Department of Quality Assurance and Univer Director of the Quality Assurance and Univer Date: 26/12/2024 Signature:	The file is checked by: Orocha Neeth ~	Signature A laa Head of Department Name: Dr. Alaa Jabbar Ghazai Date: 26 / 12 / 2024	Academic System: The Bologna Process Description Preparation Date: 2024\9\16 File Completion Date: 2024\9\19	University Name: Al-Nahrain University Faculty/Institute: College of Science Scientific Department: Medical Physics Academic or Professional Program Name Final Certificate Name: Bachelor of Medic	Ministry of Higher Education & Scientific Research Supervision and Scientific Evaluation Directorate Quality Assurance and Academic Accreditation International Accreditation Dept. Accademic Program Specificat
rsity Performance Department: Approval of the Dean	Havio;	Signature: Scientific Associate Name: Dr. Manaf Adnan Saleh Date: 26/11/ 20 14		Bachelor of Medical Physics	ion Form for the Academic





MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية								
Module Title	New Hea	ndway Plus			Module Delivery			
Module Type	BASIC				⊠ Theory			
Module Code	URENC	G1			□ Lecture □ Lab		e	
ECTS Credits	2					⊠Tutori □Practi	al cal	
SWL (hr/sem)	50	50						
Module Level		1	Semester of Delivery		1			
Administering Depa	artment	МРНҮ	College	ge College of Science				
Module Leader	Salam E.	Hammeed	e-mail	<u>sala</u>	<u>alam.dulaimi@nahrainuniv.edu.iq</u>		<u>ainuniv.edu.iq</u>	
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		PhD			
Module Reviewer Manar Tl		hayer Mansour	e-mail	mai	nar.th	aer@nahra	inuniv.edu.iq	
Peer Reviewer Name			e-mail					
Review Committee Approval			Version N	umb	ber			

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 الدر اسرية ونتائج التعلم والمحتويات الار شادية							
	1. Enable students to acquire knowledge and understanding of the						
	basic grammar rules by testing their knowledge of the correct structure of the English sentence.						
Module Aims أهداف المادة الدر اسية	2. Enable students to understand the structures of writing and what is required to write a good academic essay.						
	3. Enable students to use the most efficient method of attacking the reading passage to answer questions correctly in a limited time.						
	4. Enable students to identify their weaknesses and strengths by assess their tests.						
	1 Emberation and electricity of the lecture using the subitshound						
	and the use of video lectures.						
Module Learning	2. Making a group discussion during the lectures to discuss topics that require reflection and analysis.						
Outcomes مخرجات التعلم للمادة الدر اسية	3. Presenting a set of critical thinking questions during the lectures such as what, how, when and why for specific topics.						
	4. Giving students homework that requires explanations and solving through reasonable methods.						
	5. Giving students homework that requires explanations in causal ways.						
Indicativa Contonts	 The skills goals special to the course. 						
المحتويات الإرشادية	 Ability to independently investigate and resolve an original problem. Preparation for later advanced study. 						
	Learning and Teaching Strategies						
	Write something like: The main strategy that will be adopted in introducing this unit is						
Strategies	to encourage students to participate in solving homework exercises, while improving and expanding their critical thinking skills. This will be achieved through classes and						
	interactive tutorials and by thinking about the type of simple experiments that include some sampling activities that are of interest to the students.						

Student Workload (SWL) الحمل الدر اسي للطالب						
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	2.2			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	1.1			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	50					

Module Evaluation								
تقييم المادة الدر اسية								
	Time/Nu Weight (Marks) Week Due Relevant Learning							
	Ouizzes	1	10% (10)	Continuous				
Formative assessment	Online Assignments	1	10% (10)	Continuous	All			
	Onsite Assignments	1	10% (10)	Continuous	All			
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13			
assessment	Final Exam	3hr	50% (50)	15	All			
Total assessm	ient		100% (100 Marks)					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري					
	Material Covered				
Week 1	Simple present and simple past				
Week 2	Past and present continuous, Past and present perfect				
Week 3	Strategies of writing different essays				
Week 4	General outline of an academic essay				
Week 5	Writing an academic essay				
Week 6	Rules 1-3 - every subject has a verb - present participles - past participles				
Week 7	Rules 4-6 - coordinate connectors				

	- Adverbial connector
	- contrast adverbial connector
Week 8	Rules 1-6 (Discussion, questions and typical answers)
Week 9	Reading- (Answering main idea questions correctly)
Week 10	Reading - Identify the organization of ideas
Week 11	Reading Find pronoun referents
Week 12	Determine meanings from word parts
	Determine meanings of difficult words
Week 13	A review of what was studied in the previous lectures with questions and discussion of typical
	answers
Week 14	Mid Exam
Week 15	Final Exam

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

Learning and Teaching Resources مصادر التعلم والتدريس						
	Text	Available in the Library?				
Required Texts	Headway- Upper intermediate- 3rd Edition: Liz and John Soars, 2005.	YES				
Recommended Texts	Preparation course for the TOEFL TEST- Deborah Phillips, 2003.	YES				
Websites						

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

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







MODULE DESCRIPTOR FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية							
Module Title	Democracy 8	k Human Rights		Mod	ule Deliver	у	
Module Type	BASIC				⊠Theory		
Module Code	URDEM				□Lectur	e	
ECTS Credits	2	2				⊠Tutorial □Practical	
SWL (hr/sem)	50				⊠Seminar		
Module Level		1	Semester of Delivery		1		
Administering D	epartment	МРНҮ	College of Science				
Module Leader	Ihab Ntiq kh	nalid	e-mail	<u>ihab.nati</u>	hab.natiq@nahrainuniv.edu.iq		
Module Leader's Acad. Title		Assistant Lecturer	Module Leader's Qualification		MSc		
Module Tutor	f utor None		e-mail	None			
Peer Reviewer N	lame		e-mail				
Review Committee Approval			Version N	umber			

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى					
Prerequisite module	None	Semester			
Co-requisites module	None	Semester			

Module Aims, Learning Outcomes and Indicative Contents							
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية						
	The goal of studying human rights and democracy is to enhance understanding and awareness of human rights issues and the fundamental principles of democracy. There are several key objectives in studying this subject:						
	1. Understanding human rights: The study of human rights aims to familiarize you with the core concepts of human rights and their fundamental value in society. You will learn about the history and legal development of human rights, as well as the international treaties and agreements related to this subject.						
	2. Awareness of the core principles of democracy: You will become acquainted with the concept of democracy and its core values, including the rule of law, citizenship rights, and political participation. You will also learn about different systems of governance and how democratic principles are applied in different societies.						
Module Aims أهداف المادة الدر اسية	3. Familiarity with current challenges: You will learn about current challenges and issues in the field of human rights and democracy. You will study issues related to discrimination, social justice, women's rights, minority rights, children's rights, and refugee rights, as well as how to address these challenges within a democratic framework.						
	4. Application of concepts to real-world situations: You will learn how to apply the concepts and principles studied in human rights and democracy to practical situations. You will study the various roles of human rights organizations and democratic institutions, and how to work towards promoting human rights and enhancing democracy in societies.						
	5. Development of critical and analytical skills: You will learn how to analyze issues related to human rights and democracy and evaluate the legal, ethical, and political contexts surrounding them. You will practice formulating strong arguments and providing constructive criticism of unjust policies and practices.						
	By studying human rights and democracy, you will acquire the necessary knowledge and understanding to contribute to the promotion of human rights and democracy in society and work towards creating positive						

	change.				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	The University of Al-Nahrain works through teaching the subject of human rights and democracy to promote education, awareness, and train students on the importance of active participation in various aspects of public life. This includes promoting respect for the principles of human rights, active engagement in political and cultural life, and fostering values, beliefs, and positions that encourage all students to support their own rights and the rights of others. It also facilitates an understanding of the shared responsibility of this group in making human rights a lived reality, equipping them with knowledge, skills, and attitudes that enable them to comprehend these rights and adhere to them.				
Indicative Contents المحتويات الإرشادية	 -Understanding the concept of rights and the concept of human beings, both linguistically and terminologically, and understanding the concept of human rights and studying the legal personality of humans, as well as the characteristics of natural persons. - Understanding the historical development of the idea of human rights in ancient and medieval eras, and the concept of human rights in divine scriptures. - Studying the sources of local and international human rights. - Studying the guarantees of human rights and understanding constitutional and judicial guarantees, as well as guarantees of human rights in Islam. - Understanding the role of organizations in human rights at the regional and international levels. - Studying the impact of globalization on human rights. - Studying the concept of democracy, its evolution, definition, and dimensions. - Studying the concept of elections and its legal adaptation. - Understanding the concept of elections in cluding the delineation of the including the delineation of elections including the delineation of elections including the delineation of elections including the delineation of the organization of elections including the delineation of the including the delineation of the including the delineation of the organization of elections including the delineation of the organization of elect				
	 electoral districts, electoral lists, candidates, election campaigns, and voting. Studying electoral systems and understanding direct elections, indirect elections, individual elections, and list-based elections. -Understanding the advantages and disadvantages of democracy. 				
	Learning and Teaching Strategies				
	2. Writing reports				
Strategies	3. Online learning				
	4. Field visits				

Student Workload (SWL) الحمل الدر اسي للطالب						
Structured SWL (h/sem) 33 Structured SWL (h/w) 2.2 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 2.2						
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	1.1			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	50					

Module Evaluation								
تقييم المادة الدر أسيه								
		Time/Nu	Weight (Marks)	Week Due	Relevant Learning			
		mber	,		Outcome			
	Quizzes	1	10% (10)	Continuous	All			
Formative assessment	Online	1	10% (10)	Continuous	۸11			
	Assignments	T	10%(10)		All			
	Onsite	1	1006 (10)	Continuous	۸11			
	Assignments	T	10% (10)		All			
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13			
assessment	Final Exam	3hr	50% (50)	15	All			
Total assessm	ient		100% (100 Marks)					

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	The concept of human rights
Week 2	Human rights in ancient civilizations
Week 3	Human rights in divine laws and religions
Week 4	Human rights resources
Week 5	Human rights guarantees and means of protecting them
Week 6	The role of organizations in protecting human rights
Week 7	Globalization and human rights
Week 8	The concept of democracy and Representative democracy.

Week 9	The concept of election and its legal adaptation
Week 10	Organizing the election process and Election systems
Week 11	Formation of the electorate
Week 12	Obstacles and Foundations of Good Governance
Week 13	Disadvantages and advantages of democracy
Week 14	Mid Exam
Week 15	Final Exam

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

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Maher Saleh Allawi Al-Jubouri, Human Rights, Children and Democracy, The Law Library, 2009	YES			
Recommended Texts	Dr. Hamid Hanoun Khaled, Human Rights, Al-Sanhouri Library, 2015	NO			
Websites					

GRADING SCHEME مخطط الدرجات						
Group	Grade	التقدير	Marks (%)	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
a a	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
Success Group (50 - 100)	C - Goodجند70 - 79Sound work with notable errors		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	مقبول بقرار	(45-49)	More work required but credit awarded		
(0 - 49)	F – Fail	راسب	(0-44)	Considerable amount of work required		
Note:						

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







MODULE DESCRIPTOR FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية							
Module Title	Analytical c	hemistry			Module Delivery		у
Module Type	Suplement				⊠Theory		
Module Code	CREQ110	5				⊠Lectur ⊠Lab	e
ECTS Credits	5	5 Sector					
SWL (hr/sem)	125				⊠Seminar		
Module Level		1	Semester	Semester of Delivery		у	1
Administering D	epartment	МРНҮ	College	ge College of Science			
Module Leader	Amina mohs	sen abass	e-mail	Amina.mohsen@nahrainuniv.edu.i		rainuniv.edu.iq	
Module Leader's	Acad. Title	Professor	Module Leader's Qualification		PhD		
Module Tutor	Shams aws	ismael	e-mail	<u>Sha</u>	<u>Shams.aws@nahraininiv.edu.iq</u>		<u>niniv.edu.iq</u>
Module Reviewer Dena ahmed hashem			Din	<u>Dina.ahmed@nahrainuniv.edu.iq</u>		nuniv.edu.iq	
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	umb	ber		

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية					
Module Aims أهداف المادة الدر اسية	 Introduction to Analytical Chemistry with a goal of understanding the reason for doing analytical chemistry and the basic steps of dealing with analytical issues present for a professional chemist. Full introduction to the weights and volumes concept in chemistry reaching a full understanding of the mole concept. The curriculum develops to learn the main units regarding concentration in analytical chemistry and the relations between them and the ability to switch them. Studying Stoichiometry, in relation to the mole concept. A basic understanding of gravimetric methods and solubility. 					
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Learning the correct methods to understand analytical issues. Introduction to main definitions for volumetric and gravimetric analysis. Understanding the Mole unit and studying Stoichiometry. Understanding main units in analytical chemistry. General introduction to solubility and common ion effect. Develop student abilities to adapt units and numbers and exchange them. Learn the ability to choose an analytical method for any analytical issue. Develop the ability to interact and balance chemical equations and do a stoichiometry. Develop basic abilities to interact with chemicals at an analytical lab and methods of detecting some elements. 					
Indicative Contents المحتويات الإر شادية	 Areas of chemical analysis The current role of analytical chemist Main branches of analytical chemistry Classification of quantitative methods Analytical Methodology The concept of mole (mol) The molar mass (molecular weight) The mole calculations Concentration units Molarity and Normality 					

	b. Molality						
	c. dilution						
	d. volume per volume						
	e. weight per weight						
	f. weight per volume						
	g. ppm and ppb						
	10. Concentration units interchange						
	11. Stoichiometry						
	12. limiting and excess concept						
	13. Solubility and Ksp						
	14. Common ion effect						
	Learning and Teaching Strategies						
	استر اتيجيات التعلم والتعليم						
	- In class interactive lectures involving educational videos						
	- Practical in lab lectures						
Strategies	- Adapting interactivity with student's interaction by raising a question and asking the						
	group to find the relevant answers to them as a main way of teaching.						
	- 2hrs per week tutorial focused mainly on expanding solving numerical questions						

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) 65 Structured SWL (h/w) 4.3 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 4.3					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125				

Module Evaluation تقديم المادة الدر اسبة							
Time/Nu Weight (Marks) Week Due Relevant Learning Outcome							
	Quizzes	1	10% (10)	Continuous	All		
Formative assessment	Online Assignments	1	5% (5)	Continuous	All		
	Lab	1	15% (15)	Continuous	All		
	Seminar	1	10% (10)	Continuous	All		
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13		
assessment	Final Exam	4hr	50% (50)	15	All		
Total assessm	ient		100% (100 Marks)				

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Week 1-2	Learning basics of analytical chemistry and scientific steps of analysis.			
Week 3-5	Solution preparation and concentration (molecular mass, Moles, Molarity, Molality, Normality, and other concentration units)			
Week 6-8	units interchange (mol, ppm, ppb, w/w, w/v, v/v)			
Week 9-12	Stoichiometric Relationships (balancing chemical equation and stoichiometry)			
Week 13	Gravimetric methods of analysis (solubility and common ion effects)			
Week 14	Mid Exam			
Week 15	Final Exam			

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر
	Material Covered
Week 1	Lab 1: Lab introduction and basic glassware.
Week 2	Lab 2: Analysis and identification of Group I Cations (Ag+, Hg22+ and Pb2+ – insoluble chlorides.
Week 3	Lab 3: Analysis and identification of Group I Cations in an unknown sample.
Week 4	Lab 4: Analysis and identification of Group II Cations (Hg2+, Pb2+, Cu2+, Bi3+, Cd2+, As3+, Sb3+ and Sn4+ – insoluble sulphides in acidic.
Week 5	Lab 5: lab review
Week 6	Lab 6: Analysis and identification of Group II Cations in an unknown sample.
Week 7	Lab 7: Analysis and identification of Group III Cations (Al3+. Fe3+, Co2+, Ni2+, Cr3+, Zn2+ and Mn2+ – insoluble sulphides.
Week 8	Lab 8: lab review
Week 9	Lab 9: Analysis and identification of Group III Cations in an unknown sample.
Week 10	Lab 10: Analysis and identification group IV Cations (Ca2+, Sr2+ and Ba2+ – carbonate precipitates.
Week 11	Lab 11: Analysis and identification of group IV Cations in an unknown sample.
Week 12	Lab 12: lab review

Week 13	Lab 13: Analysis and identification of Group V Cations (Mg2+, Na+, K+ and NH4+)
Week 14	Mid Exam
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Fundamental of analytical chemistry, D.A. Skoog, D. M.West, F. J. Holler and S. R. Crouch, 8th ed., 2004, Brooks/Cole.	YES			
Recommended Texts	Analytical chemistry, "Theoretical and Metrological Fundamentals", K. Danzer, 1st ed., 2006, Springer.	NO			
Websites					

GRADING SCHEME مخطط الدرجات					
Group	Grade	التقدير	Marks (%)	Definition	
	A - Excellent	امتياز	90 - 100	Outstanding Performance	
a a	B - Very Good	جيد جدا	80 - 89	Above average with some errors	
Success Group (50 - 100)	C - Good	جنر	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	مقبول بقرار	(45-49)	More work required but credit awarded	
(0-49)	F – Fail	راسب	(0-44)	Considerable amount of work required	
Note:					

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







MODULE DESCRIPTOR FORM نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية						
Module Title	Fundamen	Fundamental of Mechanics			dule Deliver	у
Module Type	Core				⊠Theor	y
Module Code	MPHY110)1			⊠Lab	e
ECTS Credits	8	8			⊠Tutori ⊠Practi	ial cal
SWL (hr/sem)	200				⊠Semin	ar
Module Level	e Level 1		Semester of Delivery		1	
Administering D	epartment	МРНҮ	College	College	College of Science	
Module Leader	Dr. Ahmed H	ł. Flayyih	e-mail	ahmad.altabbak@nahrainuniv.edu.iq		<u>hrainuniv.edu.iq</u>
Module Leader's	Acad. Title	Professor	Module Lo Qualificat	eader's ion		PhD
Module Tutor	Zainab Salaı	n Khaleefah	e-mail	Zainab.salam@nahrainuniv.edu.iq		ainuniv.edu.iq
Module Reviewer	eviewer Entidhar Malik Hadi Fatimah Fadhil Abd		e-mail	entidhar.malik@nahrainuniv.edu.iq fatimahfadhil33@nahrainuniv.edu.iq		<u>rainuniv.edu.iq</u> hrainuniv.edu.iq
Peer Reviewer Name			e-mail			
Review Committee Ve			Version N	umber		

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى						
Prerequisite module	None	Semester				
Co-requisites module	None	Semester				
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية						
Module Aims أهداف المادة الدر اسية	Mechanics is one of the basic subjects for first yes science. The aim of this semester is to provide th of the foundations of classical physics, includ equilibrium, concepts of energy and work, and ot	ear students in o e student with l ling the laws o her important co	colleges of knowledge of motion, oncepts.			
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Providing the student with the basic concepts of the laws of motion. Learning basic concepts on which physical laws depend, such as equilibrium, conservation of energy and work. Providing the student with scientific experience, practical skills and solving scientific problems using simplified mathematical methods 					
Indicative Contents المحتويات الإرشادية	Chapter One: Vector Algebra Chapter Two: Laws of Motion Chapter Three: Newton's Laws of Motion Chapter Four: Energy Chapter Five: Momentum and Collision					
	Learning and Teaching Strategies استراتيجيات التعلم والتعليم					
Strategies	استراتیجیات التعلم و التعلیم The learning strategy depends on the following: 1. Feeding the student with theoretical foundations and concepts from theoretical lectures 2. Daily and semester tests 3. Assigning students to solve the required mathematical problems and discussing them during the class					

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	65 Structured SWL (h/w) 4.3				
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	135	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	9		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	200				

Module Evaluation							
تقييم المادة الدر اسية							
Time/Nu Weight (Marks) Week Due Relevant Learning Outcome							
	Quizzes	1	10% (10)	Continuous	All		
Formative assessment	Online Assignments	1	5% (5)	Continuous	All		
	Lab	1	15% (15)	Continuous	All		
	Seminar	1	10% (10)	Continuous	All		
Summative	Midterm Exam	2 hr	10% (10)	8	LO # 1-7		
assessment	Final Exam	4hr	50% (50)	15	All		
Total assessm	nent		100% (100 Marks)				

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Chapter One: Introduction to vector algebra, vector values and eigenvalues, types of vectors, addition and subtraction of vectors.
Week 2	Scalar and vector multiplication, triple scalar and vector multiplication, descent, solving math problems and homework.
Week 3	Chapter Two: Units and their conversions, displacement, velocity, acceleration, laws of uniform linear motion in one dimension.
Week 4	Free fall, problem solving and homework.
Week 5	Laws and applications of laws of motion in two directions, examples and assignments.
Week 6	Chapter Three: Newton's Laws of Motion (First, Second and Third Laws).
Week 7	Applications of Newton's laws of motion.
Week 8	Mid Exam
Week 9	Chapter 4: Energy, Work, Examples and Homework.
Week 10	Work and energy theory, examples and applications.

Week 11	Gravitational potential energy, examples and applications.
Week 12	Spring potential energy, applications and examples.
Week 13	Chapter 5, Momentum and Collision.
Week 14	Law of conservation of momentum, collision, examples and applications.
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبو عي للمختبر				
	Material Covered			
	Lab 1: Instructions to students, Basic personal needs and other requirements.			
Week 1	Writing the account of an experiment, Introduction to graphical representation of			
week 1	experimental data, Errors, their determination and minimization, least square fitting.			
	Units.			
Week 2	Lab 2: Graph Lab			
Week 3-4	Lab 3: Forces and Equilibrium			
Week 5-6	Lab 4: Hooks Law			
Week 7-8	Lab 5: Spiral Spring: Determination of force constant and effective mass of a spring.			
Week 9-10	Lab 6: Simple Pendulum			
Week 11-12	Lab 7: The bifilar suspension			
Week 13	Lab 8: The bifilar suspension			
Week 14	Mid Exam			
Week 15	Final Exam			

Learning and Teaching Resources					
	مصادر التعلم والتدريس				
	Text	Available in the Library?			
Required Texts	College Physics, Raymond, A. Serway, Eight edition, USA, 2009	YES			
Recommended Texts	University Physics, SAMUEL J. LING, Volume 2, 2021	YES			
Websites	https://fizikamentor.wordpress.com/wp-content/uploads/2 physics.pdf https://faculty.ksu.edu.sa/sites/default/files/physics_serway	<u>018/04/college-</u> y.pdf			

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

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







MODULE DESCRIPTOR FORM نموذج وصف المادة الدر اسبة

Module Information معلومات المادة الدر اسية							
Module Title	Electricity	and Magnetisim			Modu	ıle Deliver	у
Module Type	Core		⊠Theory		y		
Module Code	MPHY110)2					e
ECTS Credits	8					⊠Tutori ⊠Practi	ial cal
SWL (hr/sem)	200		-			⊠Semin	ar
Module Level		1	Semester of Delivery		'y	1	
Administering D	epartment	МРНҮ	College	College of Science			
Module Leader	Alaa Jabbar	Ghazai	e-mail	<u>dr</u> .	dr.alaa.ghazai@nahrainuniv.edu.iq		ainuniv.edu.iq
Module Leader's	Acad. Title	Professor	Module Leader's Qualification		PhD		
Module Tutor	Module Tutor Zahraa malik Rafah mohmmed		e-mail	<u>zal</u> <u>raf</u>	hraa.m fah.m.h	alik@nahra @nahrainu	<u>iinuniv.edu.iq</u> Iniv.edu.iq
Module Reviewer Raghda harith		e-mail	rag	raghda.h.h@nahrainuniv.edu.iq		<u>univ.edu.iq</u>	
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	um	ber		

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية							
Module Aims أهداف المادة الدر اسبة	 Understanding the electric charge and the electric field. Knowing the composition of matter. Knowing the types of matter. Knowing the types of electrical charging. Learn about Coulomb's law. Identify the electric field of charges and electric field lines. Identify forces, moments, and electrical potential energy. Knowing the Gauss's law. Identify the electric flux and the enclosed charge. Identify the electrostatic field. 							
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 For students to be able to distinguish b materials and their ability to conduct elect Student's ability to charge materials electr Students can be able to identify what h charged materials and the movement of ch Distinguishing between Coulomb's, Gaus what students achieve in studying each law Students' ability to test whether materia conductive. Students' ability to distinguish between circuit while drawing this circuit. Students' ability to perform many cale moments, potential energy, electric flux, re The ability of students to apply wh theoretically in a practical way in the future 	etween different cricity. ically. appens inside entry arges inside the ss's and Ohm's w. ls are conductiv the parts of an culations such a esistance, capacit nat has been the re.	t types of lectrically material. laws and re or non- electrical as forces, tance, etc. calculated					
Indicative Contents المحتويات الإرشادية	 Electric charge, electric field, Conductors, charges. [15 hrs.] Coulomb's Law, Electric field lines, electric 	insulators and in c dipole, force an	duced d					

	 potential energy. [15 hrs.] Gauss's Law, The electrostatic field, Ohm's Law, Capacitance and resistance. [20 hrs.] Inductive CCT and Faraday's Law. [15 hrs.] 			
Learning and Teaching Strategies				
الملتل اليجيات التعلم والتعليم				
	- Discussing the topics of the curriculum book and supporting references Theoretical			
Structure	lectures including problem solving and discussion of homework.			
Strategies	- Asking students a set of thinking questions during the lectures for specific topics.			
	- Giving students homework that requires finding self-solutions.			

Student Workload (SWL)				
الحمل الدر اسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	65	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا	4.3	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	135	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	9	
Fotal SWL (h/sem) 200 الحمل الدر اسي الكلي للطالب خلال الفصل				

Module Evaluation تقييم المادة الدر اسية							
Time/Nu Weight (Marks) Week Due Relevant Learning mber Outcome							
	Quizzes	1	10% (10)	Continuous	All		
Formative assessment	Online Assignments	1	5% (5)	Continuous	All		
	Lab	1	15% (15)	Continuous	All		
	Seminar	1	10% (10)	Continuous	All		
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13		
assessment	Final Exam	4hr	50% (50)	15	All		
Total assessm	nent		100% (100 Marks)				

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري		
	Material Covered	
Week 1	General Introduction	
Week 2	Electric charge and electric field	
Week 3	Conductors, insulators and induced charges	
Week 4	Exercises	
Week 5	Coulomb's Law	
Week 6	Electric field lines, electric dipole	
Week 7	force and potential energy	
Week 8	Exercises	
Week 9	Gauss's Law	
Week 10	The electrostatic field	
Week 11	Ohm's Law	
Week 12	Capacitance and resistance	
Week 13	Faraday's Law	
Week 14	Mid Exam	
Week 15	Final Exam	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر				
	Material Covered			
Week 1-2	Lab 1: Ohm's Law			
Week 3-4	Lab 2: Non Ohmic			
Week 5-6	Lab 3: parallel and series connection of resistance			
Week 7-8	Lab 4: Maximum power transfer			
Week 9-10	Lab 5: Lenz's law			
Week 11-12	Lab 6: Electromotive force (E. m. F)			
Week 13	Lab 7: parallel and series connection of capacitor			
Week 14	Mid Exam			
Week 15	Final Exam			

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text Available in the Library?				
Required Texts	Edward M.Purcell, Electricity and magnetism, 3rd edition, 2013	YES			
Recommended Texts	University physics with modern physics, 13th edition, 2011	YES			
Websites					

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

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







MODULE DESCRIPTOR FORM نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية						
Module Title	Mathemati	Mathematics			Module Deliver	ТУ
Module Type	Suplement				□ Theory	
Module Code	CREQ110	1			□Lab	re
ECTS Credits	5				⊠Tutor □Pract	ial ical
SWL (hr/sem)	125					
Module Level 1		1	Semester	nester of Delivery 1		1
Administering D	epartment	МРНҮ	College	Co	llege of Science	
Module Leader	Ayat Abdula	ali Neamah	e-mail	ayatneamah@nahrainuniv.edu.iq		<u>iinuniv.edu.iq</u>
Module Leader's	Acad. Title	Lecturer	Module La Qualificat	eade tion	er's	PHD
Module Tutor	Mays Majid Mohamad		e-mail	mays.majid@nahrainuniv.edu.iq		inuniv.edu.iq
Module Reviewer	Mays Majid Mohamad		e-mail	mays.majid@nahrainuniv.edu.iq		inuniv.edu.iq
Peer Reviewer Name			e-mail			
Review Committee Approval			Version N	uml	ber	

Relation With Other Modules						
Prereguisite module	العادك مع العواد العار مي العراق ا	Semester				
Co-requisites module	None	Semester				
Module	Aims Learning Outcomes and Indicative	Contents				
	هداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	Gontonto				
Module Aims أهداف المادة الدر اسية	The aim of this course is for student to gain proficiency in computations. In calculus, we use two main tools for analyzing and describing the behavior of functions: limits and derivatives. Students will use these tools to solve application problems in a variety of setting ranging from chemistry to Biology.					
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 To determine the solution set of inequalities involving absolute value, To determine domain, range and operation of some one variable functions and the graphs. To determine limit and continuity of one variable functions. To determine derivate of one variable functions. To determine the solution of problems involving the derivate of one variable function. To determine inverse function and its derivative. To learn about application of derivatives. To determine integral of one variable functions. To determine integral involving the fundamental theorem of Calculus and method of substitution. To determine the solution of problems involving the integral of one variable function. To determine integral involving transcendental functions. To compute integral with advanced integration techniques. To demonstrate ability to think critically by recognizing patterns and determining and using appropriate techniques for solving a variety of 					
Indicative Contents المحتويات الإر شادية	 Function and its graph, operation on function Definition, theorems of limit, trigonometrinfinity, infinite limit, continuity function, Definition and rule of derivate, derivate of triviale, higher order derivate, implicit derivate, in differential, Natural logarithm function, inverse function exponential function, general exponential function, hyperbolic function and its inverse. Proper integral, Fundamental Theorem of integration. 	n, trigonometry f y function limit rigonometry func related rate, basic n and its deriva function, general	unction. t, limit on ction, chain concept of ate, natural logarithm c rules of			

	 Methods of integrations, method of substitution, partial integration method, trigonometry integral and integral of rational function with partial fraction. Improper integrals, test for convergence and divergence of improper integrals. Application of Definite Integrals, Mean value theorem of integration, Area, solid revolution volume and Arc length. 			
Learning and Teaching Strategies استر اتيجيات التعلم و التعليم				
Strategies	The module will be presented to the students through a specified series of lectures, supported by practice and directed study outside the classroom. Formative assessment takes place throughout the module during lectures and feedback is given during these lectures.			

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) 63 Structured SWL (h/w) 4.2 الحمل الدر اسي المنتظم للطالب أسبوعيا الحمل الدر اسي المنتظم للطالب خلال الفصل 4.2					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.1		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125				

Module Evaluation						
تقييم المادة الدر اسية						
	Time/Nu Weight (Marks) Week Due Relevant Learning					
		mber	Weight (Marks)	Week Due	Outcome	
	Quizzes	1	10% (10)	Continuous	All	
	Online	1	10% (10)	Continuous	All	
Formative	Assignments					
assessment	Onsite	1	10% (10)	Continuous	All	
	Assignments					
	Report	1	10% (10)	Continuous	All	
Summative	Midterm Exam	2 hr	10% (10)	12	LO # 1-11	
assessment	Final Exam	3hr	50% (50)	15	All	
Total assessm	nent		100% (100 Marks)			

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Preliminaries, elementary Functions, Domain and range of functions and graphing.
Week 2	Limits, Continuity, Limits at infinity, The Sandwich Theorem and some trigonometric limits, Properties of continuous functions.
Week 3	Formal definition of the derivative, The power rule, the basic rules of differentiation.
Week 4	The product and quotient rules, and the derivatives of rational and power functions.
Week 5	The chain rule and higher derivatives. Derivatives of trigonometric functions.
Week 6	Derivatives of exponential functions. Derivatives of inverse and logarithmic functions.
Week 7	The Mean Value Theorem. Roll's theorem, L'Hopital's rule.
Week 8	Concavity, second derivatives test, Extrema, inflection points, and graphing.
Week 9	Graphing functions (continuous) Antiderivatives.
Week 10	The definite and indefinite integrals. Rules for indefinite integral
Week 11	The Fundamental Theorem of Calculus. (Part 1 and Part 2) and some examples. The Method of Integration (Integration by substitutions- Integration by parts)
Week 12	Mid Exam.
Week 13	The Method of Integration (Integration of rational functions- Trigonometric Techniques of Integration)
Week 14	The Method of Integration (Integration of product of sine and cosine – Trigonometric Substitutions)
Week 15	Final Exam

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

Learning and Teaching Resources						
مصادر التعلم والتدريس						
	Text Available in the Library?					
Required Texts	Calculus for Biology and Medicine, fourth edition by Claudia Neuhauser & Marcus Roper.	No				
Recommended Texts						
Websites	www.mathhandbook.com					

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

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







MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية								
Module Title	Computer			Мо	Module Delivery			
Module Type	Basic			⊠ Theory				
Module Code	URCOM				⊠Lecture ⊠Lab			
ECTS Credits	3				□Tutorial □Practical ⊠Seminar			
SWL (hr/sem)	75							
Module Level		1	Semester o	of Delivery		2		
Administering Department		MPHY	College	College of Science				
Module Leader	Dr.Salam Al-Dulaimi		e-mail	salam.dulaimi@nahrainuniv.edu.iq				
Module Leader's Acad. Title		Lecturer	Module Le	eader's Qualification		Ph.D.		
Module Tutor			e-mail					
Module Reviewer	Manar Thayer		e-mail	manar.thaer@nahrainuniv.edu.iq				
Peer Reviewer Name			e-mail		_			
Scientific Committee Approval Date			Version N	umber				

Deletion with other Modules							
Ketation with other Mountes							
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 الدر اسية	 At the end of the course, the students will be able to: 1- Developing the student to adapt to the rapid changes of special technologies in the field of information that characterizes it age. 2- Developing the student's ability to think scientifically through the problem-solving method using Computers. 3- Providing the student with self-learning skills and research and investigation skills through using different computer software applications. 				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Module 1: Cognitive objectives Achieving cognitive communication between students and benefiting from contemporary developments and rapid transmission the information. Providing students with integrated scientific knowledge in the field of computer science. To be proficient in preparing scientific research in a manner that takes into account an integrated scientific methodology. To know the methods of conveying information to practice the teaching profession and balance it with the applied reality Within educational institutions. Apply the basic and advanced programming skills they have learned to enrich their knowledge Intellectual science in the field of computers and its other applications. To be proficient in managing the analysis of information systems and databases with high efficiency. Teaching students the foundations of communications management, computer networks, and operating systems. Teaching tudents the skills of designing, supervising and following up on websites. Teaching the student ways to secure data and computers and finding solutions to allow them to be frozen in everyone Magazines. Module 2: The skills objectives of the course Identify and explain a variety of computer components -1 Knowledge skills - remembering 2-Remembering and analysis skills 3-Use and development skills 				
	Lecture method and use of the interactive whiteboard				
--	--				
	 Providing students with the basics and additional topics related to thinking outcomes Asking students questions and forming discussion groups during lectures to discuss the solution to the issues It requires thinking and analysis Giving students assignments to solve problems Assigning students to prepare reports related to the course Module 4: General and qualifying transferable skills (other skills related to employability and development personal) -1 Participation in scientific workshops and seminars inside and outside the country -2 Follow up on scientific development through contacting international universities via the Internet -3 Developing the student's ability to conduct scientific research and reports				
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to computer science: Should be able to show an understanding of the historical evolution from mainframe to tablet. They should also understand differences between these systems, e.g. power, computational characteristics, resources, and should be able to compare them. Introduction to operating systems and system software a. The human interface b. The operating principles and characteristics of printers, display devices, input devices. When you connect a device, the operating system has to perform some tasks in order to be able to use the device - this is interaction between human and computer. Candidates will be expected to explain the support the operating system provides, to enable user interaction. Explain the characteristics and performance of peripherals. a. Display devices b. Printers c. Keyboards d. Input/output techniques: peripheral polling, interrupt driven I/O. Candidates should be able to describe input and output techniques. Candidates will be expected to describe the use of a device, rather than describing the device itself.				

Learning and Teaching Strategies استر اتيجيات التعلم والتعليم				
Strategies	The unit will be introduced to students through a specific series of lectures, supported by problem-solving practice implemented in interactive tutorials. These lessons will be supported by practice and guided study outside the classroom. Formative assessment is carried out throughout the unit during tutorials and feedback is provided during these tutorials. The main strategy to be adopted in delivering this unit is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills.			

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبو عا			
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	3.2
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	1.8
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية						
	Time/Nu Weight (Marks) Week Due Relevant Learning Outcome					
	Quizzes	1	10% (10)	Continuous	All	
Formative assessment	Online Assignments	1	5% (5)	Continuous	All	
	Lab	1	15% (15)	Continuous	All	
	Seminar	1	10% (10)	Continuous	All	
Summative	Midterm Exam	2 hr	10% (10)	8	LO # 1-7	
assessment Final Exam 4hr		50% (50)	15	All		
Total assessment			100% (100 Marks)			

Delivery Plan (Weekly Syllabus)		
المنهاج الأسبوعي النظري		
	Material Covered	
Week 1	Introduction into Computer Science	
Week 2	Microsoft Office programs	
Week 3	Introduction into Microsoft Word	
Week 4	Microsoft Word Features	
Week 5	Lists and Tabs in Word Part1	
Week 6	Part2	
Week 7	Introduction into Microsoft Excel	
Week 8	Mid exam	
Week 9	Plotting and Static in Excel	
Week 10	Function in Excel	
Week 11	Using Equation in Sheets	
Week 12	Formatting and Export data from Excel	
Week 13	Power Point	
Week 14	Features of Power Point	
Week 15	Final Exam	

Delivery Plan (Weekly Lab. Syllabus)		
المنهاج الأسبوعي للمختبر		
	Material Covered	
Week 1	Principles and application of Computer Science	
Week 2	Microsoft Office	
Week 3	Introduction into Microsoft Word	
Week 4	Using Tabs in Word Part 1	
Week 5	Part 2	
Week 6	Part 3	
Week 7	Mid exam	
Week 8	Introduction in Microsoft Excel	

Week 9	Using Excel for Static and Plotting
Week 10	Formatting and Using Function within Microsoft Excel
Week 11	Export all data from Excel sheet
Week 12	Introduction into PowerPoint
Week 13	Lists and Tabs in Microsoft PowerPoint
Week 14	Preparatory week
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس			
	Text	Available in the Library?	
Required Texts	Calculus Geometry Anlysis ,Thomas	No (Available as an e-book)	
Recommended Texts Websites			

Grading Scheme مخطط الدر جات						
Group Grade التقدير Marks (%) Definition				Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
Success Group (50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
	C – Good	ختر	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	ر اسب (قيد المعالجة)	(45-49)	More work required but credit awarded		
(0 – 49)	F — Fail	راسب	(0-44)	Considerable amount of work required		

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







MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية						
Module Title	General Biolo	ogy		Modu	ıle Delivery	
Module Type	Suplement			⊠Theory		
Module Code	FORE 1102				⊠Lecture ⊠Lab	
ECTS Credits	5			□ □ Tutorial		
SWL (hr/sem)	125				⊠l l'actical ⊠Seminar	
Module Level		1	Semester of Delivery 2		2	
Administering Department		MPHY	College	College	e of Science	
Module Leader	Dr. Orooba N	ladhim Harbi	e-mail	orooba.alhammood@nahrainuniv.edu.iq		nrainuniv.edu.iq
Module Leader's	Acad. Title	Lecturer	Module Le	ader's Q	ualification	Ph.D.
Module Tutor	Nada Mohammed		e-mail	Nada.csc23@ nahrainuniv.edu.iq		iv.edu.iq
Module Reviewer	Zainab Ali Abdalhussain		e-mail	Zainab.ali@nahrainuniv.edu.iq		.edu.iq
Peer Reviewer Name			e-mail			
Scientific Committee Approval Date			Version Nu	mber		

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية			
	At the end of the course, the students will be able to:			
	• Explain the scope of biology and molecular basis of life			
	• Describe life activities from the cellular point of view			
Module Aims	• Manipulate basic biological tool, record data and draw conclusions			
أهداف المادة الدر اسية	• Develop scientific attitude, skill and conduct biological experiments			
	using scientific procedures			
	• Outline basic processes of energy transduction and synthesis of			
	intermediate or final products in living cells			
	Understand the basic concepts of genetics and inheritance			
	Module 1: Introduction to Biology			
	Define biology and apply its principles			
	• List the defining characteristics of biological life			
	• Identify the different kinds of cells that make up different kinds of			
	• Describe elessification and ergenizational tools biologists use			
	• Describe classification and organizational tools biologists use,			
	 Describe biology as a science and identify the key components of 			
	scientific inquiry			
	Module 2: Cellular Structure			
	Identify and explain a variety of cellular components			
	• Understand why and how the light microscope and electron microscope are used in biology			
Module Learning Outcomes	• Identify membrane-bound organelles found in eukaryotic cells			
مخرجات التعلم للمادة الدراسية	• Demonstrate familiarity with various components of the cytoskeleton, including monomeric units			
	 Demonstrate familiarity with various cell surface specializations 			
	Module 3: Cell Division			
	Describe and explain the various stages of cell division			
	• Understand chromosome structure and organization in eukaryotic cells			
	• Identify the stages of the cell cycle, by picture and by description of			
	major milestones			
	• Identify and explain the important checkpoints that a cell passes			
	• Identify the stages of mejosis by nicture and by description of major			
	milestones: explain why meiosis involves two rounds of nuclear			

	 division Describe and explain a range of mechanisms for generating genetic diversity Examine karyotypes and identify the effects of significant changes in chromosome number
	 Module 4: Cell Membranes Describe and explain the structure and function of membranes Describe the structure and function of membranes, especially the phospholipid bilayer Distinguish between passive and active transport; explain how substances are directly transported across a membrane Describe the primary mechanisms by which cells import and export macromolecules
	 Module 5: DNA Structure and Replication Relate DNA structure to the process of DNA replication Explain how DNA stores genetic information Explain the role of complementary base pairing in the precise replication process of DNA Recognize the impact of DNA mutations Module 6: DNA Transcription and Translation Describe the conversion of DNA to RNA to proteins Outline the process of genetic transcription Summarize the process of genetic translation Outline the process of prokaryotic transcription and translation
Indicative Contents المحتويات الإرشادية	 Indicative content includes the following. Introduction to human biology: History and milestones in the field of human biology Basic concepts of human biology and applications. A blood type (also known as a blood group) is a classification of blood, based on the presence and absence of antibodies and inherited antigenic substances on the surface of red blood cells (RBCs). These antigens may be proteins, carbohydrates, glycoproteins, or glycolipids, depending on the blood group system. DNA as the genetic material because of the apparent simplicity of its chemistry. DNA was known to be a long polymer composed of only four types of subunits, which resemble one another chemically. A DNA molecule consists of two long polynucleotide chains composed of four types of nucleotide subunits. Each of these chains is known as a DNA chain, or

a DNA strand. Hydrogen bonds between the base portions of the nucleotides hold the two chains together.

Chromosomes are thread-like structures present in the nucleus. They are important because they contain the basic genetic material DNA. These are present inside the nucleus of plants as well as animal cells. Chromosomes were first discovered by Strasburger in 1815 and the term 'chromosome' was first used by Waldeyer in 1888. Human beings have 46 chromosomes in their body. These are arranged into 23 pairs.

"A Chromosome looks like a thread and is coiled material, made of proteins. Chromosomes are present in the nucleus of all the cells and contain the basic genetic material DNA, which passes from one generation to another".

Structure:

A chromosome has generally 8 parts; Centromere or primary constriction or kinetochore, chromatids, chromatin, secondary constriction, telomere, chromonema, and matrix.

Centromere or Kinetochore: It is the primary constriction at the center to which the chromatids or spindle fibers are attached. Its function is to enable movement of the chromosome during the anaphase stage of cell division.

Chromatid: During cell division, a chromosome is divided into 2 identical half strands joined by a centromere.

Laboratory Skills:

Laboratory technician skills refer to the ability to carry out specialized tasks in a laboratory setting. Laboratory technicians perform specialized scientific tests, often for technical or diagnostic purposes, for which tasks such as hypothesizing, keeping records, dissecting, pipetting, measuring and sterilizing are common. To complete these tasks and others, laboratory technicians need a combination of hard and soft skills to ensure they follow guidelines and produce accurate laboratory results.

Learning and Teaching Strategies								
	Teaching strategies used in general biology and their expected results in terms							
	of acquiring knowledge and achieving learning outcomes for students were as							
	follows:							
	1. Competitive academic							
	• Students work individually.							
	• Students have common learning goals and tasks.							
	2. Individualistic learning							
Strategies	• Students work individually and independently to achieve various							
	individual learning goals and tasks that are not related to other students.							
	3. Cooperative learning							
	• Students work in small groups.							
	• Students shared learning objectives and tasks within the group that may							
	be similar or different from other groups.							
	• The professor evaluates the students on their work as groups and also							
	on their individual work							

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا					
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	65	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4.3		
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	60	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125				

Module Evaluation تقييم المادة الدر اسية							
	Time/Nu mberWeight (Marks)Week DueRelevant Learning Outcome						
Formative assessment	Quizzes	1	10% (10)	Continuous	All		
	Online Assignments	1	5% (5)	Continuous	All		
	Lab	1	15% (15)	Continuous	All		
Seminar		1	10% (10)	Continuous	All		
Summative	Midterm Exam	2 hr	10% (10)	8	LO # 1-7		
assessment	Final Exam	4hr	50% (50)	15	All		
Total assessment			100% (100 Marks)				

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري			
	Material Covered		
Week 1	Introduction and basic principle of human biology		
Week 2	Cell: Structure, properties and classification (part 1)		
Week 3	Cell: Structure, properties and classification (part2)		
Week 4	Tissue: Structure, properties; classification and function(patr1)		
Week 5	Tissue: Structure, properties; classification and function(part2)		
Week 6	Circulatory system; Blood		
Week 7	Skin and Hair		
Week 8	Mid exam		
Week 9	Structure and Function of DNA		
Week 10	Structure and Function of DNA		
Week 11	Genetic basis of DNA typing		
Week 12	Human chromosomes		
Week 13	Chromosomes variations		
Week 14	Human genetics and Semi-lethal gene		
Week 15	Final exam		

	Delivery Plan (Weekly Lab. Syllabus)				
	المنهاج الأسبوعي للمختبر				
	Material Covered				
Week 1	Laboratory safety roles				
Week 2	Types of microscopes and Parts of the Microscope				
Week 3	Eukaryotic Cell Structure				
Week 4	Tissue: classification and function(patr1)				
Week 5	Tissue: classification and function(part2)				
Week 6	Mid exam				
Week 7	Microscopic comparison between eukaryotic and prokaryotic cells				
Week 8	DNA Extraction				

Week 9	The Cell Cycle & Mitosis, Patterns of Inheritance
Week 10	Explain hematocrit, including the significance of values outside of the normal range
Week 11	Determine hematocrit from a blood sample image.
Week 12	Explain the ABO and Rh blood groups and their clinical significance.
Week 13	Identify and describe all formed elements in a human blood smear. Part 1
Week 14	Identify and describe all formed elements in a human blood smear. Part 2
Week 15	final Exam

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Reference book: Johnks and Inglis(eds.) Text book of Human Biology, 3rd Ed.	No (Available as an e- book)			
Recommended Texts					
Websites					

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

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







MODULE DESCRIPTOR FORM

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Module Information معلومات المادة الدر اسية						
Module Title	Organic Chemistry			Module Deliv	ery	
Module Type	Suplement				⊠ Theory	
Module Code	CREQ1104				⊠Lec ⊠Lab	ure
ECTS Credits	5	5			⊠Tut	orial
SWL (hr/sem)	125				☐	
Module Level	Module Level 1		Semester of Delivery		Delivery	2
Administering I	Department	MPHY	College	С	College of Science	
Module Leader	Dr. Rasha Saad Jwad		e-mail	ras	sha.saad@alnah	rain.edu.iq
Module Leader's Acad. Title Assist. Professor		Module L Qualifica	lead	ler's	PhD	
Module Tutor		e-mail				
Peer Reviewer Name		e-mail				
Review Committee Approval			Version N	Jum	lber	

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى				
Prerequisite module	None	Semester		
Co-requisites module	None	Semester		

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإر شادية				
Module Aims أهداف المادة الدر اسية	 Equip students with a foundational understanding of organic chemistry. Cover essential topics such as chemical bonding, structure, nomenclature of organic compounds, reactivity of basic functional groups and the chemistry of different functional groups. Exploring molecules of biological significance. Serve as a universal baseline of organic chemistry knowledge for incoming first-year students. Construct the practical skills of organic chemistry for students. 			
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 The student will be able to recognize and name different types of organic molecules based on their structure, functional groups, and systematic nomenclature rules. Describe the bonding and shape of organic molecules: Understanding the types of bonds present in organic molecules (e.g., covalent bonds) and how these bonds influence the three-dimensional shape or geometry of the molecules. Understanding the factors that influence the reactivity of organic molecules, such as the presence of functional groups, steric hindrance, and electronic effects. Being able to describe the physical and chemical properties of different functional groups, as well as methods for preparing them and their typical reactions. Being able to use the information about organic compound structure, bonding, reactivity, and functional groups to predict and explain the outcomes of organic reactions and to solve problems related to organic chemistry. 			
Indicative Contents المحتويات الإرشادية	 Indicative content includes the following. 1. Structure and bonding in organic molecules: This covers the basics of molecular structure, including the shapes of organic molecules and the nature of chemical bonds within them. 			

2. Functional groups: Organic molecules are classified based on functional groups, which are specific arrangements of atoms within the molecule that confer characteristic chemical properties.
3. Nomenclature: Organic chemistry has a systematic way of naming compounds, which is essential for communication within the field. This includes the IUPAC (International Union of Pure and Applied Chemistry) naming system.
4. Isomerism: Organic molecules can exist as different isomers, compounds with the same molecular formula but different structural arrangements or spatial orientations, leading to distinct chemical properties.
5. Organic reactions: Understanding how organic reactions occur at the molecular level is fundamental to organic chemistry.
6. Stereochemistry: This branch of organic chemistry focuses on the spatial arrangement of atoms within molecules and how it influences the properties and reactivity of compounds.
7. Bioorganic chemistry: This interdisciplinary field explores the chemical processes occurring in living organisms, including the structures and functions of biological macromolecules like proteins, nucleic acids, and carbohydrates.
Learning and Teaching Strategies استر اتیجیات التعلم و التعلیم
The primary approach for introducing this unit will involve fostering student
engagement through active participation in homework exercises, aiming to
enhance and broaden their critical thinking abilities. This will be facilitated
of simple experiments designed to incorporate sampling activities tailored to
students' interests.

Student Workload (SWL) الحمل الدر اسي للطالب			
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	65	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدر اسية					
		Time/N umber	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes	1	10% (10)	Continuous	All
Formative assessmen	Online Assignments	1	5% (5)	Continuous	All
t	Lab	1	15% (15)	Continuous	All
	Seminar	1	10% (10)	Continuous	All
Summative assessmen	Midterm Exam	2 hr	10% (10)	12	LO # 1-11
t	Final Exam	4hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري		
	Material Covered	
Week 1	Introduction to organic chemistry: Hybridized atomic orbitals	
Week 2	Acids and bases	
Week 3	Saturated hydrocarbons	
Week 4	Unsaturated hydrocarbons	
Week 5	Alkyl halides	
Week 6	Alcohols	
Week 7	Amines	
Week 8	Ethers	
Week 9	Aldehydes and ketones	
Week 10	Carboxylic acids and their derivatives	
Week 11	Acid halides and esters	
Week 11	Acid anhydrides and amides	
Week 12	Mid Exam	
Week 13	Aromatic compounds	
Week 14	Substituted benzene ring	
Week 15	Final Exam	

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر		
	Material Covered		
Week 1	Lab 1: Lab safety guide and laboratory glasswares		
Week 2	Lab 2: Introduction to organic chemistry compounds		
Week 3	Lab 3: Crystallization		
Week 4	Lab 4: Liquid-liquid extraction		
Week 5	Lab 5: Determination of melting point		
Week 6	Lab 6: Determination of boiling point		
Week 7	Lab 7: Solubility of organic compounds		
Week 8	Lab 8: Identification of chemical compounds		

Learning and Teaching Resources مصادر التعلم والتدريس			
	Text	Available in the Library?	
Required Texts	Bruice, Paula Yurkanis. (2014). Organic Chemistry, 7th ed. New Jersey: Pearson Education International, pages 1392.	Yes	
Recommended Texts	McMurry, John E., (2016). Organic Chemistry, 9th ed., Cengage Learning, pages 1518.	Yes	
Websites	https://www.khanacademy.org/science/organic-chemistry https://www.masterorganicchemistry.com/		

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
	A - Excellent	امتياز	90 - 100	Outstanding Performance
a a	B - Very Good	جيد جدا	80 - 89	Above average with some errors
Success Group (50 - 100)	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	مقبول بقرار	(45-49)	More work required but credit awarded
(0 - 49)	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

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







MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية						
Module Title	Biophysics		Mod	ule Delivery		
Module Type	CORE				⊠ Theory	
Module Code	MPHY1207				⊠ Lecture	
ECTS Credits	8				⊠ Lab ⊠ Tutorial	
SWL (hr/sem)	200				□ Practical ⊠ Seminar	
Module Level		1	Semester of Delivery 2		2	
Administering Department		MPHY	College	College of Science		
Module Leader	Dr. Marwa abc	l almohsin Hassan	e-mail	<u>marwa</u>	@nahrainuniv.e	edu.iq
Module Leader	's Acad. Title	Assis. Prof.	Module L	eader's	Qualification	Ph.D.
Module Tutor	utor Zahraa Malik Mosa		e-mail	zahraa.malik@nahrainunive.edu.iq		unive.edu.iq
Module Reviewer	viewer Entidhar Malik Hadi		e-mail	<u>Entidh</u>	ar.malik@nahra	ainuniv.edu.iq
Peer Reviewer Name			e-mail			
Scientific Committee Approval Date			Version N	umber		

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدر اسية	 At the end of the course, the students will be able to: Explain the scope of biology and physics. Describe life activities from biophysics point of view. Manipulate basic biological tool, record data and draw conclusions Develop scientific attitude, skill and conduct biophysics experiments using scientific procedures. Understand the basic concepts of the relation between physics and biology. 			
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 To make students know about the relation between sound in medicine. To make the students understand all about physics and its involvement with medicine. 			
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to medical physics: History and milestones in the field of medical physics Basic concepts of medical physics and applications. The relation of sound in medicine and laser in medicine.			

Learning and Teaching Strategies		
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 types of simple experiments involving some sampling activities that are interesting to the students.	

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا					
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	65	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4.3		
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	135	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	9		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	200				

Module Evaluation						
تقييم المادة الدراسية						
Time/Nu mberWeight (Marks)Week DueRelevant Learning Outcome						
	Quizzes	1	10% (10)	Continuous	All	
Formative assessment	Online Assignments	1	5% (5)	Continuous	All	
	Lab	1	15% (15)	Continuous	All	
	Seminar	1	10% (10)	Continuous	All	
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-6	
	Final Exam	4hr	50% (50)	15	All	
Total assessment100% (100						

Delivery Plan (Weekly Syllabus)				
المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Sound in medicine			
Week 2	Laser in medicine			
Week 3	Power, energy and work of the body			
Week 4	Physics of the Skeleton			
Week 5	Heat and cold in medicine			
Week 6	Pressure in the body			
Week 7	Electricity in human body			
Week 8	Mid exam			
Week 9	Physics of hearing and ear			
Week 10	Physics of eye and vision part 1			
Week 11	Physics of eye and vision part 2			
Week 12	Light and UV in medicine			
Week 13	x-ray in medicine part 1			
Week 14	x-ray in medicine part 2			
Week 15	final Exam			

Delivery Plan (Weekly Lab. Syllabus)					
	المنهاج الأسبوعي للمختبر				
	Material Covered				
Week 1-2	Laboratory safety roles				
Week 2-3	introduction				
Week 3-4	Sound in medicine part 1				
Week 4-5	Sound in medicine part 2				
Week 5-6	Sound in medicine part 3				
Week 6-7	Mid exam				
Week 7-8	Light Reflection and Refraction part 1				
Week 8-9	Light Reflection and Refraction part 2				
Week 9-10	Light Reflection and Refraction part 3				
Week 10-11	Viscosity part 1				
Week 11-12	Viscosity part 2				
Week 12-13	Viscosity part 3				
Week 13-14	Second Exam.				
Week 15	Final Exam				

Learning and Teaching Resources				
مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Medical Physics by John R. Cameron, International Publication.	No (Available as an e-book)		
Recommended Texts	Elements of Biophysics Randall 1998	No (Available as an e-book)		
Websites				

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

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







MODULE DESCRIPTOR FORM

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Module Information معلومات المادة الدر اسية						
Module Title	Arabic Language			N	Aodule Deliver	у
Module Type	BASIC				⊠Theory	
Module Code	URARA					re
ECTS Credits	2	2				ial
SWL (hr/sem)	50	50			□Practi ⊠Semin	cal ar
Module Level		1	Semester	ester of Delivery 2		2
Administering I	Department	Medical physics	College	College of Science		
Module Leader	Omar adnar	1	e-mail	<u>Oma</u>	r.adnan @nahra	ainuniv.edu.iq
Module Leader's Acad. Titleassistant profModule Qualifi		Module L Qualifica	leader tion	r's	Master	
Module Tutor		e-mail				
Peer Reviewer Name		e-mail				
Review Committee V Approval V		Version N	lumbe	er		

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 الدر اسية	 The main objective of this semester is to strengthen the Queen of First Graders and develop their linguistic abilities and focus on: 1 Acquiring knowledge skills about linguistic concepts 2 Keep the tongue from falling into the word's pronunciation error 3 Developing the student's expressive abilities 4 Teaching students to analyze the speech system 5. Teach students to distinguish between the origins of the word or increase and what it does in increasing meaning. 6. Teaching students on methods and rules of control and drafting of vocabulary. 7. Enabling the student to use the language vocabulary in the proper location 8. Provide trainings to strengthen the student's queen and develop his ability in language practice and influential rhetoric, taking advantage of experiences and training. 9. Enabling students to read and analyze literary texts, understand them and be able to save them. 10. Teaching students to read properly the words of the Holy Quran, learn its meaning and develop students' ability to keep and pronounce. 		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The University of Nahrain works by teaching Arabic to strengthen the student's linguistic queen. By adjusting and perfecting the rules of Arabic, introducing students to speech systems and the possibility of contributing to the teaching and refinement of writing and damaged times, and being able to know the divisions of actions. This develops students' ability to understand the subject. and have the ability to detect language errors. Teaching the right reading and understanding of educational grammatical		
	systems and developing the skill in addressing the problems faced by students in teaching Arabic and directing it correctly.		
Indicative Contents المحتويات الإرشادية	Students should be able to understand the basic principles of Arabi by studying the sections of speech (name, verb and letter) and describing the definition of each of them and what their connotation is. Innovative knowledge, experience and detailed knowledge of its types with representation the study was made by her sisters, the statement of her meaning, her work, what changes occurred in the sentence when she entered it, how to write the number, numbering marks, tied and open tags, and other topics of interest to the student in learning the principles of Arabic.		
	Learning and Teaching Strategies		
	استر اتيجيات التعلم والتعليم		
Strategies	1. POWERPOINT DISPLAY		

 Writing Reports Ouerterly Tests
 Qualterly rests Discussing and Solving Questions
5 Homework

Student Workload (SWL) الحمل الدر اسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	2.2	
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1	
Total SWL (h/sem) 50				

Module Evaluation								
تقييم المادة الدر اسية								
		Time/Nu	Weight (Marks)	Week Due	Relevant Learning			
		mber			Outcome			
	Quizzes	1	10% (10)	Continuous	All			
Formative	Online	1	10% (10)	Continuous	All			
	Assignments	1	1070 (10)					
assessment	Onsite	1	1006 (10)	Continuous	All			
	Assignments	T	10% (10)					
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	7	LO # 1-6			
assessment	Final Exam	3hr	50% (50)	15	All			
Total assessm	nent		100% (100 Marks)					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Grammar - Speech Section (Name, verb, letter), beginner, types, news and types			

Week 2	It was her sisters, her sisters.
Wook 3	Muthanna and his attachment, the collection of the peaceful masculine and his attachment,
Week 5	the collection of the peaceful feminine and his attachment, the five names
Week 4	Building the past act, building the act.
Week 5	The tense act of building and godmother
Week 6	Assigned names (effect - absolute effect - effect - effect - effect - effect)
Week 7	Hair - Nazik Angels
Week 8	Poetry - Mohammed Mahdi Al Jawahiri
Week 9	Dictatorship - Writing the Shame (Connecting and Cutting)
Week 10	Intermediate and Extreme Shaking
Week 11	Writing Antidote and Adversity
Week 12	Writing short and long diversion
Week 13	Punctuation -The rule of a thousand paradoxes
Week 14	Writing Number
Week 15	Final Exam

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

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Expression, creation, written drawing and written dictation/a. d. Abdulrahman Matlak al-Jabouri	No			
Recommended Texts	Clarify the trajectory of the millennium of the son of Malik/Ibn Hisham. Qatar al-Nada and Bel al-Echo of Hisham's son. The hummus of the Sooty, as adequate as Abbas Hassan, is a shrewd custom in the art of drainage, polite in drainage.	No			
Websites					

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

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





Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Physics Department



MODULE DESCRIPTOR FORM

تموذج وصف المادة الدراسية	Č
Module Information	

معلومات المادة الدراسية							
Module Title	Biomechanics			Modu	Module Delivery		
Module Type	Core				⊠Theory		
Module Code	MPHY1206				⊠Lab	C	
ECTS Credits	7				⊠Tutori ⊠Practi	al cal	
SWL (hr/sem)	175	-			Seminar		
Module Level		1	Semester	ster of Delivery 2		2	
Administering D	epartment	Medical physics	College	College of Science			
Module Leader	Dr. Ahmed H.	Flayyih	e-mail	Ahmed.hmood@alnahrain.edu.iq		<u>hrain.edu.iq</u>	
Module Leader's Acad. Title		Professor	Module Leader's Qualification			Ph.D.	
Module Tutor	Module Tutor Haneen Akram		e-mail	haneenakram837@alnahrain.edu.iq		<u>llnahrain.edu.iq</u>	
Module Reviewer Manar Thayer			e-mail	<u>manar.th</u>	aer@nahra	inuniv.edu.iq	
Peer Reviewer N	lame		e-mail	il			
Review Commit	ttee Approval		Version N	umber			

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى							
Prerequisite module	None	Semester					
Co-requisites module	o-requisites module None Semester						

Module Aims, Learning Outcomes and Indicative Contents					
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Aims أهداف المادة الدر اسية	 Define the terms <i>biomechanics, statics, dynamics, kinematics,</i> and <i>kinetics,</i> and explain the ways in which they are related. Describe the scope of scientific inquiry addressed by biomechanics. Distinguish between qualitative and quantitative approaches for analyzing human movement, and explain how to formulate questions for qualitative analysis of human movement.LINE LEARNING. 				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 On completion of this module, students are expected to be able to: Explain the actions of forces and moments and the concept of equilibrium in biomechanics. Discuss tensile and compressive loading and the associated linear stress-strain relationship in biomechanics. Discuss the kinematics of simple translation and rotational biomechanical systems, kinetics of rigid bodies and apply the concepts of work, power and energy. Explain the effects of friction, mass moment of inertia and the dynamics of simple systems in biomechanics. 				
Indicative Contents المحتويات الإرشادية	Chapter One: Forces and Maintaining Equilibrium Chapter Two: Kinematics Chapter Three: Kinetics Chapter Four: Work, Power, and Energy Chapter Five: Torques and Moments of Force				
	Learning and Teaching Strategies استر اتيجيات التعلم و التعليم				
Strategies	 The learning strategy depends on the following: 1- Feeding the student with theoretical foundations and concepts from theoretical lectures 2- Daily and semester tests 3- Assigning students to solve the required mathematical problems and discussing them during the class 				

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) 65 Structured SWL (h/w) 4.3 الحمل الدر اسي المنتظم للطالب أسبوعيا الحمل الدر اسي المنتظم للطالب خلال الفصل 4.3					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	110	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	7.3		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	m) 175 الحمل الدر اسي الك				

Module Evaluation تقييم المادة الدر اسية							
		Time/N umber	Weight (Marks)	Week Due	Relevant Learning Outcome		
	Quizzes	1	10% (10)	Continuous	All		
Formative assessmen	Online Assignments	1	5% (5)	Continuous	All		
t	Lab	1	15% (15)	Continuous	All		
	Seminar	1	10% (10)	Continuous	All		
Summative assessmen	Midterm Exam	2 hr	10% (10)	9	LO # 1-8		
t	Final Exam	4hr	50% (50)	15	All		
Total assess	ment		100% (100 Marks)				

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	 Chapter One: Define force Classify forces Define friction force Define weight Determine the resultant of two or more forces Resolve a force into component forces acting at right angles to each other 			
Week 2	 Determine whether an object is in static equilibrium, if the forces acting on the object are known Determine an unknown force acting on an object, if all the other forces acting on the object are known and the object is in static equilibrium 			
Week 3	 Chapter Two: Distinguish between linear, angular, and general motion Define distance traveled and displacement and distinguish between the two Define average speed and average velocity and distinguish between the two Define instantaneous speed and instantaneous velocity Define average acceleration 			
Week 4	 Define instantaneous acceleration Name the units of measurement for distance traveled and displacement, speed and velocity, and acceleration Use the equations of projectile motion to determine the vertical or horizontal position of a projectile given the initial velocities and time 			
Week 5	Angular kinetics, angular displacement, average angular velocity and average angular acceleration			
Week 6	Applications in Biomechanics			

	Chapter 3: Linear Kinetics, Apply Newton's second law of motion to determine the
Week 7	acceleration of an object if the forces acting on the object are known, Apply Newton's second
	law of motion
	to determine the net force acting on an object if the acceleration of the object is known.
Week 8	Mid-term exam
Week 9	Define impulse, momentum, the relationship between impulse and momentum, relationship between mass and weight
	Chapter 4: Mechanical work the differences between positive and negative work energy
Week 10	and kinetic energy.
Week 11	Gravitational potential energy, strain energy, the relationship between mechanical work and
	energy
Week 12	Tutorials and applications in biomechanics
_	Chapter 5; Torques and Moments of Force, static equilibrium, the equations of static
Week 13	equilibrium
	Determine the resultant of two or more Torques
	Determine an unknown force (or torque) acting on an object, if all the other forces
Week 14	and torques acting on the object areknown and the object is in static equilibrium
	Define center of gravity
Week 15	Tutorials and applications in biomechanics
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر				
	Material Covered			
Week 1	Lab 1: Instructions to students, Basic personal needs and other requirements.			
	Writing the account of an experiment, Introduction to graphical representation of			
	experimental data, Errors, their determination and minimization, least square fitting.			
	Units.			
Week 2	Lab 2: Force Table			
Week 3	Lab 3: Boyle's Law			
Week 4	Lab 4: Tension experiment			
Week 5	Lab 5: Inclined Plane			
Week 6	Lab 6: Free Fall			
Week 7	Lab 7: THE LAWS OF EQUILIBRIUM			
Week 8	Lab 8: Arduino Sensors			
Week 9	Lab 9: Arduino applications in Biomechanics			

Learning and Teaching Resources مصادر التعلم والتدريس			
Text Li		Available in the Library?	
Required Texts		Available	
Recommended Texts	Biomechanics of Sport and Exercise Third Edition, 2013 Peter M. McGinnis State University of New York, College at Cortland	Available	
Websites	https://z-lib.id/		

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

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







MODULE DESCRIPTOR FORM نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسبة						
Module Title	Thermodyna		Mo	dule Deliver	у	
Module Type	Core			⊠ Theory		
Module Code	ode MPHY2103				⊠Lecture ⊠Lab	
ECTS Credits	8			⊠Tutorial ⊠Practical		
SWL (hr/sem)	200			⊠Semin	ar	
Module Level		2	Semester	Semester of Delivery		1
Administering Department		МРНҮ	College	College of Science		
Module Leader	Saif Mohsin Nassrullah		e-mail	saif.muhsin@nahrainuniv.edu.iq		nuniv.edu.iq
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		PhD	
Module Tutor	Zahraa malik mosa		e-mail	zahraa.Malik@nahrainuniv.edu.iq		
Module Reviewer	Zainab Salam Khaleefah		e-mail	zainab.salam@nahrainuniv.edu.iq		
Peer Reviewer Name			e-mail			
Review Committee Approval			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 الدر اسية ونتائج التعلم والمحتويات الإر شادية					
Module Aims أهداف المادة الدر اسية	 Teaching the student the principles of thermodynamics. Identify the main laws related to the science of heat and work. Learn about real-life practical applications of thermodynamics. 				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 The student can distinguish between states of matter in addition to the difference between a real gas and an ideal gas. The student can understand the laws of thermodynamics and the mechanism of their application. The student can explain the mechanism between movement and heat and their effects The student can explain the physical difference between heat and cooling. Students' ability to apply what has been calculated theoretically in a practical way in the future. 				
Indicative Contents المحتويات الإر شادية	 Important terms, Reversible and Irreversible processes, Ideal Gas. [15 hrs.] Heat Transformation, 1st Law of thermodynamics, The State Equation. [15 hrs.] Adiabatic Processes, Specific Heat Capacity, Specific Heat Capacity in Adiabatic Processes. [20 hrs.] 2nd Thermodynamics Law and Carnot Cycle Thermal Machines and Refrigerators. [15 hrs.] 				
Learning and Teaching Strategies استر اتيجيات التعلم و التعليم					
Strategies	 Discussing the topics of the curriculum book and supporting references Theoretical lectures including problem solving and discussion of homework. Asking students a set of thinking questions during the lectures for specific topics. Giving student's homework that requires finding self-solutions. 				
Student Workload (SWL) الحمل الدراسي للطالب					
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Structured SWL (h/sem) 94 Structured SWL (h/w) 6.3 الحمل الدر اسي المنتظم للطالب أسبوعيا الحمل الدر اسي المنتظم للطالب خلال الفصل 6.3					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	106	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	7.1		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200				

Module Evaluation تقبيم المادة الدر اسية								
	Time/Nu mberWeight (Marks)Week DueRelevant Learning Outcome							
	Quizzes	1	10% (10)	Continuous	All			
Formative	Online Assignments	1	5% (5)	Continuous	All			
assessment	Lab	1	15% (15)	Continuous	All			
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13			
assessment	Final Exam	4hr	50% (50)	15	All			
Total assessm	nent		100% (100 Marks)					

	Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري				
	Material Covered				
Week 1	Important terms.				
Week 2	Reversible and Irreversible processes.				
Week 3	Ideal Gas.				
Week 4	Exercises.				
Week 5	Heat Transformation.				
Week 6	1st Law of thermodynamics.				
Week 7	The State Equation.				
Week 8	Adiabatic Processes.				
Week 9	Specific Heat Capacity.				
Week 10	Specific Heat Capacity in Adiabatic Processes.				

Week 11	Work and Heat Relationship.
Week 12	2 nd Thermodynamics Law.
Week 13	Carnot Cycle Thermal Machines and Refrigerators.
Week 14	Mid Exam
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر				
	Material Covered			
Week 1.2	Lab 1: Determination of the coefficient of apparent cubic expansivity of a liquid by			
WEEK I Z	Mathieson's sinker method			
Week 3-4	Lab 2: Entropy of system			
Week 5-6	Lab 3: measurement of thermal conductivity by lees disc method			
Week 7-8	Lab 4: experiment to measure specific heat capacity of a liquid by method of cooling			
Week 9-10	Lab 5: the specific heat capacity of copper by calendar method			
Week 11-12	Lab 6: experiment to measure specific heat capacity of a metal by method of mixtures			
Week 13	Lab 7: coefficient of linear expansion of copper			
Week 14	Mid Exam			
Week 15	Final Exam			

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Francis Weston Sears, Thermodynamics, The Kinetic Theory of Gases, and Statistical Mechanics , 2rd edition, 1953	YES			
Recommended Texts	Heat and Thermodynamics, Mark W. Zemansky, McGraw Hill, 1968	YES			
Websites					

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

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







Module Information معلومات المادة الدر اسية							
Module Title	Ba'ath Reg	Ba'ath Regime Crimes			Module Delivery		
Module Type	BASIC					□ Theory	
Module Code	URBRC						
ECTS Credits	2					□Tutoria □Practica	l al
SWL (hr/sem)	50						r
Module Level		2	Semester	Semester of Delivery		1	
Administering D	epartment	МРНҮ	College	Coll	lege o	f Science	
Module Leader	Omar Adnar	n Khamas	e-mail	omar.adnan@nahrainuniv.edu.iq		<u>univ.edu.iq</u>	
Module Leader's	Acad. Title	Assistant Professor	Module Leader's Qualification PhD		PhD		
Module Tutor	ıle Tutor		e-mail				
Module Reviewer		e-mail					
Peer Reviewer Name		e-mail					
Review Committee Approval			Version N	umb	er		

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى							
Prerequisite module	None	Semester					
Co-requisites module	Co-requisites module None Semester						

Module Aims, Learning Outcomes and Indicative Contents					
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Aims أهداف المادة الدر اسية	 Introducing students to concepts and definitions related to the crimes of the Ba'ath regime committed during its rule in Iraq. To acquaint university students with the reality of life for decades that Iraq lived during the rule of the Baath regime in Iraq. Increasing students' awareness of the facts without being influenced by any media censorship regarding the crimes of the Ba'ath regime in Iraq. The subject of the crimes of the Ba'ath regime in Iraq is important and essential for students, as it familiarizes them with the events, circumstances, and violations that Iraq experienced under Ba'ath rule from 1968 to 2003. The subject clarifies for students the impact of the Ba'ath regime's behaviors on Iraqi society 				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 The student should recognize the seriousness of crimes in general The student should understand the extent of the injustice of the previous regime. The student should comprehend the scope of criminal acts and their legal consequences. 				
Indicative Contents المحتويات الإرشادية	Awareness of students regarding the study of crimes throughout history, in Islamic law, and the legal aspects in detail, along with their consequences				
	Learning and Teaching Strategies				
	استر اتيجيات التعلم والتعليم				
Strategies	 Fundamentally: Discussion and mutual dialogue between the instructor and the students. Continuous presentation of documentaries to enhance understanding. Preparation of concise working papers from selected groups on a weekly basis. 				

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا	2.2		
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1		
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	50				

Module Evaluation تقبيم المادة الدر اسية							
	Time/Nu mberWeight (Marks)Week DueRelevant Learning Outcome						
	Quizzes	1	10% (10)	Continuous	All		
Formative	Online Assignments	1	10% (10)	Continuous	All		
assessment	Onsite Assignments	1	10% (10)	Continuous	All		
	Seminar	1	10% (10)	Continuous	All		
Summative	Midterm Exam	2 hr	10% (10)	5	LO # 1-4		
assessment	Final Exam	3hr	50% (50)	15	All		
Total assessm	ient		100% (100 Marks)				

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	General and foundational introduction to the topic: Crimes of the Ba'ath Regime according to the Iraqi High Tribunal Law of 2005.
Week 2	Psychological and social crimes and their effects, along with the most prominent violations of the Ba'ath regime in Iraq.
Week 3	The Ba'ath regime's stance on religion.
Week 4	Locations of prisons and detention under the Ba'ath regime.
Week 5	Mid Exam
Week 6	Environmental crimes of the Ba'ath regime in Iraq.
Week 7	Drying of the marshlands.
Week 8	Crimes of mass graves.
Week 9	Discussion session for students to assess their engagement in the lecture.
Week 10	Events of the mass extermination graves committed by the Ba'ath regime in Iraq.
Week 11	Discussion of reports assigned to students as part of the course requirements.
Week 12	Temporal classification of mass extermination graves in Iraq from 1963 to 2003.
Week 13	Conducting an extensive discussion of the course material and identifying the main obstacles faced by students.
Week 14	Preparatory week before the final Exam.

Week 15	Final Exam

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

Learning and Teaching Resources						
	مصادر التعلم والتدريس					
	Text	Available in the Library?				
Required Texts	 Ayman Abdul Aziz Salama, International Responsibility for Committing the Crime of Genocide, 1st edition, Dar Al- Uloom for Publishing and Distribution, Cairo, 2006. Raed Abis, Dr. Abbas Atiyah Al-Quraishi, UN Reports Condemning the Ba'ath Regime for Human Rights Violations from 1991 to 2003, Publisher: Iraqi Center for Documenting Extremism Crimes, 1st edition, Al-Kafl Printing House, Karbala, 2023. 	YES				
Recommended Texts	 Hassan Al-Khayyat, Geography of the Marshes and Swamps in Southern Iraq, Al-Matba'a Al-Alamiya, Cairo, 1975. Abbas Atiyah Al-Quraishi, Raed Abis, Hussein Ali Atwan, Documentary Encyclopedia of Open Mass Graves in Iraq from 1963 to 2003, Publisher: Iraqi Center for Documenting Extremism Crimes, 1st edition, Al-Kafl Printing House, Karbala, 2003. 	YES				
Websites						

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

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







Module Information معلومات المادة الدر اسية							
Module Title	Inorganic Ch	iemistry		N	Modul	e Delivery	<i>y</i>
Module Type	Suplement					⊠Theory	y O
Module Code	CRINOCHE	E			□ Lecture ⊠Lab		e
ECTS Credits	5					⊠Tutorial ⊠Practical	
SWL (hr/sem)	125	-			⊠Seminar		ar
Module Level		2	Semester of Delivery		1		
Administering D	epartment	МРНҮ	College	College of Science			
Module Leader	Ahmed Sabee	h Majeed	e-mail	ahmed.sabeeh@nahrainuniv.edu.iq		<u>rainuniv.edu.iq</u>	
Module Leader's Acad. Title		Assistant Professor	Module Leader'sPhDQualificationPhD		PhD		
Module Tutor Ahmed Sabee		h Majeed	e-mail <u>ahmed.sabeeh@nahr</u>		<u>rainuniv.edu.iq</u>		
Module Reviewer Ahmed Sabee		h Majeed	e-mail	<u>ahme</u>	ed.sab	eeh@nahı	<u>rainuniv.edu.iq</u>
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	umbe	er		

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى				
Prerequisite module	None	Semester		
Co-requisites module	None	Semester		

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسبة ونتائج التعلم والمحتويات الار شادية					
Module Aims أهداف المادة الدر اسية	 General view to periodic table and atomic structure. Energy levels, orbitals. Groups 1 & 2, the Alkali Metals and the Alkaline Earth metals. Atoms, Molecules, Ions and ionic compounds. Ionization energy, Atomic Radii, Electron Affinity, electronegativity. Shielding effect, Dipole moment, Polarity, Hydrogen bonding, Melting point, Boiling point Solubility Orbital hybridization. 				
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Teach students the principle of chemistry. Explain the atomic structures and its compounds. Explain some of chemical phenomena. Study the properties of some chemical elements. Practical and laboratory skills. Improvement skills, to improve student's mind and to let students think more about chemistry. Productive skills. 				
Indicative Contents المحتويات الإر شادية	 Indicative content includes the following: Areas of inorganic chemistry. The current role of inorganic chemistry. Improve the student's mind by how he or she can deal with chemicals and its uses. Teach students about hazardous chemicals in the lab and how can avoid any risk in the lab. 				
	استر اتيجيات التعلم والتعليم				
Strategies	 The learning strategy depends on the following: In class interactive lectures involving educational videos. Practical in lab lectures. Adapting interactivity with student's interaction by raising a question and asking the group to find the relevant answers to them as a main way of teaching. Power point presentation, examples from books and internet. 				

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	6.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	2.1
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدر اسية						
		Time/Nu mber	Weight (Marks)	Week Due	Relevant Learning Outcome	
Formative assessment	Quizzes	1	10% (10)	Continuous	All	
	Online Assignments	1	5% (5)	Continuous	All	
	Lab	1	15% (15)	Continuous	All	
	Seminar	1	10% (10)	Continuous	All	
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13	
assessment	Final Exam	4hr	50% (50)	15	All	
Total assessn	nent		100% (100 Marks)			

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Atomic Structure.
Week 2	Atomic Structure.
Week 3	Energy levels, orbitals, Groups 1 & 2, the Alkali Metals and the Alkaline Earth metals.
Week 4	Energy levels, orbitals, Groups 1 & 2, the Alkali Metals and the Alkaline Earth metals.
Week 5	Energy levels, orbitals, Groups 1 & 2, the Alkali Metals and the Alkaline Earth metals.
Week 6	Atoms, Molecules, Ions and ionic compounds.
Week 7	Atoms, Molecules, Ions and ionic compounds.
Week 8	Atoms, Molecules, Ions and ionic compounds.
Week 9	Ionization energy, Atomic Radii, Electron Affinity, electronegativity.
Week 10	Ionization energy, Atomic Radii, Electron Affinity, electronegativity.

Week 11	Shielding effect, Dipole moment, Polarity, Hydrogen bonding, Melting point, Boiling point
	Solubility Ofonal Hydrolauton.
Week 12	Shielding effect, Dipole moment, Polarity, Hydrogen bonding, Meiting point, Boning point
	Solubility Orbital hybridization.
Week 13	Shielding effect, Dipole moment, Polarity, Hydrogen bonding, Melting point, Boiling point
Week 15	Solubility Orbital hybridization.
Week 14	Mid Exam
Week 15	Final Exam

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر				
	Material Covered				
Week 1	Lab 1: Laboratory Report.				
Week 2	Lab 2: Laboratory safety practices.				
Week 3	Lab 3: Glasses and laboratory equipement.				
Week 4	Lab 4: Preparation of sodium hydroxide				
Week 5	Lab 5: Purification of table salt.				
Week 6	Lab 6: Preparation and reaction of barium peroxide.				
Week 7	Lab 7: Calculate the percentage of water in hydrated salt.				
Week 8	Lab 8: Paper chromatography.				
Week 9	Lab 9: Synthesis of alum from aluminum.				
Week 10	Lab 10: Halogens (Group VII B).				
Week 11	Lab 11: Preparation of Calcium Peroxide CaO2.				
Week 12	Lab 12: Preparation of Copper Iodate and Determination of Its Solubility Product in Water.				
Week 13	Lab 13: Identification of Oxalate in their Complex as Below.				
Week 14	Mid Exam				
Week 15	Final Exam				

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Inorganic chemistry, Sharpe, A. G. (Alan George), Harlow: Longman Scientific and Technical, 3rd Edition 1992	YES			
Recommended Texts	Basic Inorganic Chemistry F. Albert Cotton, Geoffrey Wilkinson, Paul L. Gaus, , 3rd Edition, 1995	YES			
Websites	https://courses.lumenlearning.com/boundless-chemistry/chapter/the-structure- of-the-atom/ https://www.acs.org/content/acs/en/careers/chemical- sciences/areas/inorganic-chemistry.html https://courses.lumenlearning.com/boundless-chemistry/chapter/periodic- trends/				

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

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







Module Information معلومات المادة الدر اسية							
Module Title	Mathemati			Modu	ıle Delivery		
Module Type	Core					⊠Theory	
Module Code	MPHY210)1					
ECTS Credits	5					⊠Tutoria □Practica	l al
SWL (hr/sem)	125					⊠Semina	r
Module Level		2	Semester of Delivery		1		
Administering D	epartment	МРНҮ	College	Col	lege o	f Science	
Module Leader	Hassan N. H	ahsim	e-mail	hassan.hashim@nahrainuniv.edu.iq		ainuniv.edu.iq	
Module Leader's	Acad. Title	Assistant Professor	Module Leader's Qualification PhD		PhD		
Module Tutor	Module Tutor Intidhar Malik Hady		e-mail	entidhar.malik@nahrainuniv.edu.iq		ainuniv.edu.iq	
Module Reviewer Zaid Malk Abbas		e-mail	zaid.malk@nahrainuniv.edu.iq		iv.edu.iq		
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	umb	er		

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية					
Module Aims أهداف المادة الدر اسية	 Teaching the students the principles of Mathematical Physics. Give the Students the ability and experience to solve and discuss the problems related with Mathematical Physics. Make a connection between the theoretical principles and the experimental applications. 					
Module Learning	1. Enabling students to know the basics of mathematical physics.					
Outcomes	2. Enabling students to understand the applied aspects of					
مخرجات التعلم للمادة الدر اسية	mathematical physics.					
Indicative Contents المحتويات الإر شادية	 Teaching the student the basic concepts of mathematical physics. Providing the student with the skills of discussing and solving applied problems related to mathematical physics. Linking theoretical concepts with practical applications. 					
	Learning and Teaching Strategies استر اتیجیات التعلم و التعلیم					
Strategies	 Discussing the topics of the methodological book and auxiliary references. Theoretical lectures including problem solving and discussion of homework Asking students for a set of thinking questions during lectures on specific topics. Giving student's homework that requires finding solutions on their own. 					

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) 63 Structured SWL (h/w) 4.2 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل 4.2					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.1		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125				

Module Evaluation								
	تقييم المادة الدراسية							
Time/Nu			Weight (Marks)	Week Due	Relevant Learning			
		mber			Outcome			
	Quizzes	1	10% (10)	Continuous	All			
Formative	Online	1	10% (10)	Continuous	All			
	Assignments	1						
assessment	Onsite	1	10% (10)	Continuous	All			
	Assignments	1	10%(10)					
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	13	LO # 1-12			
assessment	Final Exam	3hr	50% (50)	15	All			
Total assessment			100% (100 Marks)					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Introduction Special functions. The Factorial Function.			
Week 2	Gamma Function.			
Week 3	The Gamma function of negative number.			
Week 4	Some important formulas involving Gamma Function.			
Week 5	Solutions of some Examples.			
Week 6	Beta Function.			
Week 7	Other forms of Beta Function.			
Week 8	The Relation between Gamma and Beta functions.			
Week 9	(Test #1)			
Week 10	The Error function.			
Week 11	Series: Solutions of Differential Equations.			
Week 12	Legendre's Equation.			
Week 13	(Test #2) Mid Exam			
Week 14	Preparatory week.			
Week 15	Final Exam			

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

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Mathematical Methods in the Physical Sciences" By: Mary L. Boas, 3rd Edition, 2006.	No		
Recommended Texts	Advanced Calculus, 3rd Edition, Angus E. Taylor, and W. Robert Mann, 1983.	YES		
Websites	Any website related with mathematical physics https://www.christs.cam.ac.uk/sites/default/files/inline- files/0a187866618ca3049030ec5014860ae8-original.pdf			

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

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







Module Information معلومات المادة الدر اسية								
Module Title	Modern Ph	ysics			Modu	ıle Delivery		
Module Type	Core				⊠Theory			
Module Code	MPHY210)2				⊠Lecture □Lab		
ECTS Credits	6	6				⊠Tutorial □Practical		
SWL (hr/sem)	150	150				⊠Semina	r	
Module Level 2		2	Semester	Semester of Delivery		у	1	
Administering D	epartment	МРНҮ	College	Col	College of Science			
Module Leader	Marwa Abdu	ul Muhsien	e-mail	mai	<u>marwa@nahrainuniv.edu.iq</u>		<u>edu.iq</u>	
Module Leader's	Acad. Title	Assistant Professor	Module Lo	Module Leader's Qualification PhD		PhD		
Module Tutor	Zaid Malk A	bbas	e-mail	zaio	zaid.malk@nahrainuniv.edu.iq		iv.edu.iq	
Module Reviewer Rafah Mohammed		e-mail	<u>rafa</u>	rafah.m.h@nahrainuniv.edu.iq		iv.edu.iq		
Peer Reviewer Name			e-mail					
Review Committee Approval			Version N	umb	er			

Relation With Other Modules العلاقة مع المواد الدر اسية 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 الدر اسية	 Understand the basic principles of modern physics: Focus on principles developed during the 20th century such as relativity, quantum mechanics, and nuclear physics. Introduce students to new concepts: Quantum energy, particle-wave duality, special and general relativity, and atomic structure. Motivating students for scientific research: Encourage them to follow the latest developments and discoveries in physics. The ability to understand and apply basic principles: Understanding the foundations of special relativity, quantum mechanics, and nuclear physics. The ability to solve complex physics problems: Using the laws and theories of modern physics. 						
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Analyze physics data and use mathematical methods and theoretical models to solve complex issues. Critical thinking and problem solving: The student learns how to use modern physics knowledge to analyze new issues and come up with innovative solutions. Ability to explain complex natural phenomena: Using the principles of modern physics, such as explaining phenomena associated with high speeds, large masses, or subatomic particles. Familiarity with the practical applications of modern physics: In the fields of technology, medicine, engineering, and the environment, such as laser applications, magnetic resonance imaging, and renewable energy technologies. Understanding the basic principles of modern physics: Such as the special theory of relativity, quantum mechanics, and particle physics. 						
Indicative Contents المحتويات الإرشادية	 Introduction to Modern Physics: The difference between classical and modern physics. The theories that laid the foundations for modern physics such as special relativity and quantum mechanics. Special relativity: The concept of a frame of reference and relative speed. The principle of relativity. Lorentz transformations. The relationship between mass and energy (E = mc²). quantum theory: The wave-particle nature of light (wave-particle duality). The Compton effect. 						

	 Planck's interpretation of blackbody radiation. Bohr's model of the atom. 				
	 4. Quantum mechanics: Basic principles of quantum mechanics (Heisenberg's uncertainty principle, wave function, quantization of energy). Schrödinger's wave equation. Atoms and atomic structures. 				
	 5. Elementary particles : Classification of particles (e.g. quarks and leptons). Basic forces in nature (strong and weak nuclear force, electromagnetism, gravity) The standard model of particles. 				
	Learning and Teaching Strategies استر اتيجيات التعلم و التعليم				
Strategies	 Inquiry-based learning: Encourages students to ask questions and discover concepts on their own through experiments and research projects, which enhances critical thinking and problem-solving skills. Collaborative learning: Encouraging teamwork where students exchange ideas and collaborate in solving scientific questions and experiments. Brainstorming and group discussion: This strategy helps to promote group thinking and the cultural exchange of scientific ideas among students. Problem-based learning: Students learn physics by facing real issues and solving those using physics tools and concepts. Constructive assessment: Using continuous assessment to measure students' progress and understanding of concepts, rather than relying solely on final exams. 				

Student Workload (SWL) الحمل الدر اسي للطالب						
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا	4.2			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	5.8			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	150					

Module Evaluation تقبيم المادة الدر اسبة								
	Time/Nu mberWeight (Marks)Week DueRelevant Learning Outcome							
	Quizzes	1	10% (10)	Continuous	All			
Formative assessment	Online Assignments	1	10% (10)	Continuous	All			
	Onsite Assignments	1	10% (10)	Continuous	All			
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13			
assessment	Final Exam	3hr	50% (50)	15	All			
Total assessm	ient		100% (100 Marks)					

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري					
	Material Covered					
Week 1	Introduction to Special Relativity, Postulates of Special Relativity.					
Week 2	Time Dilation.					
Week 3	Doppler Effect, Length Contraction.					
Week 4	Twin Paradox, Relativistic Momentum.					
Week 5	Relativistic Mass, Relativistic Second Law.					
Week 6	Mass and Energy, Energy and Momentum.					
Week 7	The Lorentz Transformation.					
Week 8	Velocity Addition.					
Week 9	Electromagnetic Waves, Blackbody Radiation.					
Week 10	Photoelectric Effect.					
Week 11	X-Rays, Compton Effect, Pair Production, photon Absorption.					
Week 12	De Broglie (Matter) Waves, Describing a Wave.					
Week 13	Phase and Group, Velocities Particle Diffraction.					
Week 14	Mid Exam					
Week 15	Final Exam					

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

Learning and Teaching Resources					
	مصادر النعلم والندريس				
	Text	Available in the Library?			
Required Texts	Concepts of modern physics Arthur Beiser	No			
Recommended Texts	Modern Physics by Paul A. Tipler Modern Physics for Scientists and Engineers, by Stephen Thornton.	YES			
Websites	http://library.lol/main/802283D1032C91B4201CACCA52 http://library.lol/main/A014282B63FE52E8510AC53A7E http://library.lol/main/7275D2ADDF609FA6CCAC053E5C	<u>578A98</u> D0D0C8 CC8C9FA			

GRADING SCHEME مخطط الدرجات						
Group	Grade	التقدير	Marks (%)	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
Success Group (50 - 100)	B - Very Good	80 - 89 جيد جدا		Above average with some errors		
	C - Good	ختر	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	مقبول بقرار	(45-49)	More work required but credit awarded		
(0-49)	F – Fail	راسب	(0-44)	Considerable amount of work required		
Note:						

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







Module Information معلومات المادة الدر اسية							
Module Title	Ordinary Dif	fferential Equations		Mo	dule Deliver	у	
Module Type	Suplement				□ Theor	y	
Module Code	CRORDDIF	2				e	
ECTS Credits	4				⊠Tutor □Practi	ial cal	
SWL (hr/sem)	100	100					
Module Level		2	Semester	of Delivery		1	
Administering D	epartment	МРНҮ	College	College of Science			
Module Leader	Fatimah Sahil	b Kadhim	e-mail	fatimah.altaie@nahrainuniv.edu.iq		<u>ainuniv.edu.iq</u>	
Module Leader's	Acad. Title	Assistant Professor	Module La Qualificat	Module Leader's Qualification		PhD	
Module Tutor Abbas Ibrahim		e-mail	Abbas.Ibrahim@nahrainuniv.edu.iq		rainuniv.edu.iq		
Module Reviewer Abbas Ibrahim		e-mail	<u>Abbas.I</u>	Abbas.Ibrahim@nahrainuniv.edu.iq			
Peer Reviewer Name			e-mail				
Review Commit	ttee Approval		Version N	umber			

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى					
Prerequisite module	None	Semester			
Co-requisites module	None	Semester			

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية و نتائج التعلم و المحتويات الإر شادية				
Module Aims أهداف المادة الدر اسية	The aim of this course is for the students to be primarily concerned with learning the basic concepts of mathematics, application in reality, solution of ordinary differential equations with first-, and higher-order and their applications. In addition, different classes of ODEs are considered.			
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Learning the basic concepts of differential equations, such as: To be able to deal with ordinary differential equations (ODE) and their applications. To be familiar with first order ODE and learning how to solve such equations. To deal with higher order ODE and their solutions. To learn the difference between homogeneous and non- homogeneous differential equations. To have experience in applications of Laplace transform. 			
Indicative Contents المحتويات الإر شادية	 Differential Equations: definition, properties, classifications. First-order DE: Types, methods of solution: separable, homogeneous, exact, non-exact, linear, Bernoulli differential equation. Higer-order DE: Definition, homogeneous linear DE., methods of solution. Non-homogeneous DE: definitions, properties, <ethods li="" of="" solution.<=""> Laplace Transform: Definitions, properties, applications. </ethods>			
	Learning and Teaching Strategies استر اتيجيات التعلم و التعليم			
Strategies	The learning and teaching strategy is presented by: Providing the students with a sufficient amount of mathematical terms and definitions by attending lectures and presenting on the whiteboard to connect the students with the lecturer to solve as many real-life applications as possible. The pdf lectures, homework, quizzes, reports, seminar, and exercises are shared on Google Classroom. The subject will be given to the students through a series of lectures with problem-solving practice carried out in interactive tutorials. These tutorials will be supported by practice and directed study outside the classroom. Formative assessment takes place during tutorials and feedback is given during these tutorials.			

	Student W للطالب	Vorkload (SWL) الحمل الدر اسي	
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	2.5
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	100		

Module Evaluation						
	تقييم المادة الدر اسية					
Time/			Weight (Marks)	Week Due	Relevant Learning	
		mber	4.007 (4.0)		outcome	
	Quizzes	1	10% (10)	Continuous	All	
Formative assessment	Online	1	10% (10)	Continuous	All	
	Assignments	1				
	Onsite	1	100/ (10)	Continuous	All	
	Assignments	1	10% (10)			
	Seminar	1	10% (10)	Continuous	All	
Summative	Midterm Exam	2 hr	10% (10)	10	LO # 1-9	
assessment	Final Exam	3hr	50% (50)	15	All	
Total assessment			100% (100 Marks)			

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Introduction to DE's: Definition and classification of Differential Equations (DE's).
Week 2	First-order DE's: Separable DE.
Week 3	Homogeneous first-order DE.
Week 4	Exact differential equations.
Week 5	Non-exact differential equations.
Week 6	Linear differential equation and Bernoulli equation.
Week 7	Higher-order DE's: The general form of higher-order DE's.
Week 8	Homogeneous DE's, Definition and methods on solving homogeneous DE's.
Week 9	Nonhomogeneous DE's, Definition, properties, and methods of solving non-homogeneous DE's.

Week 10	Mid Exam
Week 11	Reducing second-order DE to first-order DE.
Week 12	Laplace Transform.
Week 13	Definition / properties of Laplace transform and then using Laplace transformation in solving DF's
Week 14	Preparatory week before the final Exam.
Week 15	Final Exam

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

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	Available in the Library?
Required Texts	 [1] C. Henry Edwards and David E. Penney, Differential Equations and Linear Algebra, ser. Pearson International Edition, third edition. Pearson Education, United States of America, 2010. [2] William E. Boyce, and Richard C. DiPrima, Elementary Differential Equations and Boundary Value Problems, John Wiley and Sons, Inc. Seventh edition, United State of America. 2001. 	No
Recommended Texts	Earl D. Rainville and Phillip E. Bedient, Elementary Differential Equations, Collier Macmillan Publishers, fifth Edition, New York, 1974.	YES

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

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





Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Applied Pathological Analysis Department



Module Information معلومات المادة الدر اسبة						
Module Title	Physiology			Mod	ule Delivery	,
Module Type	Core				⊠ Theory	
Module Code	мрну2203				⊠Lab	e
ECTS Credits	6	6			⊠Tutorial	
SWL (hr/sem)	150	150			⊠ Semin	ar
Module Level		2	Semester of Delivery		2	
Administering Department		MPHY	College	lege College of Science		
Module Leader	Dr. Tania Tahseen		e-mail	tania.tahseen@nahrainuniv.edu.iq		ainuniv.edu.iq
Module Leader's Acad. Title		Lecturer	Module Lo Qualificati	eader's ion		PhD
Module Tutor Sally Hani			e-mail	<u>sally.han</u>	i@nahrainur	<u>niv.edu.iq</u>
Module Reviewer	dule Reviewer Zainab Ali		e-mail	Zainab.a	li@nahrainu	niv.edu.iq
Peer Reviewer Name			e-mail			
Review Committee Approval			Version N	umber		

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

Module Aims, Learning Outcomes and Indicative Contents			
	This syllabus emphasizes integrating physiological principles with medical physics, focusing on biophysical mechanisms and applications relevant to healthcare technology and diagnostics.		
Module Aims	1. Provide students with a foundational understanding of human physiological processes, emphasizing their relevance to medical physics.		
اهداف الماده الدر اسبه	2. Bridge the gap between physics principles and physiological systems, enabling students to analyze and interpret physiological phenomena from a physical and quantitative perspective.		
	3. Equip students with the knowledge necessary to apply physiological principles to medical technologies, diagnostics, and therapeutic techniques.		
	By the end of the module, students should be able to:		
	1. Understand the major physiological systems (e.g., cardiovascular, respiratory, nervous, and musculoskeletal systems).		
	2. Apply Physics to Physiology by analyzing physiological processes (e.g., blood flow, nerve conduction) using physical laws and mathematical models.		
Module Learning Outcomes	3. Use quantitative methods to assess physiological measurements such as blood pressure, respiratory rates, and neural signals.		
مخرجات التعلم للمادة الدراسية	4. Gain practical skills in using medical instruments and technologies to measure and analyze physiological parameters. Moreover, understand and interpret physiological data from medical devices such as ECGs, spirometers, and imaging technologies.		
	5. Learn to apply physiological knowledge in medical technology and health science contexts and work effectively with healthcare professionals by understanding the physiological principles underlying medical devices and treatments.		
	1. Introduction to Physiology		
	Cellular physiology and homeostasis		
	2. Nervous System		
	 Nerve conduction and action potentials 		
Indicative Contents	Brain and spinal cord function		
المحتويات الإرشادية	Sensory and motor systems		
	3. Cardiovascular System		
	Heart function and blood circulation		
	Blood pressure and hemodynamics		
	• Electrophysiology of the heart (ECG)		

4. Respiratory System
Mechanics of breathing
Gas exchange and transport
• Physics of ventilation and respiratory devices
5. Musculoskeletal System
Muscle contraction and biomechanics
• Bone structure and strength
6. Renal and Endocrine Systems
Kidney function and fluid balance
 Hormonal regulation of physiological processes
7. Physiology in Medical Physics
• Imaging techniques (MRI, ultrasound)
Radiation effects on biological tissues
Bioinstrumentation and signal processing
8. Laboratory and Practical Sessions
• Physiological data collection (e.g., ECG, spirometry)

Learning Strategies: -Encourage students to take organized notes during lectures and ask scientific questions. -Participate actively in group discussions and collaborative activities. -Make use of textbooks, online resources, and supplementary materials to reinforce learning. -Provide constructive feedback on assignments and assessments. Teaching Strategies:	Learning and Teaching Strategies استر اتیجیات التعلم و التعلیم				
 Encourage students to actively engage with the material through discussions and group activities to promote deeper understanding. Deliver well-structured lectures that provide a clear overview of the topic. Incorporate videos, and animation to illustrate complex physiological processes. 	Strategies	استراتيجيات التعلم والتعليم والتعليم والتعليم والتعليم والتعليم والتعليم Learning Strategies: -Encourage students to take organized notes during lectures and ask scientific questions. -Participate actively in group discussions and collaborative activities. -Make use of textbooks, online resources, and supplementary materials to reinforce learning. -Provide constructive feedback on assignments and assessments. Teaching Strategies: - Encourage students to actively engage with the material through discussions and group activities to promote deeper understanding. - Deliver well-structured lectures that provide a clear overview of the topic. - Incorporate videos, and animation to illustrate complex physiological processes.			

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	6.2	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	3.7	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	150			

Module Evaluation								
تقييم المادة الدراسية								
		Time/Nu mber	Weight (Marks)	Week Due	Relevant Learning Outcome			
Formative assessment	Quizzes	1	10% (10)	Continuous	All			
	Online Assignments	1	5% (5)	Continuous	All			
	Lab	1	15% (15)	Continuous	All			
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	7	LO # 1-6			
assessment	Final Exam	4hr	50% (50)	15	All			
Total assessment			100% (100 Marks)					

Delivery Plan (Weekly Syllabus)				
المنهاج الأسبوعي النظري				
Week	Material Covered			
Week 1 Week 2	 Fundamentals of Physiology. Introduction to Physiology Definition of physiology and its importance in medical physics. Organizational levels of the body (cells, tissues, organs, systems). The concept of homeostasis and its role in maintaining body stability. Structure and Biophysics of Cell Membranes Electrical properties of membranes. 			
	- Ion channels and their kinetics			
Week 3	 Transport mechanisms: diffusion, osmosis, and active transport Cellular signaling pathways. 			
Week 4	Systemic Physiology			
	Cardiovascular System			

	- Anatomy and physiology of the heart
	- Electrical activity of the heart (ECG interpretation) - Blood flow dynamics and hemodynamics
	- Biophysics of blood pressure measurement
	Respiratory System
Week 5	- Mechanics of breathing and gas exchange Biophysics of oxygen and carbon diovide transport
	- Applications of ultrasound in lung imaging
	The second of an and many many
	Nervous System
Week 6	- Neuron structure and function
VV CCR 0	- Signal transmission: synaptic and action potentials
	- Brain imaging techniques (EEG, fMRI, PET)
Week 7	Mid-Term Examination
	Renal and Urinary System
Week 8	- Filtration, reabsorption, and secretion processes
VV CCR 0	- Imaging techniques for kidney function
	indging teeninques for kluney function
	Musculoskeletal System
	- Muscle Structure and Types: Skeletal, cardiac, and smooth muscle.
Week 9	- Muscle contraction: biophysics of the sliding filament theory Electromyography (EMG) and its applications
	- Biomechanics of bones and joints
	Sensory Systems
Week 10	- Biophysics of vision: optics of the eye and photo transduction
	- Tactile and pain sensations: neural pathways and diagnostics
	1 ····································
	Endocrine System
Week 11	- Hormonal regulation of body functions
	- Diagnostic imaging in endocrinology (e.g., thyroid scans)
	Reproductive Physiology
	- Hormonal regulation of reproduction
Week 12	- Biophysics of assisted reproductive technologies (ART)
	- Imaging techniques in reproductive health
Week 13	Medical Applications of Physiology
	- Role of physics in medical diagnostics and therapy
Week 14	Medical Applications of Physiology Applications of MPL CT and X rays in physiological studies
	- Applications of MR1, C1, and A-rays in physiological studies
	- Laser-tissue interactions and photodynamic therapy.
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Week 15	Preparation for Term Final Examination

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر			
Weeks	Material Covered		
Week 1	Lab1. Structure and function of cells.		
Week 2	 Lab 2. Thermoregulation Homeostasis Experiment: Measure body temperature under different conditions. Study the effects of heat and cold stress on skin temperature and heart rate. Homeostasis (maintaining a stable body temperature) 		
Week 3	Lab3. Membrane Transport and Osmosis Part 1.Experiment: Study diffusion and active transport in simulated systems.		
Week 4	Lab4. Membrane Transport and Osmosis Part 2.• Experiment: Study diffusion and active transport in simulated systems.		
Week 5	 Lab 5. Week 5: Cardiovascular Physiology Part 1. Experiment: Measure blood pressure using sphygmomanometers and automated devices. Record and analyze heart sounds using a stethoscope and phonocardiography. Introduction to pulse wave velocity and its clinical significance. 		
Week 6	 Lab 6. Week 6: Cardiovascular Physiology Part 2. Experiment: ECG recording and analysis. Study heart rate variability under different physiological conditions. Correlation of ECG findings with cardiac physiology. 		
Week 7	Mid-term exam		
Week 8	 Lab 7. Respiratory Physiology Measure lung volumes and capacities using a spirometer (Pulmonary function tests). Experiment: Analyze the effects of exercise on respiratory rate and tidal volume. 		
Week 9	Lab 8. Renal PhysiologyExperiment: Analyze urine samples for pH, specific gravity, and solute concentrations.		

Week 10	Lab 9. Musculoskeletal SystemMeasure muscle response using Electromyography (EMG).
Week 11	Lab 10. Musculoskeletal SystemMuscle Structure and Types: Skeletal, cardiac, and smooth muscle.
Week 12	 Lab 11. Sensory Physiology Experiment: Measure visual acuity, color vision, and blind spots. Study auditory physiology using audiometry.
Week 13	Lab 12. Biophysical Applications in Physiology IStudy the principles of Doppler ultrasound.
Week 14	 Lab 13. Biophysical Applications in Physiology II Use imaging techniques (e.g., MRI/CT simulations) to correlate anatomical and physiological findings. Introduce radiation exposure effects on physiological systems (discussion).
Week 15	Preparation for Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Guyton and Hall Textbook of Medical Physiology (14th Edition) John E. Hall	No			
Recommended Texts	Human Physiology (9th. Ed.) Stuart Ira Fox	Yes			
Websites	https://clinref.com/data/uploads/books/Guyton dical_Physiology_14th_Ed.pdf	n and Hall Textbook of Me			

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

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





Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Physics Department



MODULE DESCRIPTOR FORM نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية					
Module Title	QUANTU	M MECHANICS		Module I	Delivery
Module Type	Core			⊠Theory ⊠Lecture □Lab	
Module Code	MPHY2	201			
ECTS Credits	6			⊠Tutorial □Practical	
SWL (hr/sem)	150			×	Seminar
Module Level		2	Semester of Delivery		2
Administering Depa	rtment	МРНҮ	College	College of Science	
Module Leader	Hassan N	I. Hahsim	e-mail	hassan.hashim@nahrainuniv.edu.i	
Module Leader's Acad. Title		Assist. Professor	Module Lead Qualification	er's	Phd
Module Tutor Zaid Mal		k Abbas	e-mail	zaid.mall	<u>@nahrainuniv.edu.iq</u>
Module Reviewer Fatimah F		adhil Abd Ali	e-mail	fatimahfao	<u>lhil33@nahrainuniv.edu.iq</u>
Peer Reviewer Name	ę		e-mail		
Review Committee Approval			Version Num	ber	

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى				
Prerequisite module	None	Semester		
Co-requisites module	None	Semester		

Module	Module Aims, Learning Outcomes and Indicative Contents					
	اهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية					
	1. To introduce the principles and formalism of quantum mechanics.					
	2. To develop problem-solving skills using quantum theory.					
Module Aims أهداف المادة الدر اسية	3. To explore the application of quantum mechanics in technology and modern physics.					
	 To understand and discuss the philosophical implications of quantum mechanics. 					
	1. Demonstrate an understanding of quantum mechanical principles.					
	2. Solve quantum problems using the Schrödinger equation.					
Module Learning Outcomes	3. Analyze quantum systems such as particles in potential wells, oscillators, and atoms.					
مخرجات التعلم للمادة الدراسية	4. Discuss quantum entanglement, uncertainty, and measurement.					
	 Apply quantum mechanics to real-world phenomena and technology (e.g., semiconductors, lasers, quantum computing). 					
Indicative Contents المحتويات الإرشادية	 Teaching the student the basic concepts of quantum mechanics. Providing the student with the skills of discussing and solving applied problems related to quantum mechanics. Linking theoretical concepts with practical applications. 					
	Learning and Teaching Strategies					
	استر اتيجيات التعلم والتعليم					
	1. Discussing the topics of the methodological book and auxiliary					
	references.					
	2. Theoretical fectures including problem solving and discussion of homework					
Strategies	3. Asking students for a set of thinking questions during lectures on					
	specific topics.					
	4. Giving students homework that requires finding solutions on their own.					

Student Workload (SWL) الحمل الدر اسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4.2	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	5.8	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	150			

Module Evaluation						
تقييم المادة الدر اسية						
Time/Nu		Time/Nu mbor	Weight (Marks)	Week Due	Relevant Learning	
	Ouizzes	1	10% (10)	Continuous	All	
Formative assessment	Online Assignments	1	10% (10)	Continuous	All	
	Onsite Assignments	1	10% (10)	Continuous	All	
	Seminar	1	10% (10)	Continuous	All	
Summative	Midterm Exam	2 hr	10% (10)	13	LO # 1-12	
assessment	Final Exam	3hr	50% (50)	15	All	
Total assessment			100% (100 Marks)			

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Introduction to Quantum Mechanics			
Week 2	Mathematical Tools for Quantum Mechanics			
Week 3	The Schrödinger Equation – Part 1			
Week 4	The Schrödinger Equation – Part 2			
Week 5	Quantum Superposition and Interference			
Week 6	The Uncertainty Principle			
Week 7	Quantum Mechanics in One Dimension			
Week 8	Quantum Systems in Three Dimensions			
Week 9	Quantum Mechanics of Angular Momentum			
Week 10	Quantum Tunneling			

Week 11	Quantum Entanglement and Nonlocality		
Week 12	Quantum Mechanics and the Hydrogen Atom		
Week 13	Midterm exam		
Week 14	Quantum Statistical Mechanics		
Week 15	Review and Final Exam Preparation		
Week 16	Final Exam		

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

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	Available in the Library?
Required Texts	 ✓ Introduction to quantum mechanics, By: David J. Griffith, 3rd ed.,2018. 	https://kolegite.com/ EE_library/books_and _lectures/Физика/int roduction-to- quantum-mechanics- david-j-darrell annas-archive libgenrs-nf- 2695391.pdf
Recommended Texts	Quantum Mechanics, by L.I. Schiff, 1949.	
Websites	Any website related with Quantum Mechanics Subjects.	

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

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





Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Department of Medical Physics



MODULE DESCRIPTOR FORM نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية							
Module Title	Sound and Wa	ave motion			Modu	le Delivery	
Module Type	Core				⊠ Theory		y
Module Code	мрну2202					⊠Lab	e
ECTS Credits	6					⊠Tutori ⊠Practio	al cal
SWL (hr/sem)	150					⊠Semina	ar
Module Level		2	Semester o	of Delivery 2		2	
Administering De	epartment	MPHY	College	Co	llege	of Science	
Module Leader	Dr Alaa Jabba	r Ghazai	e-mail	<u>.dr.a</u>	alaa.gh	azai@nahra	ainuniv.edu.iq
Module Leader's Acad. Title		Professor	Module Le Qualificati	eader ion	''s		PhD
Module Tutor Rafah Mohamm		ned	e-mail <u>rafah.m.h@nahrainur</u>		iv.edu.iq		
Module Reviewer Dr. saif mohsin		nassrullah	e-mail	<u>saif</u> .	.muhsi	n@nahraim	univ.edu.iq
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	umbe	er		

Relation With Other Modules العلاقة مع المواد الدر اسية الأخرى					
Prerequisite module	None	Semester			
Co-requisites module	None	Semester			

Module	e Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية
Module Aims	Students will gain knowledge of wave motion and acoustics. The properties of
أهداف المادة الدر اسية	waves will be discussed.
	The effect of medium on the properties of waves will be covered.
	On successfully completing the module students will be able to: 1. Demonstrate knowledge and understanding of physical laws and principles, and their application to diverse areas of physics (this will include laws of motion, electromagnetism, wave phenomena and the properties of matter), with modules covering the necessary mathematics.
Module Learning Outcomes	2- Have the understanding of the concepts of oscillatory motion, superposition of waves, sound, and electromagnetic waves.
مخرجات التعلم للمادة الدراسية	3- Have experience with common mathematical and experimental tools including solving problems for this course.
	4- Have skills in collecting and analyzing experimental data.
	5. Demonstrate an ability to make use of appropriate texts, or other learning resources as part of managing their own learning.
	Indicative content includes the following. 1. Introduction A brief introduction to problem-solving in physics, Physical quantities (Standards and Units), errors, uncertainty, and some math.
	2. Sound ♦ Nature and Sources of Sounds
Indicative Contents	 Characteristics of Sound.
المحتويات الإرشادية	 Properties of Sound. Transmission of Sound
	3. Wave Motion
	 Waves and Wave Motion. Kinds/Types of Waves
	 Characteristics of Waves.
	Properties of Waves
	Learning and Teaching Strategies
	استراتيجيات التعليم والتعليم
	The primary approach for introducing this unit will involve fostering student
Strategies	engagement inrough active participation in nomework exercises, aiming to enhance and broaden their critical thinking abilities. This will be facilitated
	through class sessions and interactive tutorials, supplemented by the exploration

of simple experiments designed to incorporate sampling activities tailored to
students' interests.

Student Workload (SWL) الحمل الدر اسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	6.2	
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	3.7	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	150			

Module Evaluation تقييم المادة الدر اسية						
	Time/Nu mberWeight (Marks)Week DueRelevant Learning Outcome					
Formative	Quizzes	1	10% (10)	Continuous	All	
	Online Assignments	1	5% (5)	Continuous	All	
assessment	Lab	1	15% (15)	Continuous	All	
	Seminar	1	10% (10)	Continuous	All	
Summative	Midterm Exam	2 hr	10% (10)	12	LO # 1-11	
assessment	Final Exam	4hr	50% (50)	15	All	
Total assessm	nent		100% (100 Marks)			

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري			
	Material Covered		
Week 1	Introduction		
Week 2	Mechanical Waves : Characteristics of waves		
Week 3	Wavelength and frequency		
Week 4	Speed and energy in a traveling wave		
Week 5	Standing waves		
Week 6	Sound Waves: The characteristics of sound wave		
Week 7	The speed of sound		

Week 8	Intensity of sound waves
Week 9	Superposition of sound waves (interference and beats)
Week 10	The Doppler effect
Week 11	Oscillations and Waves
Week 11	Simple harmonic motion
Week 12	Mid Exam
Week 13	Harmonic motion and circular motion
Week 14	The force law and Energy in simple harmonic oscillators
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر				
	Material Covered			
Week 1-2	Lab 1: The decrement of decaying oscillations is defined as the ratio of successive maxima			
Week 3-4	Lab 2: Capacitor decay constant			
Week 5-6	Lab 3: The velocity of sound by means of resonance tube closed at one end			
Week 7-8	Lab 4: melde's experiment			
Week 9-10	Lab 5: The bottle resonator			
Week 11-12	Lab 6: Optical determination of velocity of sound in liquids			
Week 13	Lab 7: Absorption of ultrasonic waves in air			
Week 14	Lab 8: Mid Exam			
Week 15	Lab 9: Final Exam			

Learning and Teaching Resources مصادر التعلم و التدريس					
	Text	Available in the Library?			
Required Texts	Vibrations Waves and Sounds, Second Edition, 2013, ANYAEGBUNAM F.N.C.	Yes			
Recommended Texts	THE PHYSICS OF VIBRATIONS AND WAVES Sixth Edition 2005,H. J. Pain Formerly of Department of Physics, Imperial College of Science and Technology, John Wiley & Sons LtdLondon, UK	Yes			
Websites	file:///C:/Users/MICROSOFT/Downloads/Book5Vibrations	WavesandSounds.pdf			

http://fizica-c-
<u>11.phys.uaic.ro/Pain%20PHYSICS%20OF%20VIBRATIONS%20AND%20WA</u>
VES%206-th%20Edition.pdf

GRADING SCHEME مخطط الدرجات						
Group	Grade	التقدير	Marks (%)	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
a a	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
Success Group (50 - 100)	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	مقبول بقرار	(45-49)	More work required but credit awarded		
(0 - 49)	F – Fail	راسب	(0-44)	Considerable amount of work required		
Note:						

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





Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Medical Physics Department



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية							
Module Title	Arabic Langua	Arabic Language 2				ıle Deliver	·y
Module Type	BASIC				⊠Theory		
Module Code	URARA2						re
ECTS Credits	2					Tutor	ial
SWL (hr/sem)	50	50				□Practical ⊠Seminar	
Module Level	Module Level 2		Semester	of I	of Delivery 2		2
Administering Department		МРНҮ	College	College of Science			
Module Leader	Omar adnan		e-mail	omar.adnan@nahrainuniv.edu.iq		inuniv.edu.iq	
Module Leader'	s Acad. Title	Assist. Professor	Module L Qualifica	Lead tion	ler's		Master's Degree
Module Tutor			e-mail				
Module Reviewer Omar adnan		e-mail	on	<u>nar.adn</u>	an@nahrai	inuniv.edu.iq	
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	Num	ber		

Relation With Other Modules العلاقة مع المواد الدر اسية 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 الدر اسبة	 Covering the basics of the Arabic language Understanding the different parts of the Arabic language Developing reading, writing, and listening skills Developing linguistic culture by understanding Arabic as a language with a history and culture Learning speaking and conversational skills to communicate effectively with others. 					
	1. Knowledge and understanding: Graduates must be able to know and understand the following:					
Module Learning	 The ability to speak and write Arabic fluently and at an advanced level. An understanding of Arab culture, traditions, and values. 					
مخرجات التعلم للمادة الدراسية	4. The student's ability to participate in communities and seminars, whether academically, professionally, or socially.5. The student's ability to read and analyze literary and academic texts in Arabic, facilitating their research and writing research papers appropriately.					
	6. Professional readiness through the student's ability to use Arabic in translation, teaching, public relations, or any other field that requires communication in Arabic.					
Indicative Contents المحتويات الإر شادية	Students should be able to understand the basic principles of the Arabic language by studying the parts of speech (nouns, verbs, and particles), defining each and explaining its meaning. Students should also be able to identify the subject and predicate, and learn their types in detail, with examples. Students should also study the verbs "kana" and its sisters, "inna" and its sisters, explaining their meanings and functions, and the changes that occur in a sentence when they are used. Students should also learn how to write numbers, punctuation marks, the closed and open taa, and other topics of interest to students learning the basics of the Arabic language.					
	Learning and Teaching Strategies					
	استر النجيات النعلم والتعليم					
Strategies1. Lecture style and application with examples2. Homework and seminar system						

Student Workload (SWL) الحمل الدر اسي للطالب					
Structured SWL (h/sem) 33 Structured SWL (h/w) 2.2 الحمل الدر اسي المنتظم للطالب أسبو عيا الحمل الدر اسي المنتظم للطالب خلال الفصل					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	.11		
Total SWL (h/sem) 50 الحمل الدر اسي الكلي للطالب خلال الفصل					

Module Evaluation								
تقييم المادة الدر اسية								
		Time/Nu	Weight (Marks)	Week Due	Relevant Learning			
	Quizzes	1	10% (10)	Continuous				
Formative	Online Assignments	1	10% (10)	Continuous	All			
assessment	Onsite Assignments	1	10% (10)	Continuous	All			
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	12	LO # 1-11			
assessment	Final Exam	3hr	50% (50)	15	All			
Total assessm	ient		100% (100 Marks)					

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Writing Tips (How to Write)
Week 2	Writing Topics (Our Strength in Unity)
Week 3	Writing Topics (Honoring Parents)
Week 4	Writing Topics (The Method of Moderation)
Week 5	Writing Topics (The Art of Dealing with Others)
Week 6	Mid Exam1
Week 7	Arabic Language and Its Sciences
Week 8	Communication Skills
Week 9	Imam Ali (may Allah be pleased with him) (Friends)
Week 10	Imam Ali (may Allah be pleased with him) (The Soul Weeps)
Week 11	Verb
Week 12	Mid Exam2

Week 13	Subject and Subject-Matter
Week 14	Common Spelling Mistakes
Week 15	Final Exam
Week 16	

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

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	Available in the Library?
Required Texts	New Headway Plus for Pre-intermediate	
Recommended Texts	Think Big (Required book)	
Websites	www.youtube.com	

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

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





Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Department of Medical Physics



MODULE DESCRIPTOR FORM

الدراسية	نموذج وصف المادة

Module Information معلومات المادة الدر اسية							
Module Title	Biochemistr	у		Mod	Module Delivery		
Module Type	Suplement				☐ ☐ Theory		
Module Code	BIOCHE						
ECTS Credits	5			⊠Tutor	ial		
SWL (hr/sem)	125			☐ □Practical			
Module Level		2	Semester	of Delive	ry	2	
Administering I	Administering Department MPHY		College	College	College of Science		
Module Leader	Talib Hami	d Mawat	e-mail	Dr.talib	Dr.talib_h@nahrainuniv.edu.iq		
Module Leader' Title	s Acad.	Lecturer	Module Leader's Qualification		PhD		
Module Tutor	Dena Ahmed Hashim		e-mail	<u>dina.ahn</u>	dina.ahmed@nahrainuniv.edu.iq		
Module Reviewer	Shams Aws Ismael		e-mail	Shams.a	Shams.aws@nahrainuniv.edu.iq		
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	lumber			

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدر اسية	 Define learning objectives for students. Emphasize essential topics and skills. Motivate students by clarifying relevance. Provide benchmarks to measure success. Foster critical thinking and practical skill development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 Knowledge: Understanding core concepts and principles (e.g., understanding cell structure or enzyme kinetics). Skills: Developing practical, analytical, and problem-solving abilities (e.g., performing biochemical experiments or analyzing protein structures). Application: Applying knowledge to real-world scenarios or further studies. Behavioral Competencies: Building teamwork, communication, or critical thinking skills.
Indicative Contents المحتويات الإرشادية	 principles of blochemistry, albert L. Lenninger Harper's Illustrated Biochemistry Medical BiochemistryAuthor: John W. Baynes, Marek H. Dominiczak Lippincott's Illustrated Reviews: Biochemistry Principles of Medical BiochemistryAuthor: Daniel H Simmons, Gerhard Meisenberg
	Learning and Teaching Strategies استر اتيجيات التعلم و التعليم
Strategies	 Active Learning: Engage students with group work, case studies, and discussions. Visual Learning: Use diagrams, animations, and concept maps to visualize processes. Technology Integration: Incorporate modeling software, simulations, and online quizzes. Problem-Based Learning (PBL): Present real-world problems to encourage critical thinking. Inquiry-Based Learning: Encourage students to explore and ask questions. Interdisciplinary Approach: Relate biochemistry to fields like molecular biology and pharmacology. Fluency-Based Approach: Have students explain concepts in their own words. Formative Assessment: Use frequent quizzes and assignments for feedback.

Student Workload (SWL) الحمل الدر اسي للطالب						
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا	6.2			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	2			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	125					

Module Evaluation								
تقييم المادة الدر اسية								
Time/Nu Weight (Marks) Week Due Relevant Learning mber Outcome								
	Quizzes	1	10% (10)	Continuous	All			
Formative	Online Assignments	1	5% (5)	Continuous	All			
assessment	Lab	1	15% (15)	Continuous	All			
	Seminar	1	10% (10)	Continuous	All			
Summative	Midterm Exam	2 hr	10% (10)	14	LO # 1-13			
assessment	Final Exam	4hr	50% (50)	15	All			
Total assessm	ient		100% (100 Marks)					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري					
	Material Covered				
Week 1-2	The structure of cell				
Week 3-4	Carbohydrate				
Week 5-6	Amino acids and peptides				
Week 7-8	Proteins				
Week 9-10	Enzyme				
Week 11-12	Lipid				
Week 13	Nuclic acids				
Week 14	Mid Exam				
Week 15	Final Exam				

Learning and Teaching Resources مصادر التعلم والتدريس							
	Text	Available in the Library?					
	principles of biochemistry, albert L. Lehninger	YES					
Required Texts	Medical BiochemistryAuthor: John W. Baynes, Marek H. Dominiczak	No					
Recommended Texts	Harper's Illustrated Biochemistry	YES					
Websites							

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

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





Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Physics Department



MODULE DESCRIPTOR FORM

الدراسية	نموذج وصف المادة

Module Information معلومات المادة الدر اسية							
Module Title	Computer 2				Module Delivery		
Module Type	BASIC				⊠Theory		
Module Code	URCOM2						re
ECTS Credits	3				☐ □Tutorial		
SWL (hr/sem)	75	75					lar
Module Level 2		2	Semester of Delivery		2		
Administering De	epartment	MPHY	College	Co	College of Science		
Module Leader	Salam E Har	nmeed	e-mail	<u>Sa</u>	Salam.dulaimi@nahrainuniv.edu.iq		
Module Leader's Acad. Title			Module Leader's Qualification				
Module Tutor	Manar Thayer Mansour		e-mail	<u>ma</u>	manar.thaer@nahrainuniv.edu.iq		inuniv.edu.iq
Module Reviewer			e-mail				
Peer Reviewer Name			e-mail				
Review Committ	ee Approval		Version N	Jum	ber		

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية				
	Module Aims			
Module Aims أهداف المادة الدر اسية	 Develop Core Competencies: To provide students with a thorough understanding of core concepts in computer science, including algorithms, programming, data structures, and software development. Enhance Problem-Solving Skills: To equip students with the ability to solve complex problems using computational approaches and logical reasoning. Introduce Advanced Topics: To expose students to advanced topics such as artificial intelligence, machine learning, cybersecurity, and data analytics. Foster Ethical Awareness: To instill an understanding of ethical considerations and societal impacts of technology and computing. Encourage Research and Innovation: To inspire students to engage in research activities and innovative projects. 			
	 Understand Key Concepts: Demonstrate a deep understanding of fundamental and advanced computer science concepts. Apply Programming Skills: Develop and implement efficient algorithms and programs using multiple programming languages. Analyze and Solve Problems: Critically analyze problems and develop effective computational solutions. Conduct Research: Perform independent research and contribute to the body of knowledge in the field of computer science. Ethical Practices: Recognize and adhere to ethical standards and practices in computing and technology. Communicate Effectively: Present technical information clearly and effectively, both in written and oral forms. Work Collaboratively: Collaborate effectively within multidisciplinary teams. 			
Module Learning Outcomes	Learning Outcomes 1. Knowledge and Understanding:			
مخرجات التعلم للمادة الدر اسية	 Demonstrate a comprehensive understanding of fundamental computer science principles and concepts, such as algorithms, data structures, and software engineering. Explain the theoretical foundations of computer science, 			

	including co	mputational theory and complexity.
	• Discuss the	ethical, social, and legal implications of computing
	technologies	5.
	2. Practical Skills:	
	• Design and	implement software solutions using appropriate
	programmin	g languages and development tools.
	 Apply probl 	em-solving techniques to develop efficient and
	effective alg	orithms.
	 Use softwar 	e engineering principles and methodologies to
	manage and	execute projects.
	3. Research and Ana	lysis:
	 Conduct res 	earch to stay updated with the latest advancements in
	computer sc	ience.
	 Analyze and 	l evaluate computing systems and technologies.
	 Critically as 	sess and synthesize research findings to inform
	practice and	development.
	4. Communication a	nd Collaboration:
	• Communica	te technical information effectively through written
	reports and	oral presentations.
	• Work collab	oratively in teams to achieve common goals and
	solve compl	ex problems.
	 Demonstrate 	e interpersonal skills and the ability to give and
	receive cons	tructive feedback.
	5. Professional Devel	opment:
	 Exhibit prof 	essionalism and ethical behavior in all aspects of
	work.	
	 Develop a li 	felong learning mindset to continuously improve
	skills and ki	nowledge.
	• Prepare for	professional careers in computer science by
	understandi	ng industry standards and practices.
	6. Application and Ir	itegration:
	 Apply theor 	etical knowledge to practical scenarios and real-
	world proble	ems.
	 Integrate va 	rious computer science concepts and skills to
	develop con	prehensive solutions.
	• Demonstrate	e the ability to learn and adapt to new technologies
	and method	plogies.
	0	
	1 Introduction to Co	mnuter Science
Indicative Contents	History and evolution	on of computing
المحتويات الار شادية	Overview of computer	ter systems and architecture
	Basics of computer	hardware and software
	- Dusies of computer	naraware and software

2. Programming Fundamentals
 Basic syntax and semantics of programming languages (e.g., Python, Java, C++) Control structures, functions, and data types Introduction to object-oriented programming concepts
3. Data Structures and Algorithms
 Arrays, linked lists, stacks, queues, trees, and graphs Sorting and searching algorithms (e.g., bubble sort, merge sort, binary search) Algorithm complexity and Big-O notation
4. Software Development
 Software development lifecycle (SDLC) Agile methodologies and version control (e.g., Git) Debugging and testing techniques
5. Database Systems
 Relational databases and SQL Data modeling and database design Transactions and concurrency control
6. Operating Systems
 Processes, threads, and concurrency Memory management and file systems Security and protection mechanisms
7. Networks and Communications
 Network architectures and protocols Data transmission and network security Internet and web technologies
8. Artificial Intelligence and Machine Learning
 Introduction to AI concepts and techniques Machine learning algorithms and applications (e.g., supervised learning, unsupervised learning) Neural networks and deep learning
9. Cybersecurity

	• Fundamentals of cybersecurity and cryptography				
	• Threats, vulnerabilities, and risk management				
	• Secure coding practices and incident response				
	s becare county practices and meracin response				
	10. Human-Computer Interaction				
	Principles of user interface design				
	Usability testing and evaluation				
	Accessibility and user experience (UX) design				
	Computer Graphics				
	• Fundamentals of computer graphics				
	• Rendering techniques and algorithms				
	• Graphics programming and visualization				
	Theory of Computation				
	Automata theory and formal languages				
	• Turing machines and computational complexity				
	Decidability and undecidability				
	Capstone Project				
	• Integration of knowledge and skills from various areas of computer				
	science				
	Collaborative project development				
	 Presentation and demonstration of the final project 				
	• Tresentation and demonstration of the final project				
	Learning and Teaching Strategies				
	استر اتيجيات التعلم والتعليم				
	Study Stratagies				
	Study Strategies				
	1. Understand the Basics: Make sure you have a solid grasp of				
	fundamental concepts like algorithms, data structures, and programming				
	principles. These are the building blocks for more advanced topics.				
Strategies	2. Practice Regularly : Regular coding practice helps reinforce concepts				
Strategies	and improves problem-solving skills. Websites like LeetCode,				
	HackerRank, and Codeforces are great for practicing coding problems.				
	3. Work on Projects: Building real-world projects allows you to apply				
	your knowledge and gain practical experience. Choose projects that				

 Networking: Join professional organizations, attend conferences, and participate in online forums to network with peers and industry experts. Soft Skills: Develop soft skills such as communication, teamwork, and project management. These are crucial for collaborating effectively in professional settings. Stay Updated: Technology evolves rapidly, so it's important to stay informed about the latest trends and advancements in the field. Certifications: Obtain relevant certifications to validate your skills and knowledge. Popular certifications include AWS Certified Developer, CompTIA Security+, and Certified Ethical Hacker (CEH).
1. Internships and Co-ops : Gain practical experience through internships and cooperative education programs. These opportunities provide valuable insights into the industry.
2. Personal Branding : Create a professional online presence through a personal website, LinkedIn profile, and GitHub repository. Showcase your projects, achievements, and skills.
3. Mentorship : Seek out mentors who can provide guidance, support, and advice as you navigate your career path.
4. Lifelong Learning : Commit to continuous learning and professional development. The field of computer science is ever-changing, and staying ahead requires a commitment to growth.
staying ahead requires a commitment to growth.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا	4.2
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	12	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	0.8
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	75		

Module Evaluation						
	تقييم المادة الدر اسية					
Time/I		Time/Nu	Weight (Marks)	Week Due	Relevant Learning	
		mber			Outcome	
Formative assessment	Quizzes	1	10% (10)	Continuous	All	
	Online Assignments	1	10% (10)	Continuous	All	
	Onsite Assignments	1	10% (10)	Continuous	All	
	Seminar	1	10% (10)	Continuous	All	
Summative	Midterm Exam	2 hr	10% (10)	15	LO # 1-14	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessment		100% (100 Marks)				

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري		
	Material Covered	
Week 1	Security and Networking, Security and Networking (Cont.): Network Security Basics. Understanding network threats. Network Troubleshooting	
Week 2	Security and Networking (Cont.): Introduction to Network Troubleshooting, Common Network Issues and Symptoms, Network Troubleshooting Tools and Utilities, Security and Networking (Cont.): Using Command- Line Tools for Diagnostics, Identifying and Resolving Connectivity Issues, Diagnosing Network Performance Problems	
Week 3	E-Commerce: Concepts of Electronic banking services this includes online banking: ATM and debit c a r d services, E-Commerce (Cont.): Phone banking, SMS banking, electronic alert, Mobile banking.	
Week 4	Computer Troubleshooting: Introduction to Computer Troubleshooting, Common Hardware Issues and Solutions, Diagnosing Software Problems, Computer Troubleshooting (Cont.): Hardware Components: Diagnosis and Repair, Using Safe Mode for Troubleshooting.	
Week 5	Computer Troubleshooting (Cont.): Troubleshooting Operating System Issues, Identifying and Resolving Blue Screen Errors, Dealing with Slow Computer	

	Performance, Computer Troubleshooting (Cont.): Virus and
-	Malware Removal Techniques, Updating Drivers and software
	Introduction to Al: Definition of Al, History of Al, Al
Wester	Techniques and Approaches, Introduction to Al (Cont.): Key Characteristics of Al,
week o	Benefits of Al, Challenges and Ethical considerations, Introduction to Al (Cont.): Challenges
	and
	Limitations of Al, The Role of Data in Al Systems
	introduction to Al (Cont.): Al Tools and Frameworks, The Role of Al in Modern
Wook 7	Smartphones:
WEEK /	Al-Driven Mobile Technologies, Virtual Assistants (Siri,
	Google Assistant, Alexa), The Role of Al in Modern Smartphones (Cont.):
	Adaptive Learning, Real-Time Translation Services
	The Role of Al in Modern Smartphones (Cont.):
	The Future of Al in Smartphone Technology, Challenges of Lendersonting Al in Makile Devices Applied in a static state of Als Occurring
	Challenges of Implementing AI in Mobile Devices, Applications and Tools of AI: Overview
Week 8	01 Al
	Applications in various moustries, Education and Healtheare
	Applications and Tools of Al (Cont.): Transportation
	and Advertising
	applications and Tools of Al (Cont.): Finance
Wook 0	Robotics and Automation Technologies, Applications and Tools of Al (Cont.): Al in
week 9	Marketing:
	Targeting and Personalization
	Applications and Tools of Al (Cont.): Al in Image and
Week 10	Video Analysis, Smart Cities, Applications and Tools of Al (Cont.): Future Trends
	in Al Applications and Tools
	Al and Society: Introduction to Al and Its Societal
Week 11	Impact, The Role of Al in Enhancing Public Safety, Al and Society (Cont.): Cultural
	Perspectives on Al
	Adoption, Al and Governance: Policy Implications
	Ethical Challenges in Al: Introduction to Ethics in Al,
Week 12	Transparency and Explain ability of Al Systems, Privacy
	Concerns in Al Data Usage,
Week 13	Etnical Challenges in Al (Cont.): The Etnical
	Driven Marketing and Advertising
	Ethical Challenges in Al (Cont.): Ethical
	Considerations in Education, Human Rights and Al
Week 14	Implementation. The Future of Al: Future trends in Al recent research and emerging
	technologies
Week 15	Mid Exam
Week 16	Final Exam

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

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

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

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



ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي



Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Medical Physics Department



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدر اسية

Module Information معلومات المادة الدر اسية							
Module Title	New Headway	ate		Modu	ıle Deliver	y	
Module Type	BASIC		⊠Theor			y Po	
Module Code	URENG2				C		
ECTS Credits	2				□ □ Tutorial □ □ Practical		
SWL (hr/sem)	50						
Module Level		2	Semester of Delivery		у	2	
Administering Department		MPHY	College	College of Sciences			
Module Leader	Israa Namh Abdula		e-mail	isra	israa.alsultani@nahrainuniv.edu.iq		
Module Leader's Acad. Title		Assistant Lecturer	Module Lo Qualificat	Module Leader's Qualification		Master's Degree	
Module Tutor	Zahra Malik Mosa		e-mail	zał	zahraa.malik@nahrainunive.edu.iq		ainunive.edu.iq
Module Reviewer		e-mail					
Peer Reviewer Name			e-mail				
Review Committee Approval			Version N	umł	ber		

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 الدر اسية ونتائج التعلم والمحتويات الإرشادية					
	1. Developing Basic Communication Skills:				
	- Enable students to express themselves effectively in everyday				
	situations.				
	- Focus on building a foundation in speaking and listening.				
	2. Enhancing Reading Comprehension:				
	- Improve students' ability to understand and interpret written texts.				
	- Introduce strategies for effective reading comprehension.				
	3. Strengthening Writing Proficiency:				
Module Aims أهداف المادة الدر اسية	- Develop students' writing skills across different genres (e.g., essays, emails, reports).				
	- Emphasize grammar, sentence structure, and vocabulary usage.				
	4. Listening Skills Development:				
	- Improve students' ability to comprehend spoken English in various				
	contexts.				
	- Provide exposure to different accents and speaking speeds.				
	5. Effective Presentation Skills:				
	- Equip students with the skills to deliver clear and engaging				
	presentations.				
	- Focus on aspects such as organization, delivery, and visual aids.				
	1. Students will demonstrate the ability to initiate and sustain simple				
	2. Students will be able to deal with the basics of English language				
	Grammar.				
Module Learning	3. Students will enhance their knowledge of pathology-related vocabulary.				
Outcomes	4. Students will be able to ask and respond to basic questions related to				
مخر حات التعلم للمادة الدر اسبة	personal information, daily activities, and immediate surroundings. 5 Students will exhibit improved reading comprehension by accurately				
	5. Students will exhibit improved reading comprehension by accurately summarizing and analyzing information from a variety of texts				
	6 Students will deliver clear and organized presentations using				
	appropriate language and visuals				
	Advanced Communication Skills:				
	Greetings and introductions				
	Describing daily routines				
Indicative Contents	Reading Comprehension: • Reading stories and articles				
المحتويات الإرشادية	 Comprehension exercises with questions 				
	1 1 1 1 1 1 1				
	Writing Proficiency:				
	Article writing Summarian a various tauta				
	• Summarizing various texts				
	Vocabulary Expansion:				
------------	---	--	--	--	--
	Everyday vocabulary				
	Academic vocabulary				
	 Listening Skills Development: Listening to dialogues and conversations Podcasts and audio materials 				
	Learning and Teaching Strategies				
	استر اتيجيات التعلم والتعليم				
Strategies	 Emphasize interactive and communicative activities to engage students actively in the learning process Design tasks that require students to use English to accomplish specific goals, fostering language use in context. Recognize and accommodate diverse learning styles and paces within the classroom. Incorporate authentic materials like newspaper articles, blogs, or videos to expose students to real-life language use. Implement ongoing formative assessments, such as quizzes, peer evaluations, and class discussions, to gauge student progress. Provide constructive feedback on both spoken and written language, and encourage students to reflect on their learning experiences Adapt lesson plans based on the evolving needs and interests of the students, allowing for flexibility in the teaching approach. 				

Student Workload (SWL) الحمل الدر اسي للطالب			
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	1.1
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	50		

Module Evaluation					
تقييم المادة الدر اسية					
Ti		Time/Nu mbor	Weight (Marks)	Week Due	Relevant Learning
	Ouizzes	1	10% (10)	Continuous	All
Formative assessment	Online Assignments	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Seminar	1	10% (10)	Continuous	All
Summative	Midterm Exam	2 hr	10% (10)	7	LO # 1-6
assessment	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري			
	Material Covered		
Week 1	Introduction to the course, syllabus, and expectations.		
Week 2	Unit One of the textbook: Tenses – writing formal e-mails		
Week 3	Unit Two of the textbook: Describing objects and people – Collocations		
Week 4	Grammar: Irregular verbs- making connections with words		
Week 5	Writing Skills: Basics of academic writing		
Week 6	Reading Comprehension: Reading extracts from a novel+ discussions		
Week 7	Mid-Exam		
Week 8	Unit Three of the textbook: Quantity – Articles – Medical Physics-related		
	vocabulary part1		
Week 9	Writing basics: Summarizing texts – how to extract information from various texts		
Week 10	Grammar: Passive and active voice- Reported speech		
Week 11	Listening skill: Listening to a podcast- discussions		
Week 12	Speaking skill: Exchanging and discussing information about DNA and Google		
Week 13	Unit Four of the textbook: Pathology-related vocabulary part2 - Comparative and		
	superlative adjectives		
Week 14	Writing and talking about personal interests.		

	-Group activity: planning a class event based on shared interests.		
Week 15	final exam preparation		

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

Learning and Teaching Resources مصادر التعلم والتدريس			
	Text	Available in the Library?	
Required Texts	New Headway Plus: Pre-intermediate		
Recommended Texts	Think Big (Recommended Book)		
Websites	www.youtube.com (short videos+ chosen movies)		

APPENDIX:

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