمية القدرة على تحليل النص القرآني بما يلائم الواقع اللغوي ٤- تنمية القدرة على المقارنة بين اللغة العربية واللغة الانكليزية
Indicative Contents المحتويات الإرشادية	**Part A. The layers of the Atmosphere (8 hr.)** **Part B. Atmospheric parameters (2 hr.)** **Part C. Variation of the Seasons (4 hr.)** المحتويات الارشادية في مادة اللغة العربية تشمل مجموعة من المفاهيم والمواضيع التي يتم تغطيتها خلال عملية التعلم.ومن بين المحتويات الارشادية المهمة : ١.مقدمة عن الأخطاء اللغوية والتعريف بالتاء المربوطة والتاء المطولة والتاء المفتوحة.(٣ساعات) ٢.قواعد كتابة الالف الممدودة والمقصورة والتعرف على الحروف الشمسية والقمرية.(٣ساعات) ٣.دراسة الضاد والظاء وتعلم طرق كتابتهما بشكل صحيح.(٣ساعات) ٤.تعلم كتابة الهمزة بشكل صحيح وفقا للقواعد اللغوية.(٣ساعات) ٥.دراسة علامات الترقيم وتعلم استخدامهابشكل صحيح في النصوص اللغوية.(٣ساعات) ٦.التعرف على الاسم والفعل والتفريق بينهما وفهم القواعدالمتعلقة بهما.(٣ساعات) ٧.دراسة المفاعيل وتعلم استخدامهافي الجمل اللغوية.(٣ساعات) ٨.التعرف على الاعداد واستخدامها بشكل صحيح في العبارات والجمل.(٣ساعات) ٩.دراسة الأخطاء اللغوية الشائعة وتطبيقاتها في النصوص اللغوية.(٣ساعات) ١٠.تعلم استخدام النون والتنوين وفهم معاني حروف الجر في الجمل .(٣ساعات) ١١.التعرف على الجوانب الشكلية للخطاب الإداري وفهم لغته وقواعده.(٢ساعات) ١٢.دراسة نماذج من المراسلات الإدارية وتطبيقها في الكتابة.(٢ساعات)

	Part D. Atmospheric moisture (6 hr) **Part E. Cloud formation (2 hr)** **Part F. Air pollution (4 hr)** **Part G. Human Classifications (2 hr)**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	استراتيجيات التعلم والتعليم المستخدمة في مادة اللغة العربية تشمل مجموعة متنوعة من النهج والتقنيات التي تعزز عملية التعلم للطلاب .من بين هذه الاستراتيجيات : ١ طريقة القاء المحاضرات. 2-المجاميع الطالبية. 3-ورش العمل. 4-التقارير والدراسات. ٥-التفاعل النشط. ٦-التعلم التعاوني . ٧-توفير ردود فعل فورية . ٨-تحفيزهم على المشاركة واكتساب المعرفة والمهارات بشكل شامل وشيق.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	٣٣	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	١٧	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	٥٠		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	مقدمة عن الأخطاء اللغوية–التاء المربوطة والطويلة والتاء المفتوحة
Week 2	قواعد كتابة الالف المدودة والمقصورة–الحروف الشمسية والقمرية
Week 3	الضاد والظاء
Week 4	كتابة الهمزة
Week 5	علامات الترقيم
Week 6	الاسم والفعل والتفريق بينهم
Week 7	المفاعيل +العدد
Week 8	امتحان منتصف الفصل الدراسي
Week 9	تطبيقات الأخطاء اللغوية الشائعة

Week 10	النون والتنوين
Week 11	معاني حروف الجر
Week 12	الجوانب الشكلية للخطاب الإداري
Week 13	لغة الخطاب الإداري
Week 14	نماذج من المراسلات الإدارية
Week 15	الاستعداد للامتحان النهائي

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	أخطاء لغوية شائعة تأليف: خالد بن هلال بن ناصر العنبري ,مكتبة :الجليل الواعد الطبعة الأولى . ٢-قواعد الاملاء وعلامات الترقيم ,تأليف : عبدالسلام هارون ,تحيقيق :نبيل عبدالسلام هارون ,دار الكتب العلمية , الطبعة الأولى , ٢٠٠٥	YES
Recommended Texts	اقسام الكلام العربي من حيث الشكل والوظيفة ,تأليف : الدكتور فاضل مصطفى الساق , تقديم الأستاذ الدكتور: تمام حسن,مكتبة الخانجي_القاهرة,طبعة ١٩٩٧م .	NO
Websites	The Collage E-Library	

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

المستوى الثاني (الفصل الاول)

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Thermodynamics**		**Module Delivery**
Module Type	**Core**		☒ **Theory** • **Lecture** ☒ **Lab** ☒ **Tutorial** • **Practical** • **Seminar**
Module Code	**MPH21313**		
ECTS Credits	**6**		
SWL (hr/sem)			
Module Level	1	**Semester of Delivery**	1
Administering Department	MPHY	**College**	SCI
Module Leader	Asst. Lect. Taha Ruchdie	**e-mail**	Taha.ruchdie@gu.edu.iq
Module Leader's Acad. Title	Asst. Lect.	**Module Leader's Qualification**	M.Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	11/06/2023	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The course aims to provide 2nd stage students with basic knowledge of thermodynamics. 2. To understand that everything related to energy and understand the concepts such as the first law of thermodynamics and the second law and its applications. 3. To enable students to access the science of thermodynamics by understanding how to correct engineering analysis and how to deal with laws, equations, illustrations and other data. 4. Enabling the student to be able to analyze, devise and draw conclusions. theory through the application of techniques 5. Follow-up of scientific development through the Internet and keeping pace with scientific development by setting up experiments synchronized with theoretical topics.
Module Learning Outcomes حات التعلم للمادة الدراسية	1. Learning the basic concepts of thermodynamics and the properties of substances using property tables or property relations. 2. Understanding the different forms of energy, energy interactions by heat and work transfer, and the 1st law of thermodynamics. 3. Solving real world engineering problems related to energy by applying the 1st law thermodynamics to closed and open systems like piston-cylinder devices, turbines, and charging/discharging processes. 4. Understanding the 2nd law of thermodynamics and quantifying the performance of heat engines, heat pumps and refrigerators, reversible and irreversible processes 5. Defining entropy, developing entropy change relations, and deriving the increase of entropy principle, 6. Performing 2nd law analysis of engineering processes by quantifying entropy generation. 7. Analyzing some basic thermodynamics cycles like the Otto, Diesel, Brayton cycles for power production and the vapor compression refrigeration cycle for cooling applications.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A -Thermodynamic systems

Thermodynamic systems (closed and open),Thermodynamic properties and equilibrium, State of a system, state postulate for simple compressible substances, state diagrams, paths and processes on state diagrams, Concepts of heat and work, different modes of work, Concept of temperature [15 hrs].

Concept of energy and various forms of energy, Internal energy, enthalpy, Specific heats, First law applied to elementary processes, closed systems and control volumes, steady and unsteady flow analysis [13 hrs]

Part B -Thermodynamic properties

Thermodynamic properties of pure substances in solid, liquid and vapor phases, P-vT behaviour of simple compressible substances, phase rule [10hrs].

Thermodynamic property tables and charts, ideal and real gases, ideal gas equation of state and van der Waals equation of state, Law of corresponding states, compressibility factor and generalized compressibility chart [15 hrs]

Part C: laws of thermodynamics

Limitations of the first law of thermodynamics , Concepts of heat engines and heat pumps/refrigerators, Kelvin-Planck and Clausius statements and their equivalence, Reversible and irreversible processes, Carnot cycle and Carnot principles/theorems, Thermodynamic temperature scale, Clausius inequality and concept of entropy, Microscopic interpretation of entropy (The principle of increase of entropy) and (T-s diagrams), Second law analysis of control volume, Availability and irreversibility, Third law of thermodynamics [20 hrs].

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The main strategy in delivering this course is to encourage students to participate in thermodynamic problem solving, while simultaneously improving and expanding their critical thinking skills through training in the correct way of thinking to solve complex problems. This is achieved through classes and practical experiments matched with theoretical studies and by thinking about the type of scientific experiments that include some applications of thermodynamic laws that are of interest to students.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
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)	2,6,10,12	LO #1, 2, 10 and 11
	Assignments	1	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	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**General Introduction** **Basic definitions of thermodynamics**
Week 2	**Definitions and concept for microscopic properties**
Week 3	**Zeroth law of thermodynamics and general law of gases**
Week 4	**Equation sate and work**
Week 5	**1st law of thermodynamics and the internal energy function**
Week 6	**Heat transfer and the specific heat capacity at constant pressure**
Week 7	**Phase Diagram**
Week 8	**2nd law of thermodynamics and irreversible processes**
Week 9	**Carnot cycle**
Week 10	**Gibbs and Helmholtz free energy**
Week 11	**Entropy**
Week 12	**Enthalpy**
Week 13	**Maxwell equations**
Week 14	**3rd law of thermodynamics**
Week 15	**Nernast principle**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Measurement of Thermal Conductivity by Lee’s Disc method.
Week 2	Lab 2: Specific Heat Capacity of liquid by cooling method Experiment
Week 3	Lab 3: Determination of the coefficient of apparent cubic expansivity of a liquid by Mathiessen' s sinker method.

Week 4	Lab 4: Entropy of system.
Week 5	Lab 5: Experiment to measure Specific Heat Capacity of a Metal by Method of Mixtures.
Week 6	Lab 6: Measuring the Specific Heat Capacity for Different material
Week 7	Lab 7:Coefficient of Linear Expansion of copper

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamental of thermodynamics (6th edition) S. BORGNAKKE and VAN WYLEN	Yes
Recommended Texts	Thermodynamics: An Engineering Approach, 9th ed in SI Units Yunus A. Çengel, Michael A. Boles, M. Kanoğlu, McGraw-Hill Education.	No
Websites	https://www.tutorialspoint.com/gate_syllabus/gate_xe_thermodynamics_syllabus.htm	

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.

Differential Equations

Modules description Information معلومات المادة الدراسية			
Modules Title	**Differential Equations**		**Modules Delivery**
Type	**Basic**		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Course Code	MPH21309		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Modules Level	2nd	**Semester of Delivery**	1st
Administering Department	Medical Physics	**College**	Science
Modules Leader	Assit. Prof. Dr. Mohamed A. B.	**e-mail**	Mohammed.a.hussien@gu.edu.iq
Modules Leader's Acad. Title	Assistant Professor	**Modules Leader's Qualification**	Ph.D.
Modules Tutor	non	**e-mail**	

Peer Reviewer Name	non	**e-mail**	
Scientific Committee Approval Date	1/8/2024	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الاخرى

Prerequisite course	The course to develop the student's ability to understand differential equations (D.E) in physical applications and apply a number of issues based on basic differential equations principles, and to provide the student with the ability to interpret some applications related to physical subject and their applications, and to build the basic for understanding the subsequent courses.	**Semester**	
	Non		
Co-requisites course		**Semester**	

Aims of a Cource, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الأرشادية

Aims Course أهداف المادة الدراسية	1- Providing the student with a cognitive skill about the basic concepts of Derivative equations. 2- Introducing students to the most important principles of differential equations and applications. 3- Introduce the student to the differential equations and methods of their application. 4- Providing the student with knowledge of how to solve equations.
Course Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Enabling students to obtain knowledge and understanding of the topics of differential equations. 2- Enable students to obtain knowledge and understanding of solve of method equations 3- Enable students to obtain knowledge and understanding of the use of basic physical laws in D.E and their use in solving problems.

Indicative Contents	Indicative content includes the following. Part A – D.E equations Introduction Fundamental of Type of D.E and Conversion analysis of coordinates [5 hrs] Homogeneous D.E Operations. [3 hrs] Non-Homogeneous D.E. Operations [5 hrs] D.E in first and second Oerder [3 hrs] Parameters Separations in D.E. [5 hrs] Exact equation and Applications [3 hrs] Non-Exact Equations and Applications [5 hrs] Bernoulli Euations and Applications [4 hrs] Part B- Reduces Order in D.E [3 hrs], Basic Solving Homo D.E.[3 hrs] Homo. D. E. in Order Constant [3 hrs] Euler Formula in D. E. [3 hrs] Solve Applications [3 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1- Method of giving lectures, explanation and clarification. 2- Student groups. 3- E-learning within the university. 4- Application of education.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3

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

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week no.	Material Covered
Week 1	**Introduction, Fundamental of Differential Equations** .
Week 2	**D.E Systems, System conversion and Concept of D.E. in Coordinates**

Week 3	**Type D.E, Oprations and Physics laws of Operation**
Week 4	**Homogeneous Equations, Type of of Equations**
Week 5	**Non-Homo. D.E, Solve applications**
Week 6	**D.E in Two Order and three Order**
Week 7	**Exam**
Week 8	**Homogeneous D.E Two Order and three Order**
Week 9	**Exact Equations and Applications**
Week 10	**D. E. in First Order and Second Order in their applications**
Week 11	**Eullers Formulla in D.E. equations**
Week 12	**Bernoulli D. E. and Applications**
Week 13	**Solving Methods D.E in Practical Wave**
Week 14	**Non-Exact Equations and Applications Solve**

Week 15	**Non-Exact Equations in First and Second Orders**
Week 16	**Final Exam duration**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Differential Equations by Viorel Barbu, 2016**	Yes
Recommended Texts	**1. Ordinary Differential Equations by Harry Pollard, 2020.**	yes
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جدا جيد	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	المعالجة قيد (راسب)	)45-49 (	More work required but credit awarded
	F - Fail	٤٤-		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

Electromagnetics

Modules description Information معلومات المادة الدراسية			
Modules Title	**Electromagnetics**		**Modules Delivery**
Type	**Core**		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Course Code	MPH21312		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Modules Level	2nd	**Semester of Delivery**	1st
Administering Department	Medical Physics	**College**	Science

Modules Leader	Assit. Lec. Hussein Ali	**e-mail**	Hussein.a.rahi@gu.edu.iq
Modules Leader's Acad. Title	Assistant Lecturer	**Modules Leader's Qualification**	M.Sc.
Modules Tutor	non	**e-mail**	
Peer Reviewer Name	non	**e-mail**	
Scientific Committee Approval Date	1/8/2024	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الاخرى

Prerequisite course	The main goal of study of Electromagnetic Theory course is to identify the basic principles of this theory, as follows: - General study of Vectors in the Cartesian, cylindrical and spherical coordinate systems. Also, addressing the Divergence and Gauss's theorem, Curl and Stokes theorems and Green's theorem. - Study of the Electrostatic field in vacuum and addressing the Laplace and Poisson equations and their solutions in the Cartesian, cylindrical and spherical coordinate systems. Study of the Electrostatic field in the dielectric materials and addressing the phenomenon of polarization in these materials. In addition to calculating the Electrical displacement, Electrical susceptibility, Dielectric constant, and Laplace and Poisson equations in these materials. - Study of Maxwell's equations in their differential and integral forms. Also, study the propagation of plane electromagnetic waves in infinite media and the polarization of these waves	**Semester**	
	Non		
Co-requisites course		**Semester**	

Aims of a Cource, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Aims Course أهداف المادة الدراسية	The main goal of study of Electromagnetic Theory course is to identify the basic principles of this theory, as follows: - General study of Vectors in the Cartesian, cylindrical and spherical coordinate systems. Also, addressing the Divergence and Gauss's theorem, Curl and Stokes theorems and Green's theorem. Study of the Electrostatic field in vacuum and addressing the Laplace and Poisson equations and their solutions in the Cartesian, cylindrical and spherical coordinate systems. Study of the Electrostatic field in the dielectric materials and addressing the phenomenon of polarization in these materials. In addition to calculating the Electrical displacement, Electrical susceptibility, Dielectric constant, and Laplace and Poisson equations in these materials. Study of Maxwell's equations in their differential and integral forms. Also, study the propagation of plane electromagnetic waves in infinite media and the polarization of these waves.
Course Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Enabling students to obtain knowledge and understand the topics of Electromagnetics. 2- Write and Solve wave equation 3- Show ability of make decisions and work alone or in team.

Indicative Contents	Indicative content includes the following. Unit 1: Vectors You'll begin your study of vector, divergence, stoks and Green theorems 24 hr's Unit 2: : Electrostatics You'll explore how electric charge can move through an object and the factors that affect the way charge moves and its effects on matter. 24 hr's Unit 3: Maxwell Equations You'll build on your knowledge of Maxwell equation and poynting vector and its relation to wave propagation. 24 hr's

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Method of giving lectures, explanation and clarification. 2- Student groups. 3- E-learning within the university. 4- Application of education.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3

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

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week no.	Material Covered
Week 1	Coordinate system and Vectors
Week 2	Gauss theorem and Stoke's theorem and Green theorem

Week 3	Coulombs and Gauss laws
Week 4	Poisson’s and Laplace equations
Week 5	Poisson’s and Laplace equations in spherical coordinates
Week 6	Polarization in dielectrics
Week 7	**Mid Exam**
Week 8	Boundary conditions between two different media
Week 9	Faraday law
Week 10	Maxwell's Equations
Week 11	Solve of Maxwell's Equations
Week 12	Poynting vector
Week 13	The complex form of the Poynting vector

Week 14	Propagation of plane electromagnetic waves in infinite media
Week 15	Solving the wave equation in Infinite media - Examples
Week 16	**Final Exam duration**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Introduction to Electrodynamics by David J. Griffith, Prentice Hall, 3ed. 1999.	No
Recommended Texts	Electromagnetics by Edward J. Rothwell &Michael J. Cloud, CRC press 2001	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	جدا جيد	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	المعالجة قيد (راسب)	)45-49 (	More work required but credit awarded
	F - Fail	٤٤-		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

Atomic Physics

Module Information معلومات المادة الدراسية			
Module Title	**Atomic Physics**		**Module Delivery**
Module Type	**Core**		☒**Theory** • **Lecture** ☒**Lab** ☒ **Tutorial** • **Practical** • **Seminar**
Module Code	MPH21311		
ECTS Credits	7		
SWL (hr/sem)	**175**		
Module Level	2nd	**Semester of Delivery**	1st
Administering Department	Medical Physics	**College**	Science
Module Leader	Dr. Hedar H. AL-Fesal	**e-mail**	Hedar.h.terke@gu.edu.iq
Module Leader's Acad. Title	Lecturer	**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	/ /2024	**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	Get knowledge about the principles of Atomic Physics
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Knowledge of the atomic structure. 2. Identification the basic atomic physical laws 3. Enrich knowledge about atomic reaction
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. The importance of atomic physics in understanding the atomic structure of materials. 2. The importance of knowing the new techniques in atomic physics 3. Knowing how to conclude from facts to get new principles.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Atomic models (Rutherford model)
Week 2	Bohr model
Week 3	Atomic Hydrogen quantization
Week 4	Atomic spectrum of hydrogen atom
Week 5	Correspondence principle, Quantum numbers, Pauli exclusion principle, Hund's rule
Week 6	Exam
Week 7	Plank theory
Week 8	Black body radiation
Week 9	Photoelectric effect
Week 10	X-ray
Week 11	Spin-orbit interaction
Week 12	Selection rules
Week 13	Zeeman effect
Week 14	Stark effect
Week 15	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1-2	Milikan oil drop experiment
Week 3-4	Determination of specific charge e/m the electron experiment
Week 5-6	Frank-Hertz experiment
Week 7	Exam
Week 8-9	Photo- electric effect

Week 10-11	Stephan's law of Black body radiation
Week 12-13	Planck constant
Week 14	Review

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Atomic Physics by C.J. Foot, University of Oxford, 2005	No
Recommended Texts	Atomic and Nuclear Physics, by T.A.Littlefield & N.Thorley	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

Optics

Module Information معلومات المادة الدراسية			
Module Title	Optics		**Module Delivery**
Module Type	**Core**		☒**Theory** ☐**Lecture** ☒**Lab** ☒**Tutorial** • **Practical** • **Seminar**
Module Code	**MPH21014**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		
Module Level	*2nd*	**Semester of Delivery**	*1st*
Administering Department	Medical Physics	**College**	Science
Module Leader	Dr. Ali Alhamdani	**e-mail**	Ali.h.abdulmuneim@gu.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2024	**Version Number**	1.0

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

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم
والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. Understand the fundamental of optics that representing by geometrical optics and waves optics. 2. Increase students' knowledge about optics terms such as refractive index, optical path, critical angle, total internal reflection, thin lenses, mirrors, and image formation by optical elements, as well as Interference phenomena, Diffraction phenomena, polarization phenomena of light. 3. Provide the student with knowledge information about the electromagnetic spectrum and its wide uses in the medical fields (medical imaging and medical treatment as well as medical devices based on light). 4. Preparing the student to deal professionally with optical devices and optical elements, and how to calculate their optical constants. 5. Enable the student to distinguish between the Interference phenomena and Diffraction phenomena. 6. Provide the student with knowledge about the most important optical element present in the human body, which is the eye, and how to determine vision defects mathematically.
Module Learning Outcomes رجات التعلم للمادة الدراسية	1. Distinguish between the ray optics and wave optics. 2. Calculating the refractive index, the optical path and determining the critical angles for light travels between two media. 3. Knowing how to form images in lenses and mirrors, calculating the focal length of optical elements. 4. Determining vision defects and how to calculate the appropriate focal length for each pathological condition of vision defects. 5. Distinguish between interference and diffraction of light and calculation the fringes width. 6. Determine the constructive interference equation for bright fringes and the destructive interference equation for dark fringes. 7. Study the electromagnetic spectrum and determine the photon's energies. 8. Defining polarization, identifying its types, and calculating the intensity of light transmitted by polarizers.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Nature and propagation of light Particle theory of light – Particle theory of light (Newton's Theory)- Wave theory of Light (Huygens Theory)- Dual Nature of Light De Broglie Hypothesis- Concept of a photon- Energy of photon - Characteristics of light waves- The Electromagnetic Spectrum. [8 hrs]

Part B – Geometrical Optics

Ray Optics- Refractive Index- Laws of Refraction- Snell's Law- Optical Path Length- Fermat's Principle- The Critical Angle - Total internal reflection - Refraction of Light through a Glass Prism. [8 hrs]

Dispersion- Color Dispersion - Spherical surfaces - Graphical constructions- Convention of signs for distances- Derivation of the Gaussian formula – Magnification image in spherical surfaces. [8 hrs]

Thin lenses -Types of lenses- Image Formation- The lens formula- Image Formation -Derivation of the lens Maker's formula- Lateral Magnification of Lenses- The Power of thin lens- Thin Lens combinations- Mirror formula- Gaussian formula for spherical mirror. [8 hrs]

Spherical Mirrors- Mirror formula - Gaussian formula for spherical mirror- The lateral magnification image of the mirror- Mirror image characteristics. [4 hrs]

The Human Eye- Myopia (nearsightedness)- Hypermetropia (farsightedness)- Presbyopia - Cataract- Astigmatism- Types of Astigmatism- Myopic astigmatism- Hyperopic astigmatism- Mixed astigmatism [10 hrs]
evision problem classes [8 hrs] Part C

– Waves Optics

Superposition of waves - Coherent and incoherent sources- Constructive Superposition - Destructive Superposition- Superposition of two waves at the same frequency- Standing Waves- Superposition of two harmonic perpendicular oscillations. [10 hrs]

Interference of Light Waves- Types of interference- Conditions for interference- Young's Experiment- Intensity Distribution in the Young's Experiment- Fringe Width and Mathematical Expression. [12 hrs]

- Diffraction- Single Slit Diffraction (Fraunhofer Diffraction)- Diffraction by Rectangular Aperture- Resolving Power of a Rectangular and Circular Aperture- Double-Slit Diffraction Pattern- Diffraction Grating- Dispersion power of grating- Resolving Power. [12 hrs]

Polarization of light- Types of Polarization -Polaroid- Maul's Law- Brewster's Law- Application of Polarization. [9 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Strategies in teaching optics are centered on the teacher and the students, It depends mainly on equipping the student with theoretical and practically skills in the field of geometric optics and wave optics through the participation of students in preparing reports, assignments, seminars and projects, preparing lectures, solve optics examples and encouraging students' teamwork. And conduct optics experiments in the laboratory and increase their scientific skills and how they deal with devices and optical elements. The strategy of the optics class is to increase students' awareness of the importance of optical laws on which medical devices used in medical clinics and hospitals depend.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Nature and propagation of light electromagnetic spectrum.
Week 2	Refractive index , Fermat principle ,Critical angles and total internal reflection.
Week 3	Dispersion of light. prism and minimum deviation angle.
Week 4	Reflection and refraction at spherical surfaces.
Week 5	Thin Lenses , Lens maker's equation, Gaussian formula.
Week 6	Lenses combined.
Week 7	Mirrors and Magnification of images in mirrors.
Week 8	Optical Devices**,** The eye, defect of visions.
Week 9	Waves and Physical Optics, Transverse wave and the hypotheses of light.
Week 10	Superposition of Waves and Coherent and incoherent sources.
Week 11	Interference phenomena, Young's Experiment and Intensity Distribution in the Young's Experiment.
Week 12	Diffraction Phenomena and types of diffractions.
Week 13	Fraunhofer diffraction and Single Slit Diffraction (Fraunhofer Diffraction).
Week 14	Dispersion power of grating and Resolving power of grating.
Week 15	Polarization of light.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Optical path experiment
Week 2	Lab 2: snell's law and critical angle experiment
Week 3	Lab 3: convex lens Determine focal length experiment
Week 4	Lab 4: concave mirror experiment
Week 5	Lab 5: prisms and light dispersion experiment
Week 6	Lab 6: Grating Diffraction experiment
Week 7	Lab 7: Newton's Rings

Week 8	Lab 8: Young's double slit experiment

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. Fundamental of Optics, by Jenkins and White Application and Design, 4th Edition, John Wiley, 2010. (R856.M489 2010). 2. Introduction to Modern Optics , 2nd Edition by Grant R. Fowle.	No
Recommended Texts	Handbook of Optics, Third Edition Volume I: Geometrical and Physical Optics, Polarized Light, Components and Instruments(set) , by Michael Bass , Casimer DeCusatis , Jay Enoch .	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

جرائم نظام البعث في العراق

Module Information معلومات المادة الدراسية			
Module Title	Crimes of Baath Regime in Iraq		**Module Delivery**
Module Type	**Basic**		☒**Theory** ☐**Lecture** ☐**Lab** ☐ **Tutorial** ☐**Practical** ☐**Seminar**
Module Code	SCI231		
ECTS Credits	2		
SWL (hr/sem)	**50**		
Module Level UGx1	2nd	**Semester of Delivery**	1st
Administering Department	Medical Physics	**College**	Science
Module Leader	Humam ali	**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	/ /2024	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات االرشادية	
Module Aims أهداف المادة الدراسية	1- ان يتعرف الطالب على جرائم نظام البعث في العراق 2- ادراك الطالب لتاريخ الحقبة التيعاشها العراق ٣- ادراك الطالب لكم خالل فترة نظام البعث الجرائم النفسية واالجتماعية التي ارتكبها النظام 4- ادراك الطالب للجرائم التي ارتكبت بحق البيئة من قبل النظام 5- ادراك الطالب للجرائم الوحشية التي حصلت في المقابر الجماعية
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- معرفة الجرائم التي ارتكبت من قبل نظام البعث 2- معرفة انواع الظلم واالضطهاد الذي ارتكب بحق العراقيين
Indicative Contents المحتويات االرشادية	1- اسلوب الحوار بين الطالب واالستاذ 2- عرض آالراء ومناقشة نقاط القوة والضعف لكل منها 3- اتاحة الفرصة للطالب بالتفكير وتبني الخيارات الصحيحة

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	من خالل مقاييس اسلوب المناقشة واالختبارات اليومية

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	50		

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
	Assignments	2	10% (10)	2, 12	LO # 1,2
	Projects				
	Report	1	20% (20)	13	LO # 1,2
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
1 Week	تعريف الجريمة لغة واصطالحا واقسام الجرائم
Week 2	جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا ٢٠٠٥ م 1- انواع الجرائم الدولية 2- القرارات الصادرة من المحكمة الجنائية العليا
3 Week	الجرائم النفسية واالجتماعية (آلياتها وآثارها)
4 Week	موقف النظام البعثي من الدين
5 Week	عسكرة المجتمع وانتهاكات القوانين العراقية
6 Week	صور انتهاكات حقوق االنسان وجرائم السلطة
7 Week	قرارات االنتهاكات السياسية والعسكرية والتطرق الى اماكن السجون واالحتجاز
8 Week	امتحان
9 Week	الجرائم بحق البيئة وتشمل التلوث الحربي واالشعاعي وانفجار االلغام
10 Week	الجرائم بحق البيئة وتشمل تدمير المدن والقرى (سياسة االرض المحروقة)
11 Week	الجرائم بحق البيئة وتشمل تجفيف االهوار
12 Week	جرائم تجريف بساتين النخيل واالشجار
13 Week	جرائم المقابر الجماعية
14 Week	جرائم المقابر الجماعية وتشمل التصنيف الزمني لمفابر االبادة الجماعية في العراق
15 Week	مراجعة

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Texts Required	**كتاب جرائم البعث في العراق الصادر من وزارة التعليم العالي والبحث العلمي**	No
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	جدا جيد	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(المعالجة قيد)	)45-49 (	More work required but credit awarded
	F – Fail	راسب)		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.

المستوى الثاني (الفصل الثاني)
MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Physics of Laser		**Module Delivery**
Module Type	**Core**		☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☒**Seminar**
Module Code	MPH22315		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		
Module Level UGx11	2	**Semester of Delivery**	2
Administering Department	Medical Physics	**College**	Science
Module Leader	Assti. Lec. Hussein Ali	**e-mail**	Hussein.a.rahi@gu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Non	**Semester**	
Co-requisites module	Non	**Semester**	1

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1 - Description of the origin of the physical processes in laser systems. 2-Explanation of physics concepts for gain and amplification in different lasers 3–Explanation of the concepts of generation short pulses in laser devices 4 - using mathematical equations to calculate different physical parameters of laser systems
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define the meaning of laser. 2. Develop a clear understanding of basic physical phenomena in thermal physics and materials science as an integral part of the student's overall education 3. 2. Explain natural phenomena using simple physics concepts. 4. Compare between laser and other sources of light. 5. Calculate and find the ratio of atoms population in the energy levels. 6. Use algebra, trigonometry, and basic calculus, in solving problems in Laser physi cs and Laser cavity 7. Provide detailed and accurate description of ABCD ray tracing in an optical cavit y 8. Classify the laser types according to active medium materials. 9. List and give details of different applications of laser

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – light principle Basic of light phenomena, the electromagnetic radiation theory and equations, the properties of photon, laser definition, laser hazard, safety of laser and classification of laser [15 hrs] Part B- Laser Properties Laser history, coherence light, directionality of light, monochromatic light, brightness ,interaction of radiation with atom, normal population , population inversion, laser levels, Einstein relation, laser elements, laser cavity, the modes inside the cavity, types of cavity, stability of laser resonators, laser gain and laser losses, continues wave laser (CW), pulsed laser operation, laser spikes, Q-switched mode and modes locking, propagation of Gaussian profile. [30 hrs]. Part C- laser types: Gas laser, He-Ne laser, CO_2 laser, Argon ion laser, Solid state laser, ruby laser, Nd:YAG laser, liquid laser, dye laser, semiconductors laser. [10 hrs]
	Part D- Laser applications: Laser matter interaction, absorption of laser radiations, thermal effect, laser vaporization and plasma formation, laser ablation, scientific application, Hologram, industrial application, drilling and cutting, communication application, laser in military [17 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This course will be delivered through a combination between theoretical lectures in the classroom and experimental lectures in the Lab. The students will be receive the outcome of each lecture through discussions, videos related to the subject and questions. In addition, the information will be developed by self-learning through reading and searching to hand in the essay and home works.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	6,10	LO #1-2, 4-5, 6-7, 9-10
	Assignments	5	10% (10)	2,3,5,6,7	LO #1, 2, 4, 5, 6
	Projects / Lab.	15	10% (10)	Continuous	
	Report	1	10% (10)		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Properties of light
Week 2	Laser properties
Week 3	Interaction of radiation with atoms
Week 4	Population of atoms
Week 5	Laser levels, three level laser and four level lasers.
Week 6	Elements of laser.
Week 7	Midterm exam
Week 8	Lasing action
Week 9	Laser cavity
Week 10	Modes of the resonators
Week 11	Laser gain
Week 12	Laser operation
Week 13	The properties and propagations of Gaussian beam
Week 14	Laser types
Week 15	Laser applications

Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to laser lab.
Week 2	Lab 2: diffraction from single slit.
Week 3	Lab 3: measuring the diameter of human hair by laser diffraction
Week 4	Lab 4: determination of wavelength of laser light by using diffraction grating.
Week 5	Lab 5: Laser beam divergence
Week 6	Lab 6: laser spot size
Week 7	Lab 7: laser spot size Measurement of the absorption coefficient of material By Using Laser light

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Laser Principles, Types & Applications: K R Nambiar, New Age International, 2004	No
Recommended Texts	Lasers: Theory and Applications : A K Ghatak and K Thyagarajan, McMillan, 2003	No
Websites	https://www.keyence.eu/ss/products/marking/lasermarker/knowledge/principle.jsp	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جدا جيد	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(المعالجة قيد)	)45-49 (	More work required but credit awarded
	F – Fail	راسب)		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

الفيزياء الطبية I

Module Information معلومات المادة الدراسية			
Module Title	Medical Physics I		**Module Delivery**
Module Type	**Core**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	MPH22317		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Dr. Hedar Hazra	**e-mail**	Hedat.h.terke@gu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية ألخرى

Prerequisite module	Non	**Semester**	2

Co-requisites module	Non	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	objectives Cognitive A1- That the student understands the fundamental physics ideas connected to medicine. A2- To comprehend the physical relationship and how to medically communicate it. A 3- Relationship between physical attributes and medical device uses. The fundamental aims. B1 - Recognize the fundamental physical rules and their application to the human body. B2 - Understanding of physical aspects influencing the human body and their relationship to the appearance of disease indications on the body.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Obtaining a prominent scientific staff that tries to understand the nature of the physical work of the human body by being acquainted with each of 1- The influence of gravity forces on bone formation and blood circulation 2- The electrical influence on the nature of the body's work 3- The impact of heat on the nature of the body's work 4- Investigating mathematical physical relationships and their computerized diagnosis in illnesses caused by these impacts.

advantages of trabecular bone over compact bone, Hooks law

Lubrication of Bone Joints, synovial fluid, lubricating material, lubricating properties a fluid, viscosity of synovial fluid, coefficient of friction, using an x-ray image to measure the amount of bone mineral, review questions. [8 hrs]

conservation of energy: Introduction to Energy, conservation of energy in medical physics, energy of interacting bodies, potential energy,3 laws of conservation of energy

Work: Kinetic Energy, equation of Kinetic Energy, amount of energy in body system, non-isolated equation, Isolated System [8 hrs].

Power: power of the body, ratio of power in the body, rate of energy as power, equations of power in the body, solved problem.

Pressure: pressure in the body, pressure on the body, Typical pressure in the normal body, Arterial blood pressure, Venous blood pressure, Middle ear pressure, Eye pressure

Variation of Pressure with Depth, atmospheric pressure, Pressure Measurements, Barometer, Manometer, sphygmomanometer, Blood pressure, some solved problems [8 hrs]

Revision problem classes [2 hrs]

Part B -

Fluid Mechanics: States of Matter, Density Notes, Viscosity, Dynamic Viscosity Kinematic Viscosity, Surface tension, Surface tension, definition, Capillary Action [6 hrs].

Buoyant Force and Archimedes' Principle, Archimedes' Principle: Totally Submerged Object, Archimedes Principle: Floating Object, Archimedes Principle, Iceberg Example Types of Fluid Flow, Ideal Fluid Flow, Equation of Continuity.,[6 hrs].

Laminar Flow, equations and explanations .

Laminar Flow in a Tube, Bernoulli’s Equation, examples and solved problems [8 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in introducing this unit is to introduce
	students to the physical principles upon which medical physics depends and how to deal with them in a scientifically rigorous manner. Encouraging students to discover how the human body works with physical laws and its physiological and therapeutic effects by themselves through understanding the general laws of physics. This is done through scientific discussions in class as well as through practical application in hospitals and medical clinics.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	125		

Module Evaluation قييم 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	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج االسبوعي النظري

	Material Covered
Week 1	**Medical Physics:** Aims of the Medical physics, Physics of the body, Application of physics in medicine, i. Diagnostic, ii. Therapy, iii. Patient monitoring
Week 2	**Forces on and in the Body:** Forces, Fundamental Forces, Forces Affect the Body, Some Effects of Gravity on the Body, varicose veins, The electrical force, nuclear forces, Strong nuclear forces
Week 3	**Physics of Skeleton:** Bone functions in the body, Bone remolding, Bone mineral, advantages of trabecular bone over compact bone, Hooks law
Week 4	**Lubrication of Bone Joints**, synovial fluid, lubricating material, lubricating properties a fluid, viscosity of synovial fluid, coefficient of friction, using an x-ray image to measure the amount of bone mineral, review questions
Week 5	**conservation of energy:** Introduction to Energy, conservation of energy in medical physics, energy of interacting bodies, potential energy,3 laws of conservation of energy
Week 6	**Work:** Kinetic Energy, equation of Kinetic Energy, amount of energy in body system, nonisolated equation, Isolated System

Week 7	**Power:** power of the body, ratio of power in the body, rate of energy as power, equations of power in the body, solved problem.
Week 8	**Pressure:** pressure in the body, pressure on the body, Typical pressure in the normal body, Arterial blood pressure, Venous blood pressure, Middle ear pressure, Eye pressure
Week 9	Variation of Pressure with Depth, *atmospheric pressure*, Pressure Measurements, Barometer, Manometer, sphygmomanometer, Blood pressure, some solved problems
Week 10	**Fluid Mechanics:** States of Matter, Density Notes, Viscosity, Dynamic Viscosity
Week 11	Kinematic Viscosity, Surface tension, Surface tension, definition, Capillary Action
Week 12	Buoyant Force and Archimedes' Principle, Archimedes' Principle: Totally Submerged Object, Archimedes Principle: Floating Object, Archimedes Principle, Iceberg Example
Week 13	Types of Fluid Flow, Ideal Fluid Flow, Equation of Continuity.
Week 14	Laminar Flow, equations and explanations .
Week 15	Laminar Flow in a Tube, Bernoulli's Equation, examples and solved problems
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Laboratory safety
Week 2	First exp. Manual Sphygmomanometer
Week 3	Second exp. Digital Sphygmomanometer

Week 4	Third exp. Glucose level monitoring
Week 5	Fourth exp. Venipuncture
Week 6	Exam
Week 7	Fifth exp. Hemoglobin A1C (HbA1c) Test
Week 8	Sixth exp. Oximeter
Week 9	Seventh exp. Study of Phonocardiograph System - observe Phonocardiogram waveforms (PCG)
Week 10	Eighth exp. Study of Phonocardiograph System - hear the Phonocardiogram signals (PCG)
Week 11	Exam
Week 12	Review
Week 13	Final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1.Medical Physics by John R. Cameron, International Publication. 2. Elements of Biophysics Randall 1998 3. Medical Physics Data Book, Thomas N. Padikal, Editor MD 20205 and Sherman P. Fivozinsky, Associate Editor Office of Standard Reference Data National Bureau of Standards Washington, DC 20234 4- A Wiley-interscience publication JOHN WILEY & SONS	Yes

Recommended Texts	1. Brown B H, Medical Physics and Biomedical Engineering, Institute Of Physics, 1999. (R895.M489). 2. Bushberg Jerrold T, Seibert J A, Leidholdt E M and Boone J M, The Essential Physics of Medical Imaging, 2nd Edition, Lippincolt Williams & Wilkins, 2002. (RC78.7.D53E78). 3. Ganong William F, Ganong's Review of Medical Physiology, 24th Edition, McGraw-Hill Medical, 2012.	yes

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جدا جيد	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 (المعالجة قيد)	)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

التصوير الطبي

Module Information معلومات المادة الدراسية			
Module Title	**Medical Imaging**		**Module Deliver**
Module Type	**Core**		☒**Theory** ☐**Lecture** ☒**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**
Module Code	MPH22316		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level UGx11 2	2nd	**Semester of Delivery**	2nd
Administering Department	Medical Physics	**College**	Science
Module Leader	Dr. Jasim Mohamed	**e-mail**	
Module Leader's Acad. Title	professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	-	**e-mail**	-
Peer Reviewer Name	-	**e-mail**	-
Scientific Committee Approval Date	01/7/2024	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الاخرى

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1. To develop a basic understanding to the basic physics of medical imaging. 2. To understand the relationship between electromagnetic radiation and biological tissues. 3. To distinguish between the various interactions occurring in tissues and to be able to identify beneficial ones from the non-beneficial for medical imaging. 4. To gain basic understanding to medical imaging techniques employed in modern hospitals, including x-ray imaging, computed tomography, magnetic resonance imaging, ultrasound and nuclear isotope imaging. 5. To provide you with sufficient knowledge of introductory radiation biology and physics to allow you an appreciation of safe and optimal use of radiation imaging techniques.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the role of medical physicist in the medical imaging process. 2. Understand the concept of ionizing radiation. 3. Distinguish between different interactions of x-ray with matter. 4. Understand the outcome of each x-ray interaction with matter. 5. Differentiate the main terms related to radiation attenuation. 6. Understand x-ray production process. 7. Appreciate the main features of x-ray images. 8. Classify x-ray modalities. 9. Review CT system design. 10. Differentiate between different modes of CT acquisition. 11. Comprehend the approach of nuclear imaging 12. Differentiate between different types of medial nuclear imaging. 13. Review the principles of ultrasound imaging. 14. Distinguish between different types of MRI. 15. Define the main concepts of radiation biology
Indicative Contents المحتويات الارشادية	Indicative content includes the following: <u>Part A – Medical Imaging principles</u> The basis of medical imaging, The role of a Medical Physicist, Electromagnetic
	Radiation, Radiation from Electron Transitions, Characteristic x-rays and Auger Electrons [15 hours] Part B – Medical Imaging with Ionizing Radiation Interaction of x-ray Radiation with Matter, Kerma, Radiation Dose, X-ray Production, X-ray Detection, Computed (digital) Radiography, Radiographic image, Mammography, Computed Tomography, Modes of CT Acquisition, Clinical use of CT scans, Nuclear physics, Tomography with radionuclides, SPECT and PET [30 hours] Part C – Medical Imaging with non-Ionizing Radiation Ultrasound waves, Ultrasound Transducers, 3D-Ultrasound, Doppler-ultrasound, Magnetic Resonance Imaging and Clinical applications of MRI [20 hours] Part D- Radiation Biology

	Classification of Biologic Effects, Stochastic effects, Deterministic effects, Radiation Protection, Attenuation of X-rays and Gamma Rays,, Half-Value Layer [7 hours]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The module will be delivered through a combination of lectures, discussions and web-based learning. At the end of each lecture, students will receive more specific learning outcomes for the lecture and be expected to undertake self-directed further reading and research.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	150		

Module Evaluation تقييم المادة الدراسية				
	Time/Nu	**Weight (Marks)**	**Week Due**	**Relevant Learning**

		mber			Outcome
Formative assessment	**Quizzes**	2	20% (20)	5, 10	LO #1-4, 5-9 and 10-14
	Assignments	2	10% (10)	6,10	LO #3-5
	Projects / Lab.	1	10% (10)	Continuous	
	Report				
Summative assessment	**Midterm Exam**	1 hr	10% (10)	8	LO # 1-9
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Medical Imaging
Week 2	Electromagnetic Radiation
Week 3	Radiation interaction with matter
Week 4	X-ray Production
Week 5	X-ray interaction with matter
Week 6	X-ray Detection
Week 7	X-ray Modalities
Week 8	Midterm Exam
Week 9	Computed Tomography

Week 10	Nuclear Imaging
Week 11	Ultrasound Imaging
Week 12	Magnetic Resonance Imaging
Week 13	Radiation Biology & Protection
Week 14	Radiation Attenuation
Week 15	Overview of future developments in medical imaging
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to medical imaging lab
Week 2	Lab 2: Features of Medical images
Week 3	Lab 3: X-ray positioning
Week 4	Lab 4: CT positioning and imaging procedures
Week 5	Lab 5: MRI positioning and imaging procedures
Week 6	Lab 6: PET scan Procedure
Week 7	Lab 7: Medical imaging standard practices

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

Required Texts	1. Samei, Ehsan, and Donald J. Peck. Hendee's physics of medical imaging. John Wiley & Sons, 2019. Alisy-Roberts, P., and J. Williams. "Farr's Physics for Medical Imaging." (2008).	No
Recommended Texts	Dendy, Philip Palin, and Brian Heaton. Physics for diagnostic radiology. CRC press, 2011.	No
Websites	https://www.iomp.org/	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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Fail Group (0 – 49)	**FX –** Fail	راسب(المعالجة قيد)	)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

Materials Science

Module Information معلومات المادة الدراسية			
Module Title	**Materials Science**		**Module Delivery**
Module Type	**Basic**		☒**Theory** ☐**Lecture** ☐**Lab** ☒ **Tutorial** ☐**Practical** ☐**Seminar**
Module Code	MPH22314		
ECTS Credits	5		
SWL (hr/sem)	**125**		
Module Level UGx1	2nd	**Semester of Delivery**	2nd
Administering Department	Medical Physics	**College**	Science
Module Leader	Assit. Lec. Taha Ruchdie	**e-mail**	Taha.ruchdie@gu.edu.iq
Module Leader's Acad. Title	Assit. Lec.	**Module Leader's Qualification**	M.Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	16/9/ /2024	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- Describe the important quantum-mechanical principle that relates to electron energies. 2- Briefly describe ionic, covalent, metallic, hydrogen, and van der Waals bonds. 3- Describe the atomic/molecular structure difference between crystalline and noncrystalline materials. 4- Draw unit cells for face-centered cubic, body-centered cubic, and hexagonal close-packed crystal structures. 5- Specify the Miller indices for a plane that has been drawn within a unit cell. 6- Classification of crystalline imperfections, calculate the weight percent and atom percent for each element in a metal alloy. 7- Explain the use of X-ray diffraction measurements in determining crystalline structures.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding the basic concepts in materials science (the purpose of studying materials science and engineering, classification of materials, interatomic bonds, metallic crystal structures, and crystal systems) and relating them to the materials' properties. 2. Understanding of the basic concepts in crystalline defects and analysis of the materials using optical and electron microscopes and x-ray diffraction characterization. 3. Compute ionic radii using unit cell dimensions. 4. Given the masses and atomic weights of two or more elements in a metal alloy, calculate the weight percent and atom percent for each element.

Indicative Contents المحتويات الإرشادية	**Atomic Structure and Interatomic Bonding:** **Atomic Structure:** Fundamental Concepts, Electrons in Atoms, The Periodic Table **Atomic Bonding in Solids:** Bonding Forces and Energies, Primary Interatomic Bonds, Secondary Bonding or van der Waals Bonding. **The Structure of Crystalline Solids:** Crystal Structures: Fundamental Concepts, Unit Cells, Metallic Crystal Structures, Density Computations, Polymorphism and Allotropy, Crystal Systems. **Crystallographic Points, Directions, and Planes:** Point Coordinates, Crystallographic Directions, Crystallographic Planes, Linear and Planar Densities, Close-Packed Crystal Structures. **Crystalline And Noncrystalline Materials:** Single Crystals, Polycrystalline Materials, X-Ray Diffraction: Determination of Crystal Structures, Noncrystalline Solids. **Imperfections in Solids:** **Point Defects**: Vacancies and Self-Interstitials, Impurities in Solids, Specification of Composition. **Miscellaneous Imperfections:** Dislocations–Linear Defects, Interfacial Defects, Surface Defects, Bulk or Volume Defects, Atomic Vibrations. **Microscopic Examination:** Basic Concepts of Microscopy, Microscopic Techniques, Grain Size Determination.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Establish a positive learning environment: Create an atmosphere of respect, collaboration, and inclusion. 2. Use a variety of teaching methods: Incorporate lectures, discussions, demonstrations, experiments, and hands-on activities to keep students engaged. 3. Set clear expectations: Explain the goals of the lesson and the criteria for success. 4. Provide feedback: Give timely and constructive feedback to help students learn from their mistakes. 5. Encourage active learning: Ask questions and provide opportunities for students to practice and apply their knowledge. 6. Promote critical thinking: Challenge students to think critically and analyze information. 7. Foster collaboration: Encourage students to work together to solve problems and share ideas. 8. Utilize technology: Incorporate technology into the classroom to enhance the learning experience

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	125		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to the Materials Science
Week 2	Classification of Materials
Week 3	Atomic Structure and Interatomic Bonding (Electrons in Solids)
Week 4	Atomic Structure and Interatomic Bonding (Interatomic Bonds)
Week 5	The Structure of Crystalline Solids, Unit Cells, Metallic Crystal Structures
Week 6	Density Computations, Polymorphism and Allotropy, Crystal Systems
Week 7	Crystallographic Planes and Directions
Week 8	Single and Polycrystalline Materials
Week 9	X-ray Diffraction Analysis of Crystal Structures
Week 10	Imperfections in Solids, Point Defects
Week 11	Specification of Composition
Week 12	Linear Defects
Week 13	Bulk Defects
Week 14	Grain-size Determination
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	J. C. Williams and G. R. David, *Materials Science and Engineering: An Introduction*, 9th ed. USA: John Wiley & Sons, Inc., 2013.	No
Recommended Texts	D. R. Askeland, P. P. Fulay, and D. K. Bhattacharya, *Essentials of Materials Science and Engineering*. USA: Cengage Learning, 2010.	No

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جدا جيد	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(المعالجة قيد)	)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	**English Language2**		**Module Delivery**
Module Type	**Basic**		☐**Theory** ☒**Lecture** ☐**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**
Module Code	SCI233		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level UGx11 2	٢nd	**Semester of Delivery**	2nd
Administering Department	Medical Physics	**College**	Science
Module Leader	Assit. Lec. Fatima Essam	**e-mail**	
Module Leader's Acad. Title	Assit. Lec.	**Module Leader's Qualification**	M.Sc.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	1/10/2024	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. Build a foundational vocabulary for everyday topics such as family, work, shopping, and travel. 2. Master essential grammar structures, including the present simple, present continuous, past simple, and basic prepositions. 3. Listen for key information in simple conversations and audio texts, such as directions, introductions, and short dialogues. 4. Practice speaking in structured activities, including introductions, asking questions, and participating in short exchanges. 5. Write simple sentences and short texts, such as postcards, emails, and personal descriptions. 6. Read and understand short texts, notices, and articles on familiar topics. 7. Use practical language for daily interactions, like ordering food, asking for directions, or making plans. 8. Explore cultural differences and similarities through lessons that introduce English-speaking traditions and lifestyles

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introduce themselves and others, ask and answer basic personal questions, and use the verb to be in simple sentences. 2. Describe possessions and family relationships, using possessive adjectives and singular/plural nouns correctly. 3. Talk about daily routines, times, and schedules while using the present simple tense and frequency adverbs. 4. Discuss abilities, skills, and permissions using can and can't, and learn functional language for making requests. 5. Describe places and homes, use there is/there are with prepositions of place, and ask for and give directions. 6. Talk about past experiences and events using the past simple tense (regular verbs) and vocabulary for historical events. 7. Express preferences, likes, and dislikes, and practice using verbs followed by - ing or to forms. 8. Ask about prices, and use countable/uncountable nouns with some, any, and much/many. 9. Describe current actions using the present continuous tense and compare it with the present simple. 10. Talk about future plans and intentions using going to, and learn vocabulary for travel and holidays. 11. Discuss past events using the past simple tense (irregular verbs) and share personal experiences.
Indicative Contents	Indicative content includes the following.

المحتويات الارشادية	Each unit will focus on its primary learning outcomes, with about 10-15 minutes spent on introducing vocabulary and grammar, 20-25 minutes on practicing listening and speaking, and the remaining 20-25 minutes on reading comprehension, writing, and functional language exercises. To maximize time, more complex topics like past tense or future forms will be prioritized over less frequent structures. The course will include a brief warm-up activity at the start of each session, followed by targeted practice and ending with a summary or real-life application task.[10 hours] The review sessions will consolidate key language skills from multiple units, focusing on active practice through games, discussions, or role-plays. The final 2 hours will involve assessments, such as short quizzes and oral presentations, and a practical activity like creating or responding to functional language scenarios. [7 hours]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Lectures - Role playing - Flipped classroom approach - Time management - Immediate feedback - Group work

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	5, 10	LO #1, 2, 4,5 and 6
	Assignments	2	10% (10)	3,12	LO # 3, 4, 6 and 7
	Projects	1	10% (10)	Continuous	LO #1- 11
	Report				

Summative assessment	**Midterm Exam**	1 hr	10% (10)	8	LO # 1-9
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Greetings, introductions, and the verb to be.
Week 2	Learn vocabulary for family, countries, and possessive adjectives.
Week 3	Practice the present simple tense, frequency adverbs, and time expressions.
Week 4	Explore the use of can/can't for abilities and making polite requests.
Week 5	Learn vocabulary for homes, prepositions of place, and asking for/giving directions.
Week 6	Introduce the past simple tense (regular verbs) and key time expressions.
Week 7	Express opinions using verbs like like, love, hate followed by -ing.
Week 8	Focus on countable/uncountable nouns, quantifiers (some, any, much, many), and shopping conversations.
Week 9	Compare the present simple and present continuous tenses in context.
Week 10	Discuss future plans using going to and vocabulary for travel and holidays.
Week 11	Focus on irregular past simple verbs and sharing personal experiences.

Week 12	Practice practical language for real-life scenarios like ordering food and making arrangements
Week 13	Use comparative adjectives and simple future forms (will) to talk about hopes and predictions.
Week 14	Revisit and reinforce grammar, vocabulary, and skills learned in previous lectures.
Week 15	oral presentations, or role-plays to assess learners' progress
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	Soars, L., Soars, J. (2002). New Headway: Beginner: Student's Book B. Spain: OUP Oxford.	No
Recommended Texts	Cunningham, S., Redston, C., Moor, P. (2002). Cutting Edge: Starter. United Kingdom: Longman.	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	جدا جيد	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	**FX –** Fail	راسب(المعالجة قيد)	)45-49 (	More work required but credit awarded
(0 – 49)	**F –** Fail	راسب	)0-44 (	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	Applications of Computer Science		**Module Delivery**
Module Type	Support		☒**Theory** ☐**Lecture** ☒ **Lab** ☐ **Tutorial** ☐**Practical** ☐**Seminar**
Module Code	SCI234		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	2nd	**Semester of Delivery**	2nd
Administering Department	Medical Physics	**College**	Science
Module Leader	Assit. Lec. Batool Rafid	**e-mail**	
Module Leader's Acad. Title	Assit. Lec.	**Module Leader's Qualification**	M.Sc.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	15/6/2025	**Version Number**	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1. Security and Networking: · To introduce students to computer networks, their components, and basic security principles. · To prepare students for managing and mitigating network threats. 2. Computer Troubleshooting: · To equip learners with the ability to diagnose and resolve common hardware and software issues. 3. E-Commerce: · To familiarize learners with electronic banking services, including online and mobile banking. 4. Introduction to AI: · To provide an overview of artificial intelligence and its applications in everyday life. · To introduce key ethical considerations, societal impacts, and future developments in AI.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Security and Networks: · Describe different types of networks and their components. · Implement basic security measures to protect network integrity. 2. Computer Troubleshooting: · Apply diagnostic tools to identify hardware/software problems. · Use practical methods to resolve technical issues. 3. E-Commerce: · Utilize electronic banking services for transactions. · Explain the mechanisms behind online banking and security. 4. Artificial Intelligence: · Identify applications of AI in daily life, such as smartphones and healthcare. · Discuss the ethical and societal challenges posed by AI technologies.
	· Predict future trends and innovations in AI.

Indicative Contents المحتويات الارشادية	1. Network security principles: (4 hrs) · Understanding threats such as malware, phishing, and hacking. · Fundamentals of networking and its components. 2. E-Commerce: (2 hrs) · Fundamentals of online banking: · Online and mobile banking. · Debit and credit card services. · Use of electronic alerts for secure banking. 2. Computer Troubleshooting: (4 hrs) · Identifying common hardware and software problems: Troubleshooting hardware issues (e.g., printers, keyboards, connectivity). · Resolving software conflicts (e.g., operating system errors, application crashes). · Diagnostic tools: Usage of built-in system tools for troubleshooting (e.g., Task Manager, disk utilities). · Introduction to third-party diagnostic software. 3. Introduction to Artificial Intelligence (AI): (4 hrs) · AI in Daily Life: Applications of AI in smartphones, virtual assistants (e.g., Siri, Google Assistant).

4. The Role of AI in Modern Smartphones: (4 hrs)

· How AI is utilized in Modern Smartphones.

5. Applications and Tools of AI: (4 hrs)

· AI applications.

· AI tools.

6. AI and Society: (2 hrs)

· How AI affects the social life.

· AI and the future of humanity.

7. Ethical Challenges in AI: (2 hrs)

· Issues of privacy, surveillance, and the job market.

8. Future of AI: (2 hrs)

· Trends, recent research, and emerging technologies.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Deliver theoretical content through structured lectures. 2. Use multimedia aids (e.g., presentations, videos) to enhance understanding of abstract topics like AI and networking. 3. Hands-on practice for email setup, document collaboration, and troubleshooting. 4. Lab-based exercises to simulate network setups and resolve network issues. 5. Demonstrations of e-commerce tools, such as secure online banking and mobile payment systems.

6. Collaborative problem-solving for troubleshooting real-life IT issues. 7. Group discussions on AI's impact on society and ethical challenges. 8. Present real-world scenarios of AI applications in healthcare, finance, and transportation.
9. Analyze security breaches and propose preventive measures for network security.
10. Assign projects such as:

- Designing secure email workflows.
- Developing troubleshooting guides for common computer issues. ○ Proposing solutions for AI-related societal challenges.

11. Assign readings from textbooks and reference materials for self-study. 12. Encourage the use of online tutorials and open-source tools for further exploration.
13. Formative Assessment:

- In-class quizzes and practical evaluations.
- Group presentations on assigned topics.

14. Summative Assessment:

- Final theoretical exams to assess understanding.
- Practical tests to evaluate troubleshooting and application skills.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	45	**Structured SWL (h/w)** الحمل الدرا ي س المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	30	**Unstructured SWL (h/w)** الحمل الدرا سي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	75		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Networking, Overview of networks and types of networks.
Week 2	Network Security Basics, understanding network threats.
Week 3	Introduction to E-Commerce and Online Banking, Concepts of electronic banking, online banking basics
Week 4	Computer Troubleshooting: Identifying software and hardware issues and solving them.
Week 5	Basic Troubleshooting Techniques, Tools and techniques for diagnosing issues.
Week 6	Introduction to Artificial Intelligence, Definition, history, and overview of AI.
Week 7	Key Characteristics of AI, benefits of AI, Challenges and ethical considerations.
Week 8	The role of AI in modern smartphones, virtual assistants.
Week 9	Adaptive learning, Real-Time Translation Services.
Week 10	Applications of AI, AI in education, healthcare, finance, and marketing
Week 11	Further Applications of AI, AI in transportation and advertising
Week 12	Applications of AI: Finance, Robotics and Automation Technologies.
Week 13	AI and Society, AI's impact on social and international relations
Week 14	Ethical Challenges in AI, Ethical concerns, privacy, and AI's impact on jobs
Week 15	The Future of AI, Future trends, research, and emerging technologies
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Weeks 1	Definition of programming and MATLAB environment
Week 2	Variables
Weeks 3	Using MATLAB a calculator
Weeks 4	Vectors and matrices
Weeks 5	Decision making: If statement, if…else statement, nested if
Weeks 6	Loops: for loop, nested for loop
Week 7	Graphical User Interface
Week 8	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology," 3rd Edition (2020).** **Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete," 16th Edition (2020).** **Ahmed Banafa, "Introduction to Artificial Intelligence (AI)," 1st Edition (2024).**	no
Texts Recommended	**1. الخضر علي الخضر بحات , " أساسيات الحاسوب " , 2016.** **2. الدكتور عادل عبدالنور , "مدخل إلى عالم الذكاء االصطناعي" , 2005.**	no

Websites	· https://www.mathworks.com/ · https://www.wix.com/blog/ecommerce/2023/12/ai-in-ecommerce · https://boostcommerce.net/resources/ai-ecommerce

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
(50 - 100)	**B -** Very Good	جدا جيد	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(المعالجة قيد)	)45 -49 (	More work required but credit awarded
	F – Fail	راسب)		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	**العربية اللغة2**		**Module Delivery**
Module Type	**Basic**		☒**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	SCI232		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level UGx11 2		**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Assit. Lec. Rafal Ahmed	**e-mail**	
Module Leader's Acad. Title	Assistant lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الاخرى

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	١- تعلم العربية السليمة كونها اللغة الرسمية للوطن ٢- اللغة جوهر الهوية ورمزها ٣- اللغة تختلف عن اللهجة، فاالولى عالمية والثانية محلية ٤- توظيف المفردات الفصيحة في الصياغة االكاديمية للبحوث العلمية مترجمة بنظيرها الفصيح ٥-التمّكن من كتابة البحوث والمقاالت ذات المحتوى العلمي الصرف باللغة العربية الفصحى ٦- تجنب االخطاء الشائعة في الكتابة واختيار المفردات الصائبة ٧- اثراء الخزين المعجمي لدى الطالب للمساعدة في بناء كاريزما التواصل الكالمي ٨- االطالع على نماذج من االدب العربي شعرا ونثرا لما لها من اساس في بناء الجانب الثقافي المتنوع لدى الطالب ٩- كتابة االعداد بتمّكن فضال الكتابة الصحيحة في صياغة الطلبات الرسمية ١٠- التعرف على الدرس الصوتي في اللغة العربية وعالقته بعلم الفيزياء
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	عند انتهاء مفردات المادة الدراسية يكون الطالب متمكنا من: 1-الكتابة السليمة خالية من االخطاء 2 -التعبير العلمي االكاديمي الصحيح 3 -استعمال المفردات الفصيحة توظيفا ونطقا 4 -اضافة رصيد لغوي ومفاهيم جديدة لمعاني الكلمات 5-القدرة على المخاطبة االدارية في الطلبات الرسمية

Indicative Contents المحتويات الارشادية	1. لكل تخصص لغته التي تومئ اليه، وتدل عليه، ولغة كل علم تنبع من طبيعة كننه، فاالختصاصات العلمية لها معجم خاص بها يعبر عن جوهرها ومضمونها، فضال عن المصطلحات الخاصة بها التي تدل عليها، وكذلك المصادر العلمية التي يُرجع اليها، والحال كما في اللغة االدبية؛ فهي ايضا لها مفرداتها وطريقة كتابتها والتعبير بها وعبرها، ومصطلحاتها الخاصة بها التي تعبر عنها وتدل عليها. 2. المعاجم – بشكل عام - على اختالف موارها تمثل محتوى وكنفا لمفردات اي لغة مقترنة بالشرح والتفسير لتلك المفردات، اما المعاجم في اللغة العربية فهي واسعة ومتنوعة؛ فهناك معاجم غير معجمات اللغة، فالعربية فيها اول معجم جغرافي في التاريخ، معجم البلدان لـ)ياقوت الحموي(، فضال عن المعاجم المتخصصة في جزئية معينة، مثل معاجم البالغة، فضال عن تنوع المدارس في تأليف المعاجم وتبويبها وطريقة البحث عن المفردة فيها. 3. العالمة تندرج ضمن حقل علم السيمياء او السيميائية، وعالمات الترقيم من المواضيع المهمة باألخص في البحوث االكاديمية، بغض النظر عن التخصص، سواء كان التخصص علميا، او انسانيا، من هنا تأتي اهمية ّي مهم في الكتابة النّصيّة وفي بناء النص، فهي تُس ِهل الفهم على عالمات الترقيم؛ فلها دور سيميائي، ودالل القراءة والتلفّ رقيم خير وسيلة إلظهار ال ِصراحة القارئ، وتوضح المعنى المقصود، وبيان الوضوح في الكالم المكتوب؛ ألنّه يد ِل النّاظر إلى تلك العالمات االصطالحيّة وعلى العالقات التي تربط أجزاء الكالم بعضها ببعض بوجه عام، وأجزاء ك ِل جملة بوجه خاص، وكما يقول المتخصصون عن عالمات ن الوقف ليس مستق ، وإنّما هو من توابع التّفكير، أي: إن ال ِسكتات المق ِررة بمقادير مضبوطة في ِالا الترقيم: بأ مواضع معينة، ليست مجرد مح ِطات تنفسيّة بالمعنى البيولوج ي للتّنفس، وإنّما في المقام اأّلول وقفات معنويّة. َر فالعبرة من النّاحية الل معلومة، ِغويّة ليست بأن يستعي د القارئ نف َسه، بل المهم أن يتعاطى القارئ السك ِت بمقادي للَبس، و م عن التب ِدل، فهذه العالمات تجسيد لمقصد المتكل وفي مواض ِع محددة من السلسلة المنطوقة رفعا صوناا لمشاعر الكاتب وقصدياته فيها. 4. االسلوب الكتابي يمثل بصمة للكاتب الذي يصدر عنه، ويتجسد عند القارئ، ولكل كاتب اسلوبه الخاص به، ينعكس ذلك في نتاج الكاتب، ولألسلوب انواع مختلفة، فهناك االسلوب العلمي، واالسلوب االدبي، واالسلوب الخطابي، ولكل نوع خصائصة، وقالبه الذي يتكون فيه. 5. االحداث التي تقترن بالزمن تمثل االفعال، واألفعال في العربية تناظر االزمنة في اللغات االخرى من جانب معين، او من جزئية معينة، والعربية تحتوي على عدد كبير من الجذور، جذور األلفعال، ففي العربية أفعال ثالثية ورباعية وخماسية وسداسية، والفعل جزء مهم من اجزاء الكالم االساسية، فضال عن الجانب الصوتي في هذه الجذور، فعلم)األلصوات الفيزيائي(من العلوم المهمة في اللغة العربية، إذ يُعد علم)األلصوات الكوستيكي(

Indicative Contents المحتويات الارشادية	علما أقرب إلى الفيزياء منه للعلوم االنسانية، وهو يمثل المرحلة الوسطى بين علم الاصوات النطقي وعلم الاصوات السمعي، وعالقته مع اللغة العربية انطالقا من البذرة االولى في دراسة مخارج الحروف فيزيائيا ٦ـ الكالم عن الشعر ال ينتهي؛ فالشعر تجسيد لمشاعر الفرد المتمثل بالشاعر، والمشاعر الجمعية الانسانية جمعاء، فهو موجود لدى كل بني البشر، والشعر العربي القديم كان بمثابة نشيدا وطنيا لهم، يمثل هويتهم الثقافية الرصينة ويمثل سجال لتاريخهم وأمجادهم، على اختالف اغراضه من غزل ومدح ورثاء وغير ذلك، وبحورالشعر في الشعر العربي مبنية بناء صوتيا فريدا عبر التفعيالت التي وضعها الخليل بن احمد الفراهيدي ووضع فلسفتها وكنهها وقواعدها، والشعر رصيد ثقافي، وحجة في الكالم، وزينة ورونقا يضاف على شخصية الفرد والمجتمع بشكل عام. ٧ـ الهمزة من المواضيع االجرائية لدى الفرد الكاتب، بغض النظر عن التخصص، فيحتاجها كل فرد ناطق كاتب بها، فلها قواعدها التي تصدر عنها، وتُكتب بالشكل السليم منها، فموضوع رسم الهمزة من االهمية بمكان؛ فرسمها يغير من المعنى، فال بد من وضعها ورسمها بالشكل الصحيح لتوخي التعبير الدقيق عن المعنى المقصود. ٨ـ المفاعيل في اللغة العربية، من الموضوعات المهة في درس اللغة العربية، وال بد لكل دارس من معرفتها بشكل عام، وهناك آراء مختلفة بين البالغيين والنحويين عن المفاعيل، هل ان تلك المفعوالت فضلة، أم أنها في الجملة، وأن ركني الجملة ألساسيين هما: الفعل، ركن رئيس في الجملة ؛ فالنحويون يرون انها فضلةا والفاعل ، وأما البالغيون فيرون :إنها ليست فضلة، وإنما هي ركن أساسي في الجملة؛ ألن كل كلمة تَ ُدل على معنى في الجملة، واذا ما دلت على معنى فال تُعد فضلة، وإنما هي ركن رئيس في الجملة وبنائها، ورأي البالغيين أقرب للصواب من رأي النحويين، فدراستها في العربية لغير المختصين مما يضيف لهم خزينا تعبيريا ٩ـ من المعروف وجود ظاهرة األخطاء اللغوية نحويةا كانت أو امالئية أو اسلوبية، عند متحّدثي اللغة العربية من يعملون في مجال االعالم، وهذه الظاهرة اتسعت وزاد انتشارها وبالاخص عند غير المختصين بها وال سيما في العصر الحديث، فأخذت هذه األخطاء تغزو مجاالت الدراسة جميعها، من ذلك موضوع)العدد(في اللغة كثيرا من الطلبة وكذلك من عامة الناس يستعملون األرقام بدالا من كتابتها بالحروف؛ وذلك لتجنب ا العربية، فنجد أيا كان تخصصه؛ ولهذا فموضوع العدد وقواعد كتابته في ا الوقوع في الخطأ وهذا دليل ضعف ال يليق بالدارس اى اللغة العربية عنه في زمن لغة األرقام موضوع ال غن . ١٠ـ هناك مجموعة من االلفاظ متداولة بشكل كبير، تُستعمل في غير مكانها الصحيح، وفي غير ما وهذه االلفاظ تُستعمل في المخاطبات الرسمية االدارية بالمعنى غير الصحيح او الدقيق الذي تحمله تلك األلفاظ من معاني، فضال عن أهمية توخي الدقة في هذه األلفاظ توظيفا لها في الطلبات الرسمية التي تُقدم على اختالف موضوعاتها، فالطلب ال بد من ان يكون مختصرا مركزا، يعطي الفكرة الموجزة، والهدف المقصود منه ازاء صاحب االدارة الذي تُقدم اليه الطلبات، وما في ذلك من ايجابيات العمل في التخفيف واختصار للجهد والوقت في تنفيذ المهام االدارية الموكلة االفراد على اختالف درجاتهم.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	صناعة شخصية متكاملة للطالب الجامعي من حيث التخصص العلمي الدقيق والتخصص المساند

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	50		

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	3hr	50% (50)	16	All
Total assessment					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
1 Week	الجموع في اللغة العربية / الجمع المذكر السالم
2 Week	الجمع المؤنث السالم
3 Week	جمع التكسير
4 Week	نماذج من الصيغ الصرفية وتوظيفها دالليا
5 Week	االفعال الخمسة وتقسيماتها
6 Week	الشعر العباسي - نماذج مختارة من الشعر العربي القديم
Week 7	Mid-term Exam
8 Week	التوابع / التوكيد
9 Week	العطف
10 Week	البدل
11 Week	االسماء الخمسة
12 Week	نماذج من الشعر الحديث
13 Week	النثر العربي / الرواية الحديثة
14 Week	الترادف – المشترك اللفظي
15 Week	طريقة كتابة الطلبات الرسمية – االخطاء الشائعة الجزء الثاني
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		
	كتاب: العربية الجامعية لغير المتخصصين / ١ -د. عبده الراجحي ٢ -كتاب: النحو التطبيقي / د. عبده الراجحي ٣ -الصرف التطبيقي / د. عبده الراجحي ٤ -النحو الوافي / عباس حسن ٥ -تاريخ االدب العربي / شوقي ضيف	**Available in the Library?**
Required Texts		
Recommended Texts		
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	جدا جيد	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	المعالجة قيد) راسب)	)45-49 (	More work required but credit awarded
	F – Fail	راسب)		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.