



**Ministry of Higher Education and
Scientific Supervision and Evaluation Scientific
Research
Quality Assurance and Academic Authority
Accreditation Directorate
Accreditation Division**



Academic Programme and Course Description

University of Alkafeel— College of Sciences — Department of Medical Physics

2025-2026

Introduction

An academic programme constitutes an integrated and structured package of courses comprising procedures and experiences organised into study units, the primary purpose of which is to build and refine the competencies of graduates, thereby qualifying them to meet the demands of the labour market. The programme is reviewed and evaluated on an annual basis through internal and external audit procedures and programmes, such as the External Examiner programme.

The academic programme description provides a concise summary of the principal characteristics of the programme and its courses, indicating the skills that are to be developed in students in alignment with the programme's academic objectives. The significance of this description lies in its representing the cornerstone for achieving programmatic accreditation; it is co-authored by the teaching staff under the supervision of the scientific committees within the academic departments.

This guide, in its second edition, contains a description of the academic programme following the updating of items and sections in the preceding guide, in light of recent developments and advances in the educational system in Iraq. It encompasses the academic programme description in its traditional form (annual and semestral systems), as well as the academic programme description disseminated in accordance with the directive of the Studies Directorate, reference T.M.3/2906, dated 3 May 2023, with regard to programmes operating under the Bologna Pathway.

In this context, we reaffirm the importance of composing academic programme and course descriptions as a means of ensuring the sound conduct of the educational process.

Definitions and Terminology

Academic Programme Description: Provides a concise summary of the programme's vision, mission, and objectives, incorporating a precise account of the targeted learning outcomes in accordance with defined learning strategies.

Course Description: Provides a concise summary of the most important characteristics of the course and the learning outcomes the student is expected to achieve, demonstrating the extent to which the student has maximised available learning opportunities. It is derived from the programme description.

Programme Vision: An ambitious image of the future of the academic programme, constituting an advanced, inspiring, motivating, realistic, and applicable vision.

Programme Mission: Clarifies the objectives and activities necessary for their achievement in concise terms, and delineates the pathways and orientations for programme development.

Programme Objectives: Statements describing what the academic programme intends to achieve within a defined period of time, formulated in measurable and observable terms.

Curriculum Structure: All courses and subjects encompassed by the academic programme under the adopted learning system (semestral, annual, or Bologna Pathway), whether constituting institutional, college, or departmental requirements, together with the number of credit units.

Learning Outcomes: A coherent set of knowledge, skills, and values acquired by the student upon the successful completion of the academic programme. Learning outcomes must be specified for each course in a manner that fulfils the objectives of the programme.

Teaching and Learning Strategies: The strategies employed by academic staff to develop student learning and teaching; these are plans followed in order to attain learning objectives, describing all in-class and extra-curricular activities aimed at achieving the programme's learning outcomes.

Academic Program Description Form



University Name: University of Alkafeel

Faculty/Institute: College of Science

Scientific Department: Medical Physics

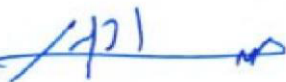
Academic or Professional Program Name: Bachelor

Final Certificate Name: Bachelor in Science

Academic System: Bologna

Description Preparation Date: 12/4/2026

File Completion Date: 12/4/2026

Signature: 

Head of Department Name:

Date: 12/4/2026

Signature: 

Scientific Associate Name:

Date: 12/4/2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance

Department:

Date:

Signature:

 12/4/2026



Approval of the Dean

A. B. Sharba

12/4/2026

1. Programme Vision

To prepare graduates who contribute to the advancement of healthcare and the promotion of diagnostic and therapeutic innovation, in accordance with Islamic values and rigorous international standards.

2. Programme Mission

To provide a stimulating academic environment that develops in students and researchers the skills to apply physical principles in medical fields and radiation protection, in service of society and in pursuit of sustainable development, while upholding professional ethics.

3. Programme Objectives

1. To prepare qualified cadres possessing in-depth knowledge and applied skills in radiation physics, medical imaging, and nuclear medicine.
2. To support scientific research integrating physics and modern technologies to improve diagnostic accuracy and treatment efficacy.
3. To continuously update curricula and practical training to keep pace with the rapid advancement in advanced medical devices and equipment.
4. To implement national standards pertaining to science programmes and to position the department for programmatic accreditation following the graduation of its inaugural cohort.
5. To attain advanced rankings in national and international classification systems.
6. To consolidate a culture of radiation safety and to ensure quality performance in health and research institutions.
7. To strengthen cooperation with governmental and private institutions to provide technical consultancy and innovative physical solutions to medical challenges.

4. Programmatic Accreditation

None

5. Other External Influences

None

6. Programme Structure

Structure Component	No. of Courses	Credit Hours	Percentage	Notes
Institutional Requirements	8	18	16.3%	
College Requirements	2	10	4.1%	
Departmental Requirements	39	212	79.6%	
Other				

* Notes may indicate whether the course is core (C), basic (B), or elective (S/Elective).

7. Programme Curriculum

Year / Level	Course Code	Course Title	Theory	Lab
Year 1 / Semester 1	MPH11001	Mechanics 1	2	2
	MPH11002	Electricity	2	2
	CS11004	Mathematics	2	0
	QU06	Arabic Language	2	0

	CS11008	Analytical Chemistry	2	2
	QU02	Democracy and Human Rights	2	2
Year 1 / Semester 2	MPH12103	Mechanics 2	2	2
	MPH12004	Biophysics	2	2
	MPH12005	General Biology	2	1
	QU04	Computer 1	2	1
	QU01	English Language	2	0
	CS12004	Organic Chemistry	2	1
Year 2 / Semester 1	MPH23006	Magnetism	2	2
	MPH23007	Optics	2	2
	MPH23008	Atomic and Molecular Physics	2	2
	MPH23009	Electromagnetic Waves	2	0
	QU24	Computer 2	2	1
	CS23005	Physiology	2	1
Year 2 / Semester 2	MPH24010	Medical Imaging	2	3
	MPH24011	Heat and Thermodynamics	2	3
	MPH24012	Analogue Electronics	2	3
	MPH24013	Acoustics	2	2
	QU26	Arabic Language 2	2	2
	QU21	English Language 2	2	2
	QU08	Crimes of the Ba'ath Regime in Iraq	2	2
Year 3 / Semester 1	MPH35014	Digital Electronics	2	2
	MPH35015	Diagnostic Radiation Physics	2	2
	MPH35016	Laser Fundamentals	2	2
	MPH35017	Biostatistics	2	2
	MPH35018	Medical Terminology	2	0
	MPH35019	Elective 1	2	0
Year 3 / Semester 2	MPH36120	Medical Physics 1	2	2
	MPH36021	Nuclear Medicine Physics	2	2
	MPH36122	Medical Laser Applications	2	2
	MPH36023	Quantum Mechanics in Medicine	2	0
	CS26008	Anatomy	2	1
	MPH36024	Elective 2	2	0
Year 4 / Semester 1	MPH47025	Radiation Physics	2	2
	MPH47026	Medical Image Analysis and Processing	2	2
	MPH47027	Bioelectronics	2	2
	MPH47028	Medical Devices Physics	2	0

	MPH47029	Elective 3	2	0
	MPH47030	Research Project	2	0
Year 4 / Semester 2	MPH48131	Medical Physics 2	2	2
	MPH48032	Radiation Therapy Physics	2	2
	MPH48033	Materials Science and Nanotechnology	2	2
	MPH48034	Health Physics	2	0
	MPH48035	Research Project	2	0
	MPH48036	Elective 4	2	0

8. Expected Programme Learning Outcomes	
Knowledge	A1. Explain fundamental physical principles and their direct applications in the fields of medical diagnosis, treatment, and radiation protection. A2. Identify the theoretical foundations underlying the operation of advanced medical devices, imaging technologies, and modern nuclear medicine techniques. A3. Assimilate radiation safety standards and internationally approved protocols to ensure quality performance in healthcare institutions. A4. Understand the mechanisms of integration between physics and modern technologies, and their role in improving the efficiency of therapeutic and diagnostic systems.
Skills	B1. Operate and calibrate complex medical devices with high precision to ensure reliable diagnostic and therapeutic results. B2. Apply innovative problem-solving skills to the technical and physical challenges encountered in medical and research environments. B3. Design and conduct applied scientific research integrating physical theory with the actual needs of the healthcare labour market. B4. Manage radiation protection procedures with a high level of competence within governmental and private institutions to minimise environmental and health risks.
Values	C1. Adhere to professional ethics and Islamic values in dealings with patients and colleagues within healthcare institutions. C2. Demonstrate professional responsibility towards achieving sustainable development through the rational use of radiological technologies. C3. Promote teamwork and collaboration with medical teams to provide integrated technical consultancy in service of society. C4. Adopt a methodology of continuous learning to keep pace with the rapid advancements in medical technology and rigorous international standards.

Teaching and Learning Strategies / Assessment Methods	
9. Teaching & Learning Strategies	1. Emphasis on the need for learning and pedagogical experience. 2. Discussion through collaborative group work. 3. Self-directed report writing. 4. Preparation of final projects.
10. Assessment Methods	1. Daily examinations. 2. Monthly examinations. 3. Oral examinations. 4. Performance of student-assigned tasks. 5. Execution of projects with defined objectives.

11. Teaching Faculty				
Academic Rank	General Specialisation	Specific Specialisation	Staff	Lecturer
Professor	Solid-State Physics	Fabrication of Opto-Electronic Devices	1	
Associate Professor	Physics	Laser and Molecular Physics		1
Associate Professor	Physics	Laser Technology	1	

Associate Professor	Philosophy of Education and Psychology	Geography Teaching Methods	1	
Associate Professor	Chemistry	Organic Chemistry	1	
Associate Professor	Life Sciences	Histology	1	
Lecturer	General Law	Criminal Law	1	
Lecturer	General Chemistry	Clinical Biochemistry	1	
Lecturer	English Language	English Linguistics		1
Lecturer	Physics	Nanotechnology	1	
Assistant Lecturer	Mathematics	Mathematical Statistics	1	
Assistant Lecturer	Computer Science	Network Design	1	
Assistant Lecturer	Computer Engineering	Artificial Intelligence	1	
Assistant Lecturer	Microbiology	Microbiology	1	

Professional Development

Orientation of New Faculty Members

Stimulating the Academic Environment: Faculty are required to provide a stimulating educational environment that develops students' skills in applying physical principles to medical fields. Curriculum Updating: Faculty are expected to contribute actively to the continuous updating of academic curricula to keep pace with the rapid evolution of medical devices. Institutional Collaboration: Faculty members are encouraged to build bridges of cooperation with governmental and private institutions to provide innovative technical consultancy. Administrative Duties: Commitment to tasks and committees formed under official administrative orders, and active participation in formulating and developing departmental objectives.

Professional Development of Faculty Members

Technical Training: Mastery of modern medical devices and linear accelerators through collaboration with health institutions and hospitals. Scientific Research: Enhancement of publications in international databases (Scopus) and use of advanced software for the analysis of medical data and radiation doses. Pedagogical Updating: Activation of virtual laboratories and problem-based learning methods in accordance with the international Bologna Pathway standards. Professional Ethics: Adherence to radiation safety and biosafety standards, and development of leadership skills in the management of specialised laboratories.

12. Admission Criteria

The department admits graduates of the preparatory stage from the preceding year through the centralised admissions channel, after which students compete internally within the college on the basis of their grade point average and stated preferences. The department also admits high-achieving graduates from institutes with cognate specialisations, in accordance with the applicable regulations of the Ministry of Higher Education and Scientific Research.

13. Principal Sources of Programme Information

The applicable laws and regulations of the Ministry of Higher Education and Scientific Research. International educational standards as observed by the majority of universities worldwide. The official website of the university and college.

14. Programme Development Plan

Careful monitoring of the programme. Cultivation of global competencies. Development of students' capacity to influence and persuade others through discussion and consensus-building. Development of students' English language proficiency. Development of students' problem-solving abilities.

Programme Skills Map

Year	Code	Course Name	Type	Knowledge				Skills				Values			
				1	2	3	4	1	2	3	4	1	2	3	4
Y1	MPH11001	Mechanics 1	C	√	√	√	√	√	√	√	√		√	√	√
Y1	MPH11002	Electricity	C	√	√	√	√	√	√	√	√		√	√	√
Y1	CS11004	Mathematics	B	√	√	√	√	√	√	√	√		√	√	√
Y1	QU06	Arabic Language	B									√	√	√	√
Y1	CS11008	Analytical Chemistry	B	√	√	√	√	√	√	√	√		√	√	√
Y1	QU02	Democracy and Human Rights	B									√	√	√	√
Y1	MPH12103	Mechanics 2	C	√	√	√	√	√	√	√	√		√	√	√
Y1	MPH12004	Biophysics	C	√	√	√	√	√	√	√	√		√	√	√
Y1	MPH12005	General Biology	B	√	√	√	√	√	√	√	√		√	√	√
Y1	QU04	Computer 1	B		√		√	√	√	√			√	√	√
Y1	QU01	English Language	B				√			√			√	√	√
Y1	CS12004	Organic Chemistry	B	√	√	√	√	√	√	√	√		√	√	√

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mechanics 1		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MPH11001			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	UGI	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Saleh Hasoon Abod		e-mail	Saleh@gmail.com
Module Leader's Acad. Title	Professor	Module Leader's Qualification		Ph.D.
Module Tutor	Ahmed Baqer Ridha		e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date		Version Number		

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The basic concepts of all the way to valid conclusion and discuss the fundamental concepts in classical mechanics (1) through a broad range of interesting application to the real world. Clearly and logically discuss the scalar, vector, gradient, divergence, curl, application of operator, vector integration, and derivative of a vector. Analyse coordinates systems (curvilinear, differential vector operator, Cartesian, spherical and cylindrical) in physics General motion of the particles in the three dimensions. Discuss the non-inertial reference systems. Discuss the gravitation and central forces.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- The first step in the development of the classical mechanics (I) was to examine the learning outcomes for the courses at the beginning of the semester. 2- The second step was to categorize the subject matter and identify the important concepts. These concepts were identified from the outlines of the physical laws, principles and the associated proofs. 3- The third step is to identify the misconceptions that students are likely to have about each of the concepts in the complete list. 4- The last step is highlighting the day life applications whenever exist and encourage the students to see more details in the international websites and reference books in the library, discussing some selected problems in each chapter, cooperate with a different institution to find how they deal with the subject.
Indicative Contents المحتويات الإرشادية	Newtonian Mechanics • Conservation of Energy & Momentum • Fluid Dynamics

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Teaching and learning strategies for this course will include: A minimum of 50 contact hours, typically to include interactive group teaching, cocurriculars, individual meetings, in-class presentations, lab-based experiments and exams. Course information and supplementary materials are available on the University's Virtual
	Learning Environment (VLE). Students will receive individualised developmental feedback on their work for this course. Students are required to attend and participate in all the formal and timetabled sessions for this course. Students are also expected to manage their directed learning and independent study in support of the course..

Student Workload (SWL)

سي للطلاب محسوب ل ١٥ أسبوعا الحمل الدرا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) سي المنتظم للطلاب أسبوعيا الحمل الدرا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	112	Unstructured SWL (h/w) سي غير المنتظم للطلاب أسبوعيا الحمل الدرا	31
Total SWL (h/sem) سي الكلي للطلاب خلال الفصل الحمل الدرا	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	2	10% (10)	2 and 12	LO 1-4

	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO1-4
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Fundamental Concepts: Vectors
Week 2	Fundamental Concepts: Position Vector of a Particle: Velocity and Acceleration in Rectangular Coordinates.
Week 3	Fundamental Concepts: Velocity and Acceleration in Plane Polar Coordinates.
Week 4	Newtonian Mechanics: Rectilinear Motion of a Particle
Week 5	Newtonian Mechanics: Newton's Law of Motion
Week 6	Newtonian Mechanics: Forces that Depend on Position: The Concepts of Kinetic and Potential Energy
Week 7	Oscillations: Linear Resoring Force: Harmonic Motion& Energy Considerations in Harmonic Motion
Week 8	Oscillations: Damped Harmonic Motion& Forced Harmonic Motion: Resonance.
Week 9	General Motion of a Particle in Three Dimensions: : The Potential Energy Function n ThreeDimensional Motion: The Del Operator.
Week 10	General Motion of a Particle in Three Dimensions: The Harmonic Oscillator in Two and Three Dimensions.
Week 11	Noninertial Reference Systems: Accelerated Coordinate Systems and Interial Forces& Rotating Coordinate Systems.
Week 12	Noninertial Reference Systems: Dynamics of a Particle in a Rotating Coordinate System.& Effects of Earth's Rotation

Week 13	Gravitation and Central Forces: Gravitational Force between a Uniform Sphere and a Particle
Week 14	Gravitation and Central Forces: Kepler's Laws & Potential Energy in a Gravitational Field
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: A) Measurement Principles and Errors B) Accurate Measurements
Week 2	Lab 2: Mathematical Pendulum
Week 3	Lab 3: Laws of Collision/Air Track
Week 4	Lab 4: Free Fall
Week 5	Lab 5: Hooke's Law
Week 6	Lab 6: Newton's Law
Week 7	Lab 7: Uniformly Accelerated Motion

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Physics by Halliday, Resnick & Walker 2001 John Wiley & Sons. Supplementary references	No
Recommended Texts	1- Physics for scientist and engineers with modern physics by Serway (1997), Saunders college publisher.	No

	2- University Physics by Sears, Zemansky, and Young (1995).	
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Electricity		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MPH 11002			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	UGI	Semester of Delivery		
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Mohamed hamza		e-mail	
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.	
Module Tutor	Ahmed baqer redha		e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date		Version Number		
Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	None		Semester	
Co-requisites module	None		Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The aim is to familiarize the students with the fundamental concepts and laws in electricity and magnetism, and establish a grounding in electromagnetism in preparation for more advanced electronic engineering courses. Also to provide them with analytical tools to understand and analyse the interactions between timevarying electric and magnetic fields.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Upon completion, successful students will be able to: 2. Understand electricity and magnetism on a level that uses standard mathematical tools. 3. Develop a conception of space and time adequate for understanding electrodynamics. 4. Develop and train problem-solving skills. 5. Establish the foundation for higher-level courses in physics, chemistry, and engineering.
Indicative Contents	
المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	At the beginning of the course, the instructor will detail the methods used to evaluate student progress and the criteria for assigning a course grade. The methods may include one or more of the following tools: examinations, quizzes, homework assignments, laboratory reports, research papers, small group problem solving of questions arising from application of course concepts and concerns to actual experience, oral presentations, or maintenance of a personal lab manual. Specific evaluation procedures will be given in class. In general, grading will be based on accumulated points from homework assignments, tests, final exam, and labs.

Student Workload (SWL)			
للطالب محسوب ل ١٥ اسبوعا الحمل الدراسي			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	112	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	31
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	CHARGE AND MATTER
Week 2	ELECTRIC FIELDS
Week 3	GAUSS' LAW
Week 4	ELECTRIC POTENTIAL
Week 5	CAPACITANCE
Week 6	CURRENT AND RESISTANCE
Week 7	Mid-term Exam
Week 8	ELECTROMOTIVE FORCE AND CIRCUITS
Week 9	MAGNETIC FIELDS
Week 10	MAGNETIC FIELD DUE TO CURRENTS
Week 11	INDUCTION AND INDUCTANCE
Week 12	Faraday's Law
Week 13	Lenz' Law
Week 14	Biot-Savart Law
Week 15	Thévenin's / Norton's Theorem and Kirchhoff's Laws
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الأسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Error Analysis
Week 2	Lab 2: Ohm's Law and RC Circuits
Week 3	Lab 3: Faraday's Law
Week 4	Lab 4: Wheatstone bridge
Week 5	Lab 5: DC Circuits & Kirchhoff's Rules
Week 6	Lab 6: Frequency Response of RLC Circuits
Week 7	Lab 7: Electromagnetic Induction

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Serway, Raymond A., and John W. Jewett, Jr. Physics for Scientists and Engineers. Vol. 2. 6th ed. Belmont, CA: Thomson-Brooks/Cole, c2003. ISBN: 9780534408428. (Student ed.)	No
Recommended Texts	Electricity and Magnetism 3rd Edition Edward M. Purcell and, David J. Morin	No
Websites	https://www.eia.gov/energyexplained/electricity/magnets-and-electricity.php	

Grading Scheme مخطط الدرجات				
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Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mathematics		Module Delivery	
Module Type	B		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	COS 11004			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGI	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Ayaat maan khalaf		e-mail	ayaat.maan@alkafeel.edu.iq
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.
Module Tutor	Ahmed baqer redha		e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date		Version Number		

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn the basic concepts of differential and integral calculus. 2. Identify the possibility of derivation of functions and the integration of different functions and their relationship to continuity. 3. Applications in applied sciences such as physics, motion applications, and engineering in calculating volumes using the maxima and minima. 4. Know the applications of calculus and integration in various sciences. 5. Application of mathematical rules and laws and development of the students conclusion. 6. The ability to use calculus to solve mathematical problems.
Module Learning Outcomes	1. Knowledge and understanding 2. Gaining experience and knowledge in drawing mathematical functions 3. Solutions of differential equations 4. Finding areas under a curve and its applications in other sciences
مخرجات التعلم للمادة الدراسية	1. Calculating the surface areas and volumes of geometric shapes Developing the student's ability to perform assignments and deliver them on time. 3. Logical and mathematical thinking in finding solutions to problems 4. Developing the student's ability to dialogue and discussion.
Indicative Contents المحتويات الإرشادية	1-Developing the student's ability to deal with technical means. 2- Developing the student's ability to deal with the Internet. 3- Developing the student's ability to deal with multiple means. 4- Developing the student's ability to dialogue and discussion.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	● Managing the lecture in an applied manner linked to the reality of daily life in order to attract the student to the topic of the lesson without straying from the heart of the matter so that the material is flexible and subject to understanding and analysis. ● Assigning the student some group activities and assignments. ● Allocating a percentage of the mark for daily assignments and tests.
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Student Workload (SWL)			
س للطالب محسوب ل ١٥ اسبوعا الحمل الدرا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	117	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	25
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	Introduction – what is Calculus , Real Numbers and the Real Line, Intervals
Week 2	Solving Inequalities, Absolute Value ,Cartesian Coordinates in the plane
Week 3	Increments and Straight lines, distance between points in the plane
Week 4	Slope, Parallel and Perpendicular Lines, Equation of a Straight line
Week 5	Functions and Their Graphs, Even Functions and Odd Functions: Symmetry, Composite Functions
Week 6	Limits, The Limit Laws, One-Sided Limits and Limits at Infinity
Week 7	Continuity, Continuity Test
Week 8	Mid-term exam
Week 9	Derivatives, Laws of Derivatives , Second- and Higher-Order Derivatives
Week 10	Derivatives of Trigonometric Functions, The Chain Rule and Parametric Equations, Implicit Differentiation
Week 11	Application of Derivatives, Velocity and Speed, Local(Relative) Extreme Value, Increasing Function and Decreasing Functions, Rolles Theorem, Related Rates
Week 12	Integration, Indefinite Integrals, Integrals of Trigonometric Functions
Week 13	Derivatives of inverse of Trigonometric Functions, Integrals of inverse of Trigonometric Functions, Logarithm Function, The natural logarithmic, Derivative of natural logarithmic, Integrals of natural logarithmic, Exponential Functions, Integrals of Exponential Functions
Week 14	The Definite Integrals, Integration by Trigonometric Substitution, Integration of Rational Functions ,Integration by Parts
Week 15	Application of the integral, Area, Volume, Work

Week 16	Preparatory week before the final Exam
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	- Thomas. G. B., Calculus and Analytic Geomtry, 4th , 1984.	Yes
Recommended Texts	- Durfee. W.H, Calculus and Analytic Geometric, New York, 1971.	Yes
Websites	www. Freescience.info/math	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Arabic Language		Module Delivery
Module Type	B		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	QU06		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	1
Administering Department	Department of Medical Physics	College	College of science
Module Leader	Ahmed baqer redha	e-mail	ahmed.sharba@alkafeel.edu.iq
Module Leader's Acad. Title	Assistant professor	Module Leader's Qualification	Phd
Module Tutor	ayad saheb	e-mail	N/A
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	V1

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The objectives of the Arabic language course are to introduce students to the most important basic rules of correct spelling, help them avoid errors in expression, and enable them to master the language at a level appropriate to their cultural background. Here are some of the main objectives of the course: 1. To understand the fundamental rules of spelling that students will need in their studies and future work.

	2. To be able to apply these rules easily and effortlessly without needing to memorize them. 3. To enable students to recognize simple spelling and grammatical errors in order to avoid making them. 4. To develop the ability to express themselves correctly without needing assistance. 5. To help students understand the importance of the Arabic language in their lives and work, expand their vocabulary, and identify and address the most common errors and difficulties they encounter.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The learning outcomes for Arabic language courses aim to develop a range of skills and knowledge in students. Below are some of the key learning outcomes expected upon completion of this course: 1. Understanding the basic rules of writing in Arabic. 2. Applying linguistic knowledge skillfully and easily. 3. Analyzing linguistic structures and simple texts used in daily life. 4. Demonstrating self-confidence and the ability to express themselves clearly. 5. Correcting their own minor errors.
Indicative Contents المحتويات الإرشادية	1. Spreading the Arabic language among all members of society to open new horizons for developing and supporting language skills. 2. Addressing the various challenges facing society in the field of education, particularly in teaching Arabic, and striving to find effective and beneficial solutions to enhance language abilities. 3. Utilizing modern communication tools such as the internet and others in the learning process..

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Several simple strategies can be used to effectively develop the learning process, making it enjoyable and beneficial. These include: 1. Numbered Heads Strategy 2. Popsicle Stick Strategy 3. Think-Pair-Share Strategy 4. Cube Strategy 5. Correct the Mistake Strategy 6. Hot Seat Strategy

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1.2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	4 marks	5,7,9	2,3,4
	Assignments	2	4 marks	3,5	2,3
	Onsite Assignments	10	1 marks	all	all
	Reports	1	10 marks	6,7,8,9,10	all
Summative assessment	Midterm Exam	2hr	10% (10)	9	
	Final Exam	3hr	50% (50)	17	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	An introductory overview of the science of spelling, its founder, origins, and development
Week 2	The initial hamza
Week 3	The medial hamza 1
Week 4	The medial hamza 2
Week 5	The final hamza
Week 6	The final hamza and tanween al-fath
Week 7	The ta' marbuta and the ta' mabsuta
Week 8	The letters dad and dha'
Week 9	Midterm exam
Week 10	The alif maqsurah
Week 11	Letters of addition and omission
Week 12	Number and counted noun 1
Week 13	Number and counted noun 2
Week 14	Number and counted noun 3
Week 15	Shadda and madda

Week 16	Preparation for the final exam
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Unique Dictation, Naoum Jirjis Zarazir, Arabic Language Library, Baghdad, Iraq, 6th edition, 2017. Clear Dictation, Abdul Majeed Al-Nuaimi, Dar Al-Mutanabbi Library, Baghdad, Iraq, 3rd edition, 1967.	
Recommended Texts		
Websites	Lisan Al-Arab Electronic Library Al-Aluka Network Fasih Website Narjis Electronic Library Waqfiyah Electronic Library Noor Electronic Library	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Biophysics		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MPH 12004			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	UGI	Semester of Delivery		2
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Ahmed baqer redha		e-mail	ahmed.sharba@alkafeel.edu.iq
Module Leader's Acad. Title	Asst. Professor		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives

أهداف المادة الدراسية

- 1- Review in detail several important modern physical science concepts, models, laws, tools and techniques that can be applied to addressing real biological questions.
- 2-Using of the Physical science methods providing enormous breakthroughs in our understanding of fundamental biology - stemming from the early development of optical microscopy in understanding the cellular nature of life, through to complex structural biology techniques to elucidate the shape of vital biomolecules including proteins and DNA.
- 3- Introduce the key biological macromolecules, the forces that are involved in maintaining their structure and how structure is determined.
- 4- Discuss key physical science developments that have involved methods to study single cells in their native context, single- molecule biophysical methods that permit dynamic and mechanistic information to be extracted with unprecedented precision, and ground-breaking developments in areas of super-resolution imaging and biosensing.
- 5- Discuss tools and techniques that, broadly, permit the detection and characterization of biological material using non-visible electromagnetic radiation, and methods used to manipulate and quantify biological forces, with particular emphasis throughout placed on real applications. Examples of such tools discussed include electron microscopy, nuclear magnetic resonance spectroscopy and atomic force microscopy. We will also discuss optical and magnetic tweezers for single biological molecule manipulation, ion channel measurements in living cells and core physics concepts of fundamental biological processes which are interrogated using these modern instruments.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The module will focus on a number of concepts, models, laws, tools and techniques of physical science that underpin biophysical methods. It will address a broad range of challenging biological questions. During this module students will: 1-Comprehend the use of physical concepts and laws to produce models of biological systems, and quantitatively analyse these models. 2-Critically analyse the validity of assumptions made in these models and assess their impact on the validity of the results. 3-Understand the physical basis of experimental techniques used to study the biological systems introduced and explain the key results. 4-Assess the key features and biological significance of the systems introduced. 5-Demonstrate an understanding of the key physical principles behind several important biological processes underpinning living matter. 6-Apply modern biophysical tools and techniques to real applications
Indicative Contents المحتويات الإرشادية	The characterization of molecular structure, the measurement of molecular properties, and the observation of molecular behavior presents an enormous challenge for biological scientists. A wide range of biophysical techniques have been developed to study molecules in crystals, in solution, in cells, and in organisms. These biophysical techniques provide information about the electronic structure, size, shape, dynamics, polarity, and modes of interaction of biological molecules. Some of the most exciting techniques provide images of cells, subcellular structures, and even individual molecules. It is now possible, for example, to directly observe the biological behavior and physical properties of single protein or DNA molecules within a living cell and determine how the behavior of the single molecule influences the biological function of the organism. Much biophysical research involves either the development of novel techniques to investigate the structure, properties, and biological functions of biomolecules or the application of these techniques to monitor how the structure and dynamics of biomolecules enables specific biological functions. Information about specific biophysical techniques is provided here.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Some suggestions are sketched concerning the positive impact the introductory lecture on biophysics could have on the undergraduate students. The basic idea is that, especially with this occasion, the teachers have the opportunity to emphasize the role, importance and impact of biophysics on the approach of living matter. The introductory lecture should be a very impressive and challenging one, aiming to attract the students towards this fascinated field of life sciences. However, these suggestions do not preclude the possibilities offered by the other lectures to make short incursions into the past or present life of biophysicists and to emphasize their remarkable scientific achievements.
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Student Workload (SWL)

٥ اسبوعا 1 الحمل الدراسي للطالب محسوب لـ

Structured SWL (h/sem)	63	Structured SWL (h/w)	4
الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem)	112	Unstructured SWL (h/w)	2٥
الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem)	175		
الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation

تقييم المادة الدراسية

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

	Report	1	10% (10)	13	all
Summative assessment	Midterm Exam	2hr	20% (20)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - Pressure And Hydrostatic Pressure
Week 2	Introduction And Basic Concepts In Kinematics
Week 3	Torques And Levers In Human Body
Week 4	Basic Concepts Of Electricity
Week 5	Electricity In The Nervous System
Week 6	Excited Nerve Cell Electricity
Week 7	Electrocardiography - Ecg Signal
Week 8	Introduction To Fluid Dynamic
Week 9	Circulatory System And Haemodynamic
Week 10	Introduction To Optics And Vision
Week 11	Eye Anatomy And Vision Process
Week 12	Emmetropia Vs Vision Defects
Week 13	Sound Interaction With Matter And Sonography
Week 14	Biological Effects Of Ionizing Radiation

Week 15	Sound Wave In Media
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Determining solution concentrations using a refractometer and a polarimeter
Week 2	Lab 2: Fermat's principle, the law of light refraction, the law of light reflection
Week 3	Lab 3: Phenomenon of the total internal reflection of light
Week 4	Lab 4: Operation principle of the refractometer
Week 5	Lab 5: Applications of polarimetry in diagnostics
Week 6	Lab 6: Types of concentrations: weight to weight, weight to volume, molar and normal
Week 7	Lab 7: Optical birefringence

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Leake MC: Biophysics: tools and techniques (CRC Press, 1st Ed, 2016) Leake MC: Single-Molecule Cellular Biophysics (CUP, 1st Ed, 2013)	Yes
Recommended Texts	Alberts A et al: Molecular Biology of the Cell (Garland Science, 6th Ed, 2014)	No

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	General biology		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	COS 12005		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	
Administering Department		College	
Module Leader	Noor hasoon	e-mail	
Module Leader's Acad. Title	Asst. Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Ahmed baqer redha	e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Understand the fundamental principles of animal classification, anatomy, physiology, and behavior. 2. Explore the diversity of animal species and their adaptations to different environments. 3. Examine the mechanisms of animal reproduction, development, and evolution. 4. Gain knowledge of animal ecology and conservation principles. 5. Develop scientific inquiry and critical thinking skills through hands-on laboratory experiences.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate knowledge of animal classification, anatomy, physiology, and behavior 2. Understand the principles of animal ecology and adaptation 3. Explain the mechanisms of animal reproduction and development 4. Analyze the diversity of animal species and their adaptations 5. Apply scientific reasoning and critical thinking skills to study zoological concepts
Indicative Contents المحتويات الإرشادية	1. Definition and scope of zoology 2. Historical development of zoology 3. Importance of zoology in various fields

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures: Traditional classroom lectures to deliver theoretical concepts and introduce new topics. 2. Field Trips: Excursions to natural habitats or zoological parks to observe animals in their natural environment. 3. Laboratory Sessions: Hands-on practical sessions to study animal specimens, perform dissections, and conduct experiments. 4. Group Discussions: Encourage students to participate in group discussions to analyze case studies and solve problems related to zoological concepts. 5. Multimedia Resources: Utilize visual aids, videos, and interactive tools to enhance understanding of complex zoological concepts.
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Student Workload (SWL)

سي للطلاب محسوب ل ١٥ اسبوعا الحمل الدرا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	102	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	48	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	25
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

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

	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	all
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Zoology and Animal Classification
Week 2	Animal Anatomy and Physiology
Week 3	Animal Behavior
Week 4	Animal Reproduction and Development
Week 5	Animal Diversity
Week 6	Animal Ecology
Week 7	Evolution and Adaptation in Animals
Week 8	Conservation and Wildlife Biology
Week 9	Animal Physiology
Week 10	Animal Communication
Week 11	Animal Biotechnology and Applications
Week 12	Animal Evolution and Paleontology
Week 13	Emerging Topics in Zoology
Week 14	Review and Assessment
Week 15	Final Review and Assessment

Week 16	Preparatory week before the final Exam
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Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوي للمختات	
	Material Covered
Week 1	Lab 1: Introduction to Zoology Lab and Safety Protocols
Week 2	Lab 2: Animal Diversity and Classification Lab
Week 3	Lab 3: Animal Anatomy and Dissections Lab
Week 4	Lab 4: Animal Physiology Experiments Lab
Week 5	Lab 5: Animal Behavior Studies Lab
Week 6	Lab 6: Animal Reproduction and Development Lab
Week 7	Lab 7: Field Trip for Animal Ecology Lab
Week 8	Lab 8: Evolution and Adaptation in Animals Lab
Week 9	Lab 9: Microscopy and Cell Biology in Zoology Lab
Week 10	Lab 10: Animal Conservation Lab
Week 11	Lab 11: Animal Behavior Experiments Lab
Week 12	Lab 12: Animal Physiology and Environmental Factors Lab
Week 13	Lab 13: Animal Communication and Social Behavior Lab
Week 14	Lab 14: Animal Adaptations Lab
Week 15	Lab 15: Research Project or Review Session Lab

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Hickman, C.P., Roberts, L.S., Keen, S.L., Larson, A., l'Anson, H. (2012). Integrated Principles of Zoology. McGraw-Hill Education.	No

Recommended Texts	Ruppert, E.E., Fox, R.S., Barnes, R.D. (2004). Invertebrate Zoology: A Functional Evolutionary Approach. Brooks Cole.	No
Websites	www.khanacademy.org	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English Language		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	QU 01		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	2
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Ahmed bager redha		e-mail: ahmed.sharba@alkafeel.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	7. To develop students' general English 8. To develop the skills of reading, writing, listening and speaking. 9. Each unit is organized to enhance students' basic knowledge of vocabulary and grammar through reading texts. 10. . To enable the students, comprehend the spoken form. 11. To develop student's ability to use English in day-to-day life and real life situation. 12. To understand the written text and able to write academic paper. 13. To write simple English to express ideas.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Students will heighten their awareness of correct usage of English grammar in writing and speaking 2. Students will improve their speaking ability in English both in terms of fluency and comprehensibility 3. Students will give oral presentations and receive feedback on their performance 4. Students will increase their reading speed and comprehension of academic 5. articles 6. Students will improve their reading fluency skills through extensive reading 7. Students will enlarge their vocabulary. 8. Students will strengthen their ability to write academic papers, essays and summaries. 9. Students will learn how to form sentences. 10. Students will acquire the skills of listening, speaking, reading, writing and thinking in an integrated manner. 11. Students will use polite forms of expression and respond meaningfully both orally and in writing. 12. Students will acquire varied range of vocabulary; understand increased complexity of sentence structures both in reading and writing.
Indicative Contents	Indicative content includes the following. <u>Part A</u>

المحتويات الإرشادية	Grammar (tenses, Questions, Possessive adjectives, Subject pronouns, Object pronouns, Possessive pronouns, Verb to be is recycled and extended to include negative and question forms that enable students to be aware of the correct usage of English grammar in writing and speaking. <u>Part B</u> Reading is aimed to develop students' general English through the skills of reading dialogues and short passages. <u>Part C</u> Speaking and Listening: To help students understand basic expressions and conversations and use them in real-life situations through Roleplay , Practicing dialogues, The alphabet, Talking about daily routines, Describing lifestyles, Listening the requests, Home town, Countries, Numbers ... <u>Part D</u> Writing: To help students write basic sentences leading to a paragraph using the vocabulary learned in the textbook.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Using the explanation method for each topic, while providing the student with the subject file, explanatory videos, and applied exercises for each topic, with the involvement of The student, during the lecture, asked the oral question at one time and the written question at another by: 1 Encouraging the student to participate in speaking by presenting phrases and examples similar to those in the lecture. 2- Involve the students in the discussion in English by presenting a topic or piece of comprehensible reading or a video for discussion 3- Participating in discussion groups inside the hall or on the virtual platform of Google Classrooms (Meet its and Classroom Google). Contact Online (while encouraging students to listen to English-language videos in the academic field or social life.

Student Workload (SWL)			
يس للطلاب محسوب ل ١٥ اسبوعا الحمل الدرا			
Structured SWL (h/sem)	32	Structured SWL (h/w)	2
الحمل الدراسي المنتظم للطلاب خلال الفصل		الحمل الدراسي سالمنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem)	18	Unstructured SWL (h/w)	24
الحمل الدراسي غير المنتظم للطلاب خلال الفصل		الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem)	50		
الحمل الدراسي الكلي للطلاب خلال الفصل			

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوي ع النظري	
	Material Covered

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

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

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:

Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:

Learning and Teaching Resources

مصادر التعلم والتدريس

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

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Democracy & Human Rights		Module Delivery
Module Type	Base		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	QU02		
ECTS Credits	2.00		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Ali Thuban Abbas		e-mail: ali.thuban@alkafeel.edu.iq
Module Leader's Acad. Title	lecturer	Module Leader's Qualification	PhD.
Module Tutor	Ahmed baqer redha		e-mail: ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name	me	e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1 .Promoting Dialogue and Mutual Respect: This course aims to foster open and constructive dialogue among students and encourage them to respect and value others' viewpoints, even when opinions differ. It also aims to enhance mutual understanding and students' ability to engage with diverse perspectives. 2 .Developing Life Skills: The Human Rights and Democracy course contributes to the development of essential life skills in students, such as critical thinking,

	reading and writing, research, problem-solving, informed decision-making, and effective communication. 3. Promoting Active Citizenship: This course aims to promote active citizenship among students and encourage their participation in teamwork.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The Human Rights and Democracy course at universities is expected to achieve a range of learning outcomes for students. Some potential outcomes of this course include: 1. A deep understanding of human rights and democracy concepts: Students can gain a comprehensive understanding of human rights and democracy concepts and their fundamental principles, including human rights, freedom of expression, equality, and the rule of law. 2. Promoting dialogue and mutual respect: Students can learn how to participate in constructive and collaborative dialogues, and appreciate and respect the viewpoints of others, even when they disagree. 3. Enhancing civic awareness: Students can gain a greater awareness of their responsibilities as citizens and their role in society, and promote active citizenship and social participation.
Indicative Contents المحتويات الإرشادية	We will discuss the subject of human rights and democracy from the perspective of the concept of human rights, the position of divine laws on rights, the sources of rights and their guarantees, the concept of democracy and its forms, and the mechanism of the parliamentary system (election).

Learning and Teaching Strategies			
استراتيجيات التعلم والتعليم			
Strategies	There are many strategies that can be used in teaching and learning human rights and democracy at universities. Here are some common teaching strategies that can be implemented:		
	1. Group discussions: Group discussions can be organized on human rights and democracy topics. Students are guided to exchange views and engage in critical discussion on issues such as human rights. Active participation and respect for diverse viewpoints should be encouraged.		
	2. Case studies: Case studies can be used to introduce students to real-life experiences of human rights and democracy, or instances of human rights violations.		
	3. Presentations and Publications: Students can prepare presentations and publications on the concepts of human rights and democracy and their applications. They can use images, illustrations, and real-life examples to clarify the concepts more clearly.		
Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً			
Structured SWL (h/sem)	32	Structured SWL (h/w)	2
الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعياً	

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1.2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	The Concept of Rights (Definition - Categories)
Week 2	Human Rights in Divine Laws (Christianity and Judaism)
Week 3	Human Rights in Divine Laws (Islam)
Week 4	International Sources of Human Rights: a) The Universal Declaration of Human Rights
Week 5	b) The International Covenants on Human Rights
Week 6	Guarantees of Human Rights at the Domestic Level
Week 7	Guarantees of Human Rights at the International Level
Week 8	2- Semi-direct democracy
Week 9	3- Representative (parliamentary) democracy (concept and pillars)
Week 10	Forms of the representative (parliamentary) system (council system - presidential system)
Week 11	Forms of the representative system - parliamentary system
Week 12	Mechanism of the representative (parliamentary)
Week 13	system: Election (concept of election - electorate)
Week 14	Electoral systems
Week 15	Final exam
Week 16	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Human Rights, Children's Rights, and Democracy Authors: Dr. Maher Saleh Alawi Al-Jubouri, Dr. Raad Naji Al-Jada, Dr. Riyadh Aziz Hai, Dr. Kamel Abdul-Ankoud, Dr. Ali Abdul-Razzaq Muhammad, Dr. Hassan Muhammad Shafiq	No
Recommended Texts		
Websites		

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Organic chemistry		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	CS12004			
ECTS Credits	5.00			
SWL (hr/sem)	125			
Module Level	UGI	Semester of Delivery		2
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	shaker abdolreda abbas		e-mail	shakerabode@alkafeel.edu.iq
Module Leader's Acad. Title	Asst. prof.		Module Leader's Qualification	PhD.
Module Tutor	ahmed baqir redha		e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date		Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- Understanding the nature of chemical bonds in carbon compounds and distinguishing between different functional groups.

	- Studying the systematic nomenclature (IUPAC) of organic compounds, enabling the student to read and understand the names of drugs and compounds used in medical analyses .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Familiarity with molecular and functional structure: Understanding the fundamentals of chemical bonds and functional groups of organic compounds and linking their physical properties to the behavior of molecules within biological systems. - Mastery of laboratory diagnostic skills: Acquiring practical ability to handle organic materials and perform separation and qualitative analysis methods that pave the way for understanding medical techniques. - Linking chemistry with medical applications: Understanding the relationship between the chemical composition of substances (such as drugs and extracts) and their interaction with the human body's systems from a physical and biological perspective.
Indicative Contents المحتويات الإرشادية	- Study of functional groups, systematic nomenclature, chemical bonds, and stereochemistry of aliphatic and aromatic compounds . - Focus on the physical properties of biomolecules (proteins and carbohydrates) and laboratory separation and diagnostic techniques for medical purposes.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Active Learning: Engaging students through problem-solving, case studies, and interactive discussions to link organic chemistry with medical applications. • Blended Learning: Combining traditional face-to-face lectures with digital resources, virtual labs, and online simulations for molecular structures. • Problem-Based Learning (PBL): Presenting real-world medical or biological challenges that require chemical and physical analysis to solve. • Practical & Laboratory-Based Learning: Developing hands-on skills through experimental work, data collection, and technical reporting in a lab environment.

Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	93	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Organic Chemistry
Week 2	Chemical Bonding and Electronegativity
Week 3	Resonance and Reaction Classification
Week 4	Functional Groups
Week 5	Hydrocarbons – Alkanes
Week 6	Reactions of Alkanes
Week 7	Midterm
Week 8	Cycloalkanes and Alkyl Halides
Week 9	Alkenes – Structure and Nomenclature
Week 10	Preparation and Reactions of Alkenes
Week 11	Alkynes

Week 12	Aromatic Compounds – Benzene
Week 13	Nomenclature and Reactions of Benzene Derivatives
Week 14	

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Analytical Chemistry		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CS11008			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGI	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	zaman abdalhussein ibadi		e-mail	zaman.abdulhussein@alkafeel.edu.iq
Module Leader's Acad. Title	Asstant prof		Module Leader's Qualification	PHD
Module Tutor	Ahmed baqir redha		e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	02/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives اهداف المادة الدراسية	1. Clarification of how analytical chemistry can make significant contributions to in chemistry science . 2. Identify –volumetric analysis which are useful in chemistry-. 3. This course deals with the basic concept of the most important calibration standardization and blank corrections and this module. 4. Learn about the most important scientific terms (Terminology) and their definitions related to this topic. 5. To understand the impact of these Neutralization titration. Precipitation titration --- Oxidation – reduction titration Complex formation reaction in -- volumetric analysis 6. To perform different applications of quantitative analysis and qualitative analysis -.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Discuss the result and involvement of volumetric analysis 2. Define analytical chemistry , quantitative analysis and qualitative analysis 3. Identify the standardization and blank corrections. 4. Explain the methods of expressing concentration and calculation of the equivalent weight . 5 List and Describe the properties of EDTA , titration methods employing EDTA . 6 Identify the Methods of chemical analysis in the pharmaceutical industry.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part</u> <u>A – Theoretical lectures</u> What analytical chemistry ? Basic tools of analytical chemistry, the language of analytical chemistry, calibration standardization and blank corrections, quantitative analysis and qualitative analysis , solution ,type of solution , methods of expressing concentration ,calculation of the equivalent weight, volumetric analysis , terms employed in volumetric analysis , requirement of reactions used in volumetric analysis. [10 hrs] , the types of reaction used in volumetric analysis 1. Neutralization titration, titration curve ,calculation the PH of different solution, Buffer solution , Hydrolysis of salts , Solubility. [8 hrs] The common ion effect , 2. Precipitation titration , titration curve of Precipitation titration ,3.Oxidation – reduction titration, titration curve of Oxidation – reduction titration , 4. Complex formation reaction, [10 hrs] Ecology of coccolithophores, coccoliths and sedimentology, functions of coccoliths,

	geologic distribution, effect of global climate change on distribution, evolutionary responses, terminology of calcareous nannofossils. [8 hrs] types of ligands , properties of EDTA , titration methods employing EDTA .Methods of chemical analysis in the pharmaceutical industry [3 hrs] <u>Part B – Practical labs</u> Introduction of analytical chemistry Methods of Expressing Concentration Titration process Requirements of titration process Standard solution and properties , Primary and secondary standard substance EXP1 : Standardization of HCl EXP2 : Determination of NaOH Redox titration Exp3:Determination of Ferrous sulphate by titration with potassium permanganates Complex formation titration EXP4: Determination of water hardness Precipitation titration EXP 5: Mohr method EXP6: Volhard method. [18 hrs]
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Learning and Teaching Strategies استراتيجيات التعليم والتعلم	
Strategies	Develop student skill in studying analytical chemistry and using different methods in determining the concentration of substance

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي الغير منتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي الغير منتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	What analytical chemistry ? Basic tools of analytical chemistry
Week 2	the language of analytical chemistry, calibration standardization and blank corrections,
Week 3	quantitative analysis and qualitative analysis , solution ,type of solution , methods of expressing concentration
Week 4	calculation of the equivalent weight, volumetric analysis , terms employed in volumetric analysis , requirement of reactions used in volumetric analysis
Week 5	. the types of reaction used in volumetric analysis 1. Neutralization titration, titration curve
Week 6	,calculation the PH of different solution, Buffer solution

Week 7	Hydrolysis of salts , Solubility, The common ion effect ,
Week 8	2. Precipitation titration ,
Week 9	titration curve of Precipitation titration
Week 10	3.Oxidation – reduction titration
Week 11	titration curve of Oxidation – reduction titration
Week 12	4. Complex formation reaction
Week 13	types of ligands , properties of EDTA
Week 14	titration methods employing EDTA
Week 15	Methods of chemical analysis in the pharmaceutical industry.

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:. Introduction of analytical chemistry
Week 2	Lab 2: Methods of Expressing Concentration
Week 3	Lab 3: Titration process Requirements of titration process
Week 4	Lab 4: Standard solution and properties , Primary and secondary standard substance
Week 5	Lab 5: Standardization of HCl
Week 6	Lab 6: Determination of NaOH
Week 7	Lab 7:. Redox titration
Week 8	Lab 8:Determination of Ferrous sulphate by titration with potassium permanganates Complex formation titration
Week 9	Lab9. Determination of water hardness Precipitation titration
Week10	Lab 10: Mohr method
Week 11	Lab 11:Volhard method
Week 12	Lab 12: Requirements of titration process

Learning and Teaching Resources مصادر لتعلم والتدريس		
	Text	Available in the Library?
Required Texts	Vogel text book of quantitative chemical analysis ,5thEd. (1989)	Yes
Recommended Texts	Vogel text book of quantitative chemical analysis ,5thEd. (1989)	Yes
Websites		

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer 1		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	QU04		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGI	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Muhsen mohamed mahdi	e-mail	muhsen.mohammad@alkafeel.iq
Module Leader's Acad. Title	Assistant prof	Module Leader's Qualification	M.S.
Module Tutor	Ahmed abqer redha	e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	13/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of Microsoft Word. 2. This course deals with the basic concept of Word. 3. To understand how writing and printing on computer. 4. To perform different application with word such as MATLAB.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how Word works in simple way. 2. List the various terms associated with computer. 3. Summarize what is meant by a basic Word element. 4. Discuss the student's interaction with the computer 5. Description of the functions of the Word. 6. Learn about the features of the Word program through the existing ribbons. 7. Learn about all possible operations in this program
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Theoretical lectures Introduction of Microsoft Office, The Elements of the Word Screen- Quick Access Toolbar, Window, Ribbon, Status bar [10 hour], Skills in writing of Microsoft Word program, File Tab, Saving and Closing a New Document. HOME TAB, Clipboard group, Font group, Paragraph group, add numbers or bullets to paragraphs, [10 hour] Insert tab, Pages group, add a cover page, insert a blank page, Illustrations group, Symbols group, insert tab, Tables group, Select in Table, Insert cell, Page. [18 hour]

Learning and Teaching Strategies

استراتيجيات التعليم والتعلم

Strategies	Expand students' perceptions of this science and its contents that are included in the Word program, which could add information to students about its use mechanism. And how to deal with files and format them or reformulate them within the commands in this program and diagnose them. This will be achieved through lectures, laboratories, interactive tutorials.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعيا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

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

Syllabus (Weekly Plan Delivery)	
المناهج الأسبوعي النظري	
	Material Covered
Week 1	

Delivery Plan (Weekly Lab. Syllabus)	
المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction in Microsoft Word
Week 2	Lab 2: Skills in writing of Microsoft Word program.
Week 3	Lab 3: File Tab
Week 4	Lab 4: Home Tab
Week 5	Lab 5: Font group
Week 6	Lab 6: Hinge line.
Week 7	Lab 7: Description of Bullets and Numbering, Midterm Exam
Week 8	Lab 8: Insert tab - Pages group
Week 9	Lab9: Description of Symbols group.
Week10	Lab 10: Insert tab - Tables group
Week 11	Lab 11: Header and Footer.
Week 12	Lab 12: Insert tables
Week 13	Lab 13: Design list
Week 14	Lab 14: View list
Week 15	Lab 15: Layout list
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Mustansiriyah University, Computer Center, Word 2019	Yes
Recommended Texts	©2010 Torben Larg Frandsen and Ventus Aps ISBN 978-87-7681-655-1	Yes
Websites	Online Microsoft Word Help and Learning o https://support.office.com/en-us/word • “Welcome to Word” Document Template o MW has a built-in introductory document. To open, first open MW, then click on the ‘Welcome to Word’ template under ‘New	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mechanics 2		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MPH-1204			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	UGI	Semester of Delivery		2
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader			e-mail	Saleh@gmail.com
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification		
Module Tutor	Saleh hasoon		e-mail	ahmed.sharba@alkafeel.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	02/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives

اهداف المادة الدراسية

The course aims to develop their analytical, problem-solving, and critical- thinking skills in the context of mechanics.

Learning Outcomes:

1. Knowledge and Understanding: Students should be able to demonstrate a deep understanding of the fundamental concepts, laws, and theories of classical mechanics, including Newton's laws of motion, conservation of energy and momentum, and rotational motion.
2. Problem Solving: Students should be able to apply the principles of mechanics to solve a wide range of problems, including kinematics, dynamics, and statics, using mathematical techniques and appropriate physical models.
3. Experimental Skills: Students should be familiar with experimental methods commonly used in mechanics and be able to design and conduct experiments, analyze data, and draw meaningful conclusions.
4. Mathematical Skills: Students should have a strong foundation in mathematical techniques, such as calculus and vector algebra, necessary for the analysis and formulation of mechanics problems.
5. Critical Thinking: Students should be able to critically evaluate physical phenomena, interpret experimental results, and make connections between different concepts in mechanics.
6. Communication: Students should be able to effectively communicate their ideas, methodologies, and findings, both in written form and through oral presentations, using appropriate scientific terminology.

ideas, methodologies, and findings, both in written form and through oral presentations, using appropriate scientific terminology.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.

Week 1: Introduction to Mechanics

Knowledge and Understanding: Can you explain Newton's laws of motion and their application to various scenarios?

Problem Solving: Can you solve basic kinematics problems involving motion, velocity, and acceleration using appropriate equations?

Week 2: Dynamics and Energy

Knowledge and Understanding: Can you describe the concepts of work, energy, and conservation laws (energy and momentum) and their significance in mechanics?

Problem Solving: Can you apply Newton's laws of motion, work-energy theorem, and conservation principles to solve problems involving forces, motion, and energy?

Week 3: Rotational Motion and Oscillations

Knowledge and Understanding: Can you explain the principles of rotational motion, including angular velocity, angular acceleration, and moments of inertia? Can you describe the characteristics of simple harmonic motion?

Problem Solving: Can you solve problems related to rotational motion and oscillations, such as calculating angular displacement, torque, rotational kinetic energy, and analyzing simple harmonic motion?

Indicative Contents المحتويات الارشادية	Indicative content includes the following. <u>Part A – Theoretical lectures</u> Vectors in physics, Scalars versus Vectors, The Components of a Vector, Adding and Subtracting Vectors, Unit Vectors, Position, Displacement, Velocity, and Acceleration Vectors [8 hrs] Newton's laws of motion, Newton's first law, Newton's second law, Newton's Third Law: Action-Reaction Pairs, The Concept of Force, Hooke's Law. [10 hrs] Conservative Forces, Potential Energy Kinetic Energy, Work, Spring Force, Power, Conservation of Mechanical Energy,. [10 hrs] Work Done by Non– Conservative Forces Static and Kinetic Friction, Tension in a Rope. [8 hrs] Static Tension in a Rope [3 hrs] <u>Part B – Practical labs</u> Experiments: 1. Falling ball viscometer [2 hrs], 2. Coefficient of Static Friction between two Surfaces [2 hrs], 3. Spiral spring to verify Hooke's law and to determine the extension per unit mass of the added load [2 hrs], 4. The Simple Pendulum [2 hrs], 5. Finding the specific weight of a group of liquids [2 hrs], 6. Measurement of fluid flow rate by its density [2 hrs]
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Here is a summary of the main presentation strategy: Introduction: Begin the article with an engaging introduction that highlights the importance of learning outcomes and indicative contents in Mechanics for a first-class university. Describe the indicative contents of the Mechanics course, emphasizing the key topics and concepts that students will cover. Provide examples to illustrate the breadth and depth of the subject matter.

Student Workload (SWL) الحمل الدراسي محسوب للطالب لـ 15 أسبوع			
Structured SWL (h/sem) الحمل الدراسي منتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب اسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي الغير منتظم للطالب خلال الفصل	112	Unstructured SWL (h/w) الحمل الدراسي الغير المنتظم للطالب اسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO 1, LO2
	Assignments	2	10% (10)	2 and 12	Lo3-4
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	Lo 1-5
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Vectors in physics, Scalars versus Vectors, The Components of a Vector
Week 2	Adding and Subtracting Vectors, Unit Vectors, Position, Displacement, Velocity, and Acceleration Vectors.
Week 3	Newton's laws of motion, Newton's first law.
Week 4	Newton's second law, Newton's Third Law: Action-Reaction Pairs.
Week 5	The Concept of Force, Hooke's Law
Week 6	Conservative Forces.
Week 7	Potential Energy Kinetic Energy.
Week 8	Work, Spring Force.
Week 9	Power, Conservation of Mechanical Energy.
Week 10	Work Done by Non- Conservative Forces.
Week 11	Static and Kinetic Friction.
Week 12	Static Tension in a Rope.
Week 13	momentum.
Week 14	rotational motion.
Week 15	energy and waves.

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Lab 1: Falling ball viscometer.
Week 2	Lab 2: Coefficient of Static Friction between two Surfaces.
Week 3	Lab 3: Spiral spring to verify Hooke's law and to determine the extension per unit mass of the added load.
Week 4	Lab 4: The Simple Pendulum.
Week 5	Lab 5: Finding the specific weight of a group of liquids.
Week 6	Lab 6: Measurement of fluid flow rate by its density.
Week 7	Lab 7: Velocity of sound.
Week 8	Lab 8: Angular pendulum.
Week 9	Lab 9: Finding the tuning fork frequency.

Learning and Teaching Resources		
مصادر التعليم والتدريس		
	Text	Available in the Library?
Required Texts	Gregory A DiLisi, (2009). Classical Mechanics , Volume 4.	
Recommended Texts	Joel A. Shapiro, (2010) Classical Mechanics	
Websites	https://bookauthority.org/books/best-classical-mechanics-books	

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