Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2025−2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies for the study year 2024-2025 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: **University of Diyala**

Faculty/Institute: **College of Science**

Scientific Department: **Mathematics**

Academic or Professional Program Name: **BSC–Mathematics Sciences**

Final Certificate Name: **BSC–Mathematics Sciences**

Academic System: Courses for 3rd, 4th stages, Bologna process for 1st and 2nd Levels.

Description Preparation Date: **13 September 2024**

File Completion Date: **13 September 2024**

Signature: 

Head of Department Name:

Assist. Prof. Dr. Fatima M ABOUD

Date:**13 September 2024**

Signature: 

Scientific Associate Name:

Prof. Dr. Munther Hamza Rathi

Date: **13 September 2024**

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature: 

Approval of the Dean

Program Vision, Mission. Objectives, …

1. Program Vision

The Mathematics department keep pace with the scientific and technical development and access to the latest findings of modern mathematics in the world, and that the science of mathematics be an essential participant in the development of other sciences within the college.

Providing the student with the foundations of modern knowledge, advanced scientific research methods, high values, and developing the student's personality, making him a graduate capable of innovation, challenge, leadership, self-learning, teamwork, and competition locally, regionally, and globally.

Developing and updating school curricula in the light of contemporary global trends and subjecting them to a periodic calendar in accordance with international standards, taking into account local conditions.

2. Program Mission

Introducing the community to the science of mathematics and trying to remove barriers that make it difficult to understand mathematics by linking this science to practical application.

Graduating active and distinguished scientific cadres scientifically and practically.

Advance the pace of scientific research and encourage research creativity.

Access to academic accreditation nationally and globally.

3. Program Objectives

- Preparing graduates who hold a bachelor's degree in mathematics and possess distinguished scientific and mathematical skills that enable them to

work in relevant governmental or private institutions and have the ability to continue their postgraduate studies.

- Exchanging experiences and strengthening links with Iraqi, regional and international universities and scientific institutions in the field of specialization.
- 3. Providing research and advisory services to various community institutions and contributing positively to solving community problems. undergraduate research, internships, and study-abroad

4. Program Accreditation

Does the program have program accreditation? And from which agency?

Not yet.

5. Other external influences

Is there a sponsor for the program?

No sponsor.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	5	10	%7	
College Requirements	6	18	%13	
Department Requirements	38	114	%86	
Summer Training	1	Without units		
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
	Math1101	Differential Calculus	7	-
	Math1102	Introduction to Foundation of Mathematics	7	-
	Math1103	Finite Mathematics	7	-
	Math1104	Introduction to computer science	5	-
	UOD1101	Freedom and democracy and Human Rights	2	-
	UOD1102	Arabic Language	2	-
	Math1211	Integral Calculus	7	-
	Math1212	Advanced Topics in Foundation of Mathematics	7	-
	Math1213	Introduction to Linear algebra	6	-
	Math1204	Computer\Office Applications	4	-
	COS1102	General Mechanics	4	-
	UOD1103	English Language	2	-
	Math2111	Advanced Differential Calculus	7	-
	Math2112	Ordinary Differential Equations	6	-
	Math2113	Advanced topics in Linear algebra with applications	6	-
	Math2104	Statistics and probability		
	COS2101	Mathematical Physics	3	-
	Math2105	Topics in computer science	3	-
		Freedom and Democracy	2	-
	Math2211	Advanced Integral Calculus	7	-
	Math2212	The stability theory of ordinary differential equations	6	-
	Math2213	Mathematical Statistics	2	2
	UD22	The crimes of Ba'ath	3	-
	Math2104	Programming in Matlab language	3	-
	Math2204	Geometry	3	-
		Real Analysis I	3	-

		Numerical Analysis I	3	2
		Groups	3	-
		Computer I	2	2
		Number Theory I	3	-
		Advanced Statistics	3	-
		Real Analysis 2	3	-
		Numerical Analysis 2	3	2
		Rings	3	-
		Computer 2	2	2
		Applies Mathematics	3	-
		Hypothesis Tests	3	-
		Complex Analysis I	3	-
		Functional Analysis I	3	-
		Topology I	3	-
		Operational Research I	3	-
		Partial Differential EquationsI	3	-
		Complex Analysis 2	3	-
		Functional Analysis 2	3	-
		Topology 2	3	-
		Operational Research 2	3	-
		Partial Differential Equations 2	3	-
		Project	2	-

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1: *Identification of Complex Relationships*	A1: Graduates will be able to illustrate the structure and function of cellular components and explain how they interact in a living cell. A2::Good understanding of mathematics and statistics and their applications. A3::The ability to use the language of mathematics to explain and analyze mathematical ideas accurately. A4::The student is able to retrieve and remember information (facts, principles, rules, laws and theories as you know them). The ability to form mathematical proofs and conclusions.
Skills	
Learning Outcomes 2: *Oral and Written Communication, Laboratory, Field Studies, Scientific Knowledge, Data Analyses and Critical Thinking*	Learning Outcomes Statement 2: Graduates will be able to formally communicate the results of biological investigations using both oral and written communication skills. Learning Outcomes Statement 3: Graduates will be able to perform laboratory experiments and field studies, by using scientific equipment and computer technology while observing appropriate safety protocols. Graduates will be able to demonstrate a balanced concept of how scientific knowledge develops, including the historical development of foundational theories and laws and the nature of science. Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses. Graduates will be able to use critical-thinking and problem-solving skills to develop a research project and/or paper.
Ethics	
Learning Outcomes 4	C1:: Creating a spirit of teamwork among students through laboratory groups, graduation projects, and reports. C2:: Boosting students' self-confidence through daily discussions via seminars. C3:: Enhancing students' confidence in facing challenges by completing their academic journey through
Learning Outcomes 5	C1:: Creating a spirit of teamwork among students through laboratory groups, graduation projects, and reports. C2:: Boosting students' self-confidence through daily discussions via seminars. C3:: Enhancing students' confidence in facing challenges by completing their academic journey through

9. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

10. Evaluation methods

Implemented at all stages of the program in general.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Mathematics	Applied Algebra			1	
Professor	Mathematics	Algebraic Topology			1	
Professor	Mathematics	Applied Math			1	
Professor	Mathematics	Quantum Encryption			1	
Professor	Mathematics	Computational Mathematics			1	
Assistant Professor	Mathematics	Functional Analysis			1	
Assistant Professor	Mathematics	General Topology			2	
Assistant Professor	Mathematics	Optimization			1	

Assistant Professor	Mathematics	Number Theory			1	
Assistant Professor	Mathematics	Scheduling Machine			1	
Lecturer	Mathematics	Algebraic topology			1	
Lecturer	Mathematics	Fuzzy algebraic topology			1	
Lecturer	Mathematics	Dynamical system			1	
Lecturer	Mathematics	Fractional Differential Equations			1	
Lecturer	Mathematics	Mathematical Statistics			1	
Lecturer	Mathematics	Applied Mathematics			1	
Lecturer	Mathematics	Statistics			1	
Lecturer	Mathematics	Optimization			1	
Lecturer	Physics	Material and solid state			1	
Assistant Lecturer	Mathematics	Numerical Analysis			2	
Assistant Lecturer	Mathematics	Dynamical system			1	
Assistant Lecturer	Mathematics	Statistics			1	
Assistant Lecturer	Mathematics	Optimization control theory			1	

Professional Development
Mentoring new faculty members
Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.
Professional development of faculty members
Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. **Acceptance Criterion**
(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. **The most important sources of information about the program**
State briefly the sources of information about the program.

14. Program Development Plan
The curricula are developed by adding modern topics that keep pace with the continuous development in mathematics and its applications. This is done through developing and training faculty members through their participation in seminars, courses, and attendance at scientific conferences for the purpose of being informed of the latest developments.

Program Skills Outline															
				Required program Learning outcomes											
Year/ Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
	MathI101	Differential Calculus	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	MathI102	Introduction to Foundation of Mathematics	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	MathI103	Finite Mathematics	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	MathI104	Introduction to computer science	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	UODI101	Freedom and democracy and Human Rights	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	UODI102	Arabic Language	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	MathI211	Integral Calculus	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	MathI212	Advanced Topics in Foundation of Mathematics	Basic	√	√	√	√	√	√	√	√	√	√	√	√
		Introduction to Linear algebra	Basic	√	√	√	√	√	√	√	√	√	√	√	√
		Computer\Office Applications	Basic	√	√	√	√	√	√	√	√	√	√	√	√
		General Mechanics	Basic	√	√	√	√	√	√	√	√	√	√	√	√

		English Language	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Linear Algebra 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Probability and statistic	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Electricity and Magnetics 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Computer 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Advanced Calculus 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Differential equation 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Freedom and Democracy	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Mathematical statistics	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Electricity and Magnetics 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Computer 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Advanced Calculus 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Differential equation 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√

		Geometry	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		جرائم حزب البعث	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Real Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Numerical Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Groups	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Computer 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Number Theory	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Advanced Statistics	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Real Analysis 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Numerical Analysis 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Rings	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Computer 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Applied Mathematics	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√

		Hypothesis tests	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Real Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Numerical Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Groups	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Complex Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Functional Analysis	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Topology 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Operational Research	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Partial Differential Equations1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Complex Analysis 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Measure Theory	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Topology 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Approximation Theory	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√

		Partial Differential Equations 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Project	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Hypothesis tests	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Real Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Numerical Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Groups	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Complex Analysis 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Functional Analysis	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Topology 1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Operational Research	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Partial Differential Equations1	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Complex Analysis 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Measure Theory	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√

		Topology 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Approximation Theory	**Optional**	√	√	√	√	√	√	√	√	√	√	√	√
		Partial Differential Equations 2	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√
		Project	**Basic**	√	√	√	√	√	√	√	√	√	√	√	√

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

First Stage

المستوى الاول: الفصل الاول

MODULE DESCRIPTION FORM:First Level

نموذج وصف المادة الدراسية:المستوى الاول

Module Information معلومات المادة الدراسية					
Module Title	**Differential calculus**			**Module Delivery**	
Module Type	**C**			☐ **Theory**	
Module Code	**Math1101**			☒ **Lecture**	
ECTS Credits	**7**			☐ **ab**	
SWL (hr/sem)	**175**			☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code	**College**	Type College Code		
Module Leader	Jamil M. Jamil	**e-mail**	Jamil291078@yahoo.com		
Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	Ph.D.		
Module Tutor	Name (if available)	**e-mail**	E-mail		
Peer Reviewer Name	Name	**e-mail**	E-mail		
Scientific Committee Approval Date	2024/9/2	**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. Define set of numbers and Functions with Properties. 2. Apply Limits and Continuity concept.

	3. Define the Differentiation concept. 4. Solve the Applications of Differentiation problems
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand Functions . 2. Understand the limit and continuity. 3. Understand Differentiation . concept. 4. Solve the Applications of Differentiation problem. 5. Developing teamwork skills through activities offered to students. 6. Use Learning management system (lms)
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

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 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)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Real Numbers m, Fundamental Concepts, Field of Real Numbers, Intervals, Inequalities, Absolute Value , Countable Sets.
Week 2	The Cartesian plane Cartesian Coordinates, Divide the straight segment, Slope of a Straight Line, Equation of Line, Polar Coordinate.
Week 3	Conical Surface, The Conic Section, Central Conics, The Circle, The parabolaics,
Week 4	The Ellipse , Reflection Properties , The Hyperbola, Other Definitions of Central Con
Week 5	T The Rotation Transformation, he Graph of any Second Degree Equation,
Week 6	Some Problems Related to Conics
Week 7	Mid-term Exam
Week 8	Geometric Transformations , Symmetry, Reflection, Translation,
Week 9	Congruence, The Relation between these Transformations.
Week 10	The Relation between these Transformations.
Week 11	Cartesian Coordinates in Three Dimensional Spaces, Three Dimensional Vectors, The Cross Product
Week 12	Planes in Three Dimensional Spaces, Lines in Three Dimensional Spaces, Surfaces,
Week 13	Cylinders, Cylindrical and Spherical Coordinates, Surfaces of Revolution, Symmetry,
Week 14	Traces and Plane Sections of a Surface, Quadric surfaces, Procedure for Sketching a Surface
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Anton. H, Bivens .I & Davis. S. ,"Calculus ",7th ,2002. Thomas. G. B. & Finney. R. L ,"Calculus and Analytic Geomatry",6th ,1984	Yes
Recommended Texts		No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group	**A** – Excellent	امتياز	90 - 100	Outstanding Performance

(50 - 100)	**B** - Very Good	جيد جدا	80 – 89	Above average with some errors
	C – Good	جيد	70 – 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (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: Introduction to Mathematical Foundations

مقدمة في اسس الرياضيات:نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Introduction to Mathematical Foundations**			**Module Delivery**	
Module Type	C			☐ **Theory** ☒ **Lecture** ☐ **lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	Math1102				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Amal mohi al-dean		**e-mail**	amalmuhi@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Lec.		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2024/9/2		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The main purpose for this course to introduce the following concepts: 5. Basic mathematical logic. 6. Methods of proof.. 7. Basics of set theory 8. Relations, mappings (functions), binary operations. 9. Algebraic systems, groups, rings, fields. 10. Homomorphisms of algebraic systems. 11. A basis for other mathematical courses.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	7. efine logical equivalence, quantifiers, the contrapositive of a conditional statement, and state the basic rules of logical equivalence. State different methods of proof. 8. Define the power set, set operations and state their main properties 9. Define the Cartesian product, binary , equivalence relation, equivalence classes, order relations, partitions and state their main properties. 10. Define mappings (functions), injections, surjections, bijections, composition and inverse mappings (functions). 11. Define equivalence of sets, finite sets, and countable sets and give examples from sets of numbers. 12. Define binary operations, algebraic systems and their homomorphisms, and give examples using modular arithmetic. 13. efine groups, rings, fields and state when a subset is a subgroup, a subring or a subfield.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. A general introduction to the matrices, the definition of the Sets and Logic, Concept of Set, Principals of Mathematical Logic. Also, the Prepositions and Truth Tables, such as, Quantifiers , Arguments, Mathematical Proof. [15 hrs] Concept of Set, The principles of mathematical logic, Propositions and Truth Tables, Quantifiers, Arguments, Mathematical Proof, Axiomatic Development of Set Theory, Sets algebra. [15 hrs] Cartesian Product, Relations and their Properties , Type of Relations, Equivalence Classes, Ordered Sets . [10 hrs] Definitions and General Properties, Type of Functions, Composition of Functions, Extension and Restriction of Function, The Image and Inverse Image of a Function, Invertible Functions, The Axiom of Choice and Its Equivalents. [15 hrs] Equivalent Sets, Finite and Infinite Sets, Countable sets, Similar Sets, Cardinal Numbers, Ordinal, Paradoxes in Set Theory. [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• After studying this course - the student - God willing - will be able to find solutions to many types of mathematics topics such as the foundations of mathematics . Understand the basic principles of mathematical logic. • Understand the basic principles in groups. • Using the basics of the foundations of mathematics. Preparing the student to absorb advanced materials.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 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**	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Sets and Logic, Concept of Set, Principals of Mathematical Logic.
Week 2	Prepositions and Truth Tables .
Week 3	Quantifiers , Arguments, Mathematical Proof.
Week 4	Axiomatic Development of the set theory, Sets algebra.
Week 5	Relations, Cartesian Product, Relations and their Properties ,.
Week 6	Type of Relations, Equivalence Classes, Ordered Sets.
Week 7	Mid-term Exam
Week 8	Functions, Definitions and General Properties.
Week 9	Type of Functions, Composition of Functions, Extension and Restriction of Function.
Week 10	The Image and the inverse Image of a Function.
Week 11	Invertible Functions, The Axiom of Choice and Its Equivalents.
Week 12	Potency of Sets, Equivalence Sets, Finite and Infinite Sets.

Week 13	Countable Sets, Similar Sets.
Week 14	Cardinal Numbers, Ordinal, Paradoxes in Set Theory
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• نوري فرحان المياحي " أسس الرياضيات " الطبعة الأولى. • "مقدمة في أسس الرياضيات", عادل غسان نعوم, باسل عطا الهاشمي, جامعة بغداد 2000 . • Wildal R., "Introduction to the Foundation of Mathematics", New York 1965. • Lipschutz S., "Set Theory and Related Topics", Schaum's Outline Series 1964.	
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

Finite Mathematics

نموذج وصف المادة الدراسية: الرياضيات المنتهية

Module Information معلومات المادة الدراسية					
Module Title	**Finite Mathematics**			**Module Delivery**	
Module Type	**B**			☐ **Theory** ☒ **Lecture** ☐ **ab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	Math1103				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Hamza Barakat Habib		**e-mail**	Hamza.alsaadi@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2024/9/2		**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	12. The ability to have the knowledge of the basic algebraic operations of the Matrix and its properties.

	13. The ability to understand the terms: Determinate, the inverse of the Matrix, the Matrix transposed. 14. The ability to represent a system of linear equations as an augmented matrix and solve the system using Gauss-Jordan elimination 15. The ability to solve application problems using matrices and systems of equations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 14. A broad knowledge and basic understanding of Finite Mathematics. 15. Engage in analyzing, solving, and computing real-world applications of finite mathematics. 16. Representing the linear systems geometrically. 17. Set up and solve linear systems/linear inequalities graphically/geometrically and algebraically using matrices. 18. Solving the life problems based on the applications of matrices. 19. Awareness of some fundamental mathematical concepts applicable in this field.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to matrices A general introduction to the matrices, the definition of the matrix and the types of the matrices. Also, the basic algebraic operations of the matrices, such as, the addition, subtraction and the matrix multiplications. Linear Systems Providing a basic introduction and definition to the linear systems. Also, representing the matrix contents in terms of linear systems. Solving the Linear Systems Solving the linear systems by several solving linear systems methods. Firstly, the Gauss elimination method is provided as a basic method for solving the linear systems. Secondly, the Gauss-Jordan method is discussed which is considered as an extension to the Gauss elimination method.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	First year university students are provided with an opportunity to develop mathematical skills in area of Finite Mathematics. The course has a numerical leaning tied to solving problems that have direct relevance in the "real world," and including such topics as systems of linear equations, linear systems and matrices.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 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**	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	An introduction to matrices, definitions of the matrix, square matrix, zero matrices and equality of matrices and providing examples
Week 2	The addition of matrices, the properties of the addition of matrices and examples.
Week 3	The multiplications of matrices, the properties of multiplication of matrices and examples.
Week 4	Transposed matrix and its properties.
Week 5	The inverse of the matrix and some basic theorems and examples.
Week 6	Linear systems, geometric interpretation of them and elementary transformations of linear system.
Week 7	Mid-term Exam
Week 8	Gaussian elimination method.
Week 9	Gauss-Jordan elimination method.
Week 10	Determinant of the matrix.
Week 11	Minor determinate and the cofactor of an element.
Week 12	The properties of the determinate and some basic theorems.
Week 13	The adjuint of the matrix.
Week 14	Solving the linear systems by using the inverse of the matrix, Cramer's Rule for solving the linear system.

Week 15	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• M.L. Lial, R.N. Greenwell, N.P. Ritchey (2015). Finite Mathematics, 11th edition. London: Pearson. • Hefferon, J. (2020). Linear algebra forth edition.	
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM: Introduction to computer science

نموذج وصف المادة الدراسية:الحاسوب

Module Information معلومات المادة الدراسية					
Module Title	**Introduction to computer science**			**Module Delivery**	
Module Type	**B**			☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Math1104**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	1		**Semester of Delivery**	1	
Administering Department			**College**	Type College Code	
Module Leader	Firas Ali Mohammed		**e-mail**	firas@uodiyala.ud.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	M Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2024/9/2		**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	Module objectives for a Computer basics course typically outline the specific knowledge and skills that students are expected to acquire upon completion of the course. Here are some common module objectives for a Numerical Analysis course: 1. Learn and understand some basic terms and concepts of computer science. 2. Knowledge of the historical development and life cycle of the computer industry and its areas of use 3. Identify the basic components of a computer and distinguish between them and the method of the actor among them. 4. - Learn the concepts of security and confidentiality of information, software licensing agreements, and methods of preserving data and information 5. Understanding what operating systems are and what are their advantages, especially the operating system (Windows 7) and the ability to use it easily. 6. Learn about the people of the features and characteristics of applied software such as (Microsoft Office Word 2010 and Microsoft Office PowerPoint 2010). 7. The student acquires the ability and skill to use the program (Word 2010 and PowerPoint 2010) and benefit from them in carrying out the required scientific tasks as well as practical life with ease. 8. Increasing students' understanding and awareness that learning the computer curriculum and information technology techniques is a science in itself and is the basis for scientific development and progress in the world.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Module Learning Outcomes for a Computer basics course may vary depending on the specific curriculum and educational institution. However, here are some common learning outcomes that are typically associated with a Numerical Analysis course: 1. Efficiency and skill in using the computer and how to deal with its basic components. 2. The ability to enter data, methods of saving and retrieving it, and protecting it from theft and hacking. 3. Acquire new skills and different methods in Word 2010 applications, PowerPoint 2010 Microsoft Office. 4. The possibility of using a computer to process data, obtain information, and solve many problems.
Indicative Contents المحتويات الإرشادية	" Computer basics " The computer entered all scientific, applied and academic fields, and it became necessary for everyone in various scientific disciplines to be familiar with the basic rules for dealing with the computer and managing it to achieve the goals of its use..

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	2 and 7	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 10	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 الاسبوعي النظري	
	Material Covered
Week 1	Life cycle and evolution of computer generations
Week 2	Electronic computer and the concept of data and information
Week 3	Computer features and areas of computer use
Week 4	Types of computers (according to purpose of use, size and performance, data quality, operating systems).
Week 5	The physical parts of a computer (physical entity)
Week 6	Computer input and output units
Week 7	System unit in a computer
Week 8	Computer software entity and setup systems
Week 9	Personal computer and the main features of a personal computer
Week 10	Computer security and computer privacy
Week 11	Computer software licenses and license types
Week 12	electronic Intrusion and Intrusion sources
Week 13	The Malware (Computer viruses)

Week 14	Components of viruses and their types
Week 15	The necessary steps to protect from electronic penetration
Week 16	**FINAL EXAMS**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	operating system functions
Week 2	operating system goals
Week 3	Operating system classification
Week 4	Examples of some operating systems
Week 5	Windows 7 operating system
Week 6	Windows 7 installation requirements
Week 7	New features in Windows 7
Week 8	Computer desktop components
Week 9	Start menu, taskbar and desktop notification area
Week 10	Folders and files in Windows 7
Week 11	Types of icons in Windows 7
Week 12	Perform operations on Windows 7 windows
Week 13	desktop backgrounds in Windows 7
Week 14	Control panel in Windows 7
Week 15	Some common settings in Windows 7
Week 16	**FINAL EXAMS**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1. Basics of computer and its office applications, part 1 - Written by: Prof. Dr. Ziyad Tariq Muhammad Abboud, Prof. Dr. Ghassan Hamid Abdel Majeed, Prof. Dr. Amir Hussein Murad, teacher Bilal Kamal Ahmed, 2014, Curriculum of the Ministry of Higher Education and Scientific Research - Department of Research and Development.	Yes
Recommended Texts	1. LeBlanc, Brandon." A closer look at the Windows 7 SUKs". Windows Team Blog. Microsoft, 2009. 2. Computer Literacy BISICS: A Comprehensive Guide to IC3 by Connie Morrison and Dolores Wells (2012). 3. John W. Jacobs, Introduction to Microsoft Word 2010 Technology Center. 2010. 4. Michael Miller "Computer Basics Absolute Beginner's Guide, Windows® 10 Edition, Copyright © 2020 by Pearson Education.	Yes

Websites	1. MS- Word 2010 Advanced : part 1. Templates, Forms and styles. http://book boon.com/. 2. . MS- PowerPoint 2010 Advanced : part 1. Templates, Forms and styles. http://book boon.com/	yes

Grading Scheme
مخطط الدرجات

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية: حقوق الانسان والحرية والديمقراطية

Module Information معلومات المادة الدراسية					
Module Title	حقوق الانسان والحرية والديمقراطية			**Module Delivery**	
Module Type	**B**			☐ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOD1101				
ECTS Credits	**3**				
SWL (hr/sem)	75				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Othman Khlan Farhan		**e-mail**	othaman@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name(if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2/9/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- تهدف المادة الى تعريف الطلبة بحقوق الانسان والحرية والديمقراطية وابرز مصادرها وخصائصها والمراحل التاريخية التي مرت بها حقوق الانسان والحرية والديمقراطية.

2- ثم التعرف على الاعلان العالمي لحقوق الانسان وابرز المواد التي تضمنها الاعلان ، والمعاهدات والمواثيق الدولية وابرز المنظمات الدولية. 3- اهم المواثيق الدولية في مجال حقوق الانسان والحرية والديمقراطية وتعريف الطلبة بحقوق الانسان في الديانات السماوية (، والمسيحي ، والدين الاسلامي) والديانات الاخرى. 4- ومن ثم التأكيد على الديمقراطية وكيفية ممارسة الديمقراطية في مجتمع حديث العهد بالديمقراطية ليكون الطلبة نواة المستقبل في بناء الدولة العراقية .	
الاهداف المعرفية والمهارية: 1- يعرف حقوق الانسان والحرية والديمقراطية . 2- يذكر الطالب اهم حقوق الانسان في الحياة . 3- يعرف الطالب مصطلح حقوق الانسان والحرية والديمقراطية . 4- يطبق الطالب التعامل وفق مبادئ حقوق الانسان والحرية والديمقراطية داخل الحرم الجامعي. 5-يناقش الطالب حقوق الانسان والحرية والديمقراطية وتطورها عبر الحضارات القديمة. 6- يبين الطالب التداخل بين النظام الديمقراطي مع انظمة الحكم الاخرى. 7- يميز الطالب بين ضمان حقوق الانسان في ظل الانظمة الديمقراطية عن غيرها من الانظمة . 8 – يدرك الطالب اهمية حقوق الانسان والحرية والديمقراطية للحفاظ على كرامة هذا الانسان. 9 –يظهر الطالب تمسكه بجميع المبادئ التي تحمي حقوق الانسان والحرية والديمقراطية . 10 –. يرسم الطالب النماذج التي تعبر عن المطالبة بحقوق الانسان والحرية والديمقراطية . 11- يستخدم الطالب المفاهيم المكتسبة نظريا في تثقيف المجتمع للمحافظة على حقوق الانسان والحرية والديمقراطية.	**Module Learning Outcomes** مخرجات التعلم للمادة الدراسية
مفهوم تعريف- الإنسان تعريف -الحق تعريف- (الإنسان حقوق التعريف بحقوق الانسان ,تعريف الانسان. (2 ساعة) الانسان ، مفهوم حقوق حقوق خصائص الإنسان حقوق الإنسان). اهمية دراسة حقوق التطور التاريخي لحقوق الإنسانحقوق الإنسان في حضارات وادي الرافدين (قانون اوركاجينا و اورنمو . قانون لبت عشتار.قانون مملكة اشنونا قانون شريعة حمورابي) (2 ساعة). حقوق الإنسان في الحضارات القديمة الاخرى (الحضارة الهندية والصينة، حضارة مصر الفرعونية، والحضارة اليونانية والحضارة الرومانية), حقوق الإنسان في الإسلام (حقوق الطفل ، والمرأة ، والحقوق الاجتماعية والاقتصادية والسياسية). (2 ساعة) حقوق الإنسان في العصور الوسطى, حقوق الإنسان في الشرائع السماوية. في الديانة اليهودية و في الديانة المسيحية, حقوق الانسان على مستوى الثورات والشرعيات الحديثة. (2 ساعة) الاعتراف بحقوق الانسان على المستوى الدولي مراحل الاعتراف الدولي بحقوق الانسان الاعتراف الاقليمي المعاصر بحقوق الانسان على المستوى الاوربي و المستوى الامريكي والمستوى الافريقي والمستوى العربي والاسلامي . (2 ساعة) نشوء المنظمات غير الحكومية ودورها في مجال حقوق الانسان (اللجنة الدولية للصليب الاحمر، منظمة العفو الدولية، منظمة مراقبة حقوق الانسان، المنظمة العربية لمراقبة حقوف الانسان). (2 ساعة)	**Indicative Contents** المحتويات الإرشادية

	حقوق الانسان في المواثيق الدولية والاقليمية والتشريعات الوطنية(الاعلان العالمي لحقوق الانسان، حقوق الانسان في العهديين الدوليين). (2 ساعة) اجيال حقوق الانسان (الجيل الاول هو جيل الحقوق المدنية والسياسية، والجيل الثاني هو جيل الحقوق الاقتصادية والاجتماعية والثقافية، والجيل الثالث هو جيل الحقوق الجديدة). حقوق الانسان في المواثيق الاقليمية(الاتفاقية الاوربية لحقوق الانسان لعام 1950)(الاتفاقية الامريكية لحقوق الانسان لعام 1969)(الميثاق الافريقي لحقوق الانسان لعام 1981) (الميثاق العربي لحقوق الانسان لعام 1994). حقوق الانسان في التشريعات الوطنية(على صعيد الدولة العراقية). (2 ساعة) تعريف الديمقراطية، مفهوم الديمقراطية، مميزات الديمقراطية، التطور التاريخي للديمقراطية والحرية في العصور التاريخية القديمة(حضارة وادي الرافدين) (حضارة وادي النيل، الحضارة اليونانية، الحضارة الرومانية) (2 ساعة) العلاقة بين الحقوق والحريات العامة للأفراد والديمقراطية، الفرق بين الحرية تقيم النظام الديمقراطي ومراحل تطبيقه في العراق(ايجابيات الديمقراطية، سلبيات الديمقراطية) (2 ساعة) انواع الديمقراطية(أولاً-الديمقراطية المباشرة ، ثانياً-الديمقراطية التمثيلية(النيابية) وتقسم إلى:-أ الديمقراطية شبة المباشرة، ب- الديمقراطية غير المباشرة، واهم مميزاتها وعيوبها. الشروط العامة لنجاح النظام الديمقراطي(احترام حقوق الانسان، التعددية السياسية، التداول السلمي للسلطة، المساواة السياسية، احترام مبدأ الديمقراطية، وجود دولة القانون). (2 ساعة) مكونات وركائز الديمقراطية(المواطنة، المشاركة السياسية، الانتخابات، النواب والمسؤولية، المعاضة، الشرعية الدستورية، الفصل بين السلطات، الشفافية والمساءلة). (2 ساعة) مفهوم الانتخابات وتكيفها القانوني (شروط الانتخابات، مفاهيم خاصة بالانتخابات، الادارة الانتخابية), (المبادئ العامة للإدارة الانتخابية، نظم الانتخابات، نظام الاغلبية والتمثيل النسبي). (2 ساعة) مراحل النظام الديمقراطي في العراق، اهم مواد الدستور العراقي 2005م في مجال الديمقراطية وحقوق الانسان. الفساد الاداري مفهومه و تعريفه، انواع الفساد، اسباب الفساد، معالجات الفساد .بعض المصطلحات السياسية(الدستور، المحكمة الدستورية، النظام الرئاسي، النظام البرلماني، الاتحاد الفيدرالي، الاتحاد الكونفدرالي). بعض المصطلحات السياسية(العلمانية ، الارستقراطية، الليبرالية، البيروقراطية، المعاهدات، الامبريالية). (2 ساعة)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	- المحاضرة والمشاركة. - المناقشة والحوار. - العصف الذهني. - كتابة التقارير عن الموضوع. - السؤال والجواب .

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

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2

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	20% (20)	5	LO #1, #2 and #10, #11
	Assignments	-	0% (0)	-	-
	Projects / Lab.	-	0% (0)	-	-
	Report	2	20% (20)	13	LO #5, #8 and #10, #12
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #8
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	الإنسان). حقوق مفهوم تعريف- الإنسان تعريف -الحق تعريف- (الإنسان حقوق التعريف بحقوق الانسان ,تعريف الانسان. الانسان ، مفهوم حقوق حقوق خصائص الإنسان حقوق اهمية دراسة
Week 2	التطور التاريخي لحقوق الإنسان حقوق الإنسان في حضارات وادي الرافدين (قانون اوركاجينا و اورنمو . قانون لبت عشتار.قانون مملكة اشنونا قانون شريعة حمورابي)
Week 3	حقوق الإنسان في الحضارات القديمة الاخرى (الحضارة الهندية والصينة، حضارة مصر الفرعونية، والحضارة اليونانية والحضارة الرومانية), حقوق الإنسان في الإسلام (حقوق الطفل ، والمرأة ، والحقوق الاجتماعية والاقتصادية والسياسية).
Week 4	حقوق الإنسان في العصور الوسطى, حقوق الإنسان في الشرائع السماوية. في الديانة اليهودية و في الديانة المسيحية, حقوق الانسان على مستوى الثورات والشرعيات الحديثة. (2 ساعة)
Week 5	الاعتراف بحقوق الانسان على المستوى الدولي مراحل الاعتراف الدولي بحقوق الانسان الاعتراف الاقليمي المعاصر بحقوق الانسان على المستوى الاوربي و المستوى الامريكي والمستوى الافريقي والمستوى العربي والاسلامي .
Week 6	نشوء المنظمات غير الحكومية ودورها في مجال حقوق الانسان (اللجنة الدولية للصليب الاحمر، منظمة العفو الدولية، منظمة مراقبة حقوق الانسان، المنظمة العربية لمراقبة حقوف الانسان), حقوق الانسان في المواثيق الدولية والاقليمية والتشريعات الوطنية(الاعلان العالمي لحقوق الانسان، حقوق الانسان في العهديين الدوليين).
Week 7	اجيال حقوق الانسان (الجيل الاول هو جيل الحقوق المدنية والسياسية، والجيل الثاني هو جيل الحقوق الاقتصادية والاجتماعية والثقافية، والجيل الثالث هو جيل الحقوق الجديدة), حقوق الانسان في المواثيق الاقليمية(الاتفاقية الاوربية

	لحقوق الانسان لعام 1950)(الاتفاقية الامريكية لحقوق الانسان لعام 1969)(الميثاق الافريقي لحقوق الانسان لعام 1981) (الميثاق العربي لحقوق الانسان لعام 1994). حقوق الانسان في التشريعات الوطنية(على صعيد الدولة العراقية).
Week 8	امتحان نصف الفصل الدراسي
Week 9	تعريف الديمقراطية، مفهوم الديمقراطية، مميزات الديمقراطية، التطور التاريخي للديمقراطية والحرية في العصور التاريخية القديمة(حضارة وادي الرافدين) (حضارة وادي النيل، الحضارة اليونانية، الحضارة الرومانية)
Week 10	العلاقة بين الحقوق والحريات العامة للأفراد والديمقراطية، الفرق بين الحرية تقيم النظام الديمقراطي ومراحل تطبيقه في العراق(ايجابيات الديمقراطية، سلبيات الديمقراطية)
Week 11	انواع الديمقراطية(أولاً-الديمقراطية المباشرة ، ثانياً-الديمقراطية التمثيلية(النيابية) وتقسم إلى:-أ الديمقراطية شبة المباشرة، ب- الديمقراطية غير المباشرة، واهم مميزاتها وعيوبها. الشروط العامة لنجاح النظام الديمقراطي(احترام حقوق الانسان، التعددية السياسية، التداول السلمي للسلطة، المساواة السياسية، احترام مبدأ الديمقراطية، وجود دولة القانون).
Week 12	مكونات وركائز الديمقراطية(المواطنة، المشاركة السياسية، الانتخابات، النواب والمسؤولية، المعاضة، الشرعية الدستورية، الفصل بين السلطات، الشفافية والمساءلة).
Week 13	مفهوم الانتخابات وتكيفها القانوني (شروط الانتخابات، مفاهيم خاصة بالانتخابات، الادارة الانتخابية), (المبادئ العامة للإدارة الانتخابية، نظم الانتخابات، نظام الاغلبية والتمثيل النسبي).
Week 14	مراحل النظام الديمقراطي في العراق، اهم مواد الدستور العراقي 2005م في مجال الديمقراطية وحقوق الانسان. الفساد الاداري مفهومه و تعريفه، انواع الفساد، اسباب الفساد، معالجات الفساد. بعض المصطلحات السياسية(الدستور، المحكمة الدستورية، النظام الرئاسي، النظام البرلماني، الاتحاد الفيدرالي، الاتحاد الكونفدرالي). بعض المصطلحات السياسية(العلمانية ، الارستقراطية، الليبرالية، البيروقراطية، المعاهدات، الامبريالية)
Week 15	الامتحان النهائي.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**1- الانسان في القران الكريم/ عباس محمود العقاد، ط5، دار نهضة مصر، القاهرة (2005).** **2- تاريخ نشأة مفاهيم حقوق الانسان/ للدكتور رائد سليمان الفقير(2006).** **3- المعاهدات الدولية الاساسية لحقوق الانسان/ مفوضية الامم المتحدة السامية لحقوق الانسان، الامم المتحدة نيويورك جنيف،(2006).** **4- الديمقراطية والحرية وحقوق الانسان/ حسين عبد الحميد احمد رشوان، (ط1، دار المكتب الجامعي الحديث، القاهرة، مصر (2006)**	Yes
Recommended Texts	**1- حقوق الإنسان والديمقراطية والحريات العامة/ للدكتور ماهر صبري كاظم، ط1، دار جيكور، 2015.** **2 -الموسوعة الميسرة في حقوق الانسان - الفكر والممارسة دراسة في الفكريين الوضعي والاسلامي/ للدكتور عباس فاضل الدليمي، ط1، دار صفاء، عمان الاردن، (2017).**	Yes

	3- حقوق الإنسان(تطورها- مضامينها- حمايتها)/ للدكتور رياض عزيز هادي،(2007).	
Websites	**1- http://www.al-mostafa.com/index.htm** **2- http://www.almeshkat.net/books/index.php** **3- http://www.imamu.edu.sa/arabiyah** **منتديات الكتب المصورة http://pdfbooks.net/vb/login.php**	

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: اللغة العربية

Module Information معلومات المادة الدراسية					
Module Title	اللغة العربية			**Module Delivery**	
Module Type	**B**			☐ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOD1102				
ECTS Credits	**3**				
SWL (hr/sem)	75				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Othman Khlan Farhan		**e-mail**	othaman@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name(if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2/9/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- تعريف الطلبة اهم المفاتيح الأساس في التعامل بلغة عربية فصيحة خالية من اي خطأ أو لحنٍ وكيفية التعلم فيما يخص الأدب والنحو والبلاغة والاملاء العربية وكل هذا لغير الاختصاص. 2- رفع القدرات التعبيرية للطالب، وزيادة ثروتهم اللغوية ، ومساعدتهم على استخدام العبارة المناسبة بشكل دلالي واضح.

	3-تدريب الطلبة على التحدث، والتنظيم المنطقي للأفكار، مع الحرص على التمسك باللغة العربية الفصحى . 4- رفع الأداء اللغوي العام لدى الطلبة. 5- تمكين الطلبة من الكتابة والتعبير والحديث بلغة عربية فصيحة وواضحة. 6- مساعدة الطلبة في التعبير عن افكارهم من خلال المناقشة والحوار بلغة سهلة وفصيحة . 7- جعل الطلبة قادرين على اكتساب خزين لغوي من الكلمات واللفاظ والتعابير الفصيحة. 8- تعلم الطلبة الحفاظ على لغة القرآن التراث العربي الاصيل.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	الاهداف المعرفية والمهارية: 1- يعرف اساليب اللغة العربية. 2- يوظف ادوات الترقيم عند الكتابة . 3- يتدرب على كيفية تحليل النصوص الادبية . 4- يعرب بعض الامثلة والتمارين عن الجملة الاسمية والفعلية . 5-يناقش بعض النصوص القرآنية والادبية . 6- يبين الفرق بين علامات الاعراب الاصلية والفرعية. 7- يميز بين الافعال والاسماء في الجمل. 8– يتدرب على القراءة الواضحة والإلقاء . 9- يتدرب على الكتابة بخط حسن من خلال التعريف بأنواع الخطوط العربية، وكتابة كل حرف، ثم كتاب الجمل والعبارات بخط الرقعة. 10- يميز بين حمزة القطع وهمزة الوصل عند الكتابة . 11- يتعلم اساليب التحدث أمام الآخرين مع استعمال التأشير باليد والعين والجسد بما يتناسب مع الكلام . 12- يميز بين حرفي الضاد والظاء في الكتابة والنطق. 13- يميز بين التاء المربوطة والمفتوحة اثناء الكتابة.
Indicative Contents المحتويات الإرشادية	توضيح أهمية اللغة العربية وفوائدها بالنسبة للطالب الجامعي (2 ساعة). اللغة، حفظ وتفسير وتحليل أول عشرة آيات من سورة الكهف مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية. (2 ساعة) اللغة، حفظ وتفسير وتحليل ثلاثة آيات من سورة الحجرات مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية.(2 ساعة) الادب، حفظ وتحليل ثلاثة عشر سطراً من قصيدة سفر ايوب في الشعر الحر للشاعر العراقي بدر شاكر السياب مع حياة الشاعر واهم الاوجه البلاغية والنحوية في القصيدة. (2 ساعة) الادب، حفظ وتحليل ثمانية ابيات في الحماس للشاعر ابي الطيب المتنبي مع حياة الشاعر مع اهم الاوجه البلاغية والنحوية في القصيدة.(2 ساعة) قواعد اللغة العربية وأهميتها معرفة اقسام الكلام(الاسم والفعل والحرف)واهم علاماتها. قواعد اللغة العربية :- النكرة والمعرفة، انواع المعارف(العلم) شرح موضوع (اسم العلم والاسم المركب) مع الأمثلة.(2 ساعة) قواعد اللغة العربية، (الضمائر)شرح موضوع(ضمائر الرفع والنصب والجر) مع الامثلة.(2 ساعة) اللغة، حفظ وتفسير وتحليل سورة الاعلى مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية.

	الادب، حفظ وتحليل ثمانية ابيات من قصيدة (كن بلسما) للشاعر (ايليا ابي ماضي)مع حياة الشاعر مع اهم الحالات الاعرابية والبلاغية. (2 ساعة) قواعد اللغة العربية، شرح موضوع (اسماء الاشارة) مع الأمثلة وحالات الاعراب، شرح موضوع (المعرف بالإضافة) مع الأمثلة وحالات الاعراب.(2 ساعة) قواعد اللغة العربية، شرح موضوع (الحال)معرفة الحال وصاحبها وما هي انواع الحال مع الأمثلة وحالات الاعراب.(2 ساعة) الأملاء في اللغة العربية، علامات الترقيم واهميتها في اللغة العربية.(2 ساعة) قواعد اللغة العربية، شرح موضوع (العدد)معرفة تميز العدد وماهي اقسام العدد مع الأمثلة وحالات الاعراب.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	- **المحاضرة والمشاركة.** - **المناقشة والحوار.** - **العصف الذهني.** - **كتابة التقارير عن الموضوع.** - **السؤال والجواب .**

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

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
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**	1	10% (10)	5	LO #1, #2 and #10, #11
	Assignments	1	10% (10)	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 الاسبوعي النظري

	Material Covered
Week 1	توضيح أهمية اللغة العربية وفوائدها بالنسبة للطالب الجامعي. اللغة، حفظ وتفسير وتحليل أول عشرة آيات من سورة الكهف مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية.
Week 2	اللغة، حفظ وتفسير وتحليل ثلاثة آيات من سورة الحجرات مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية.
Week 3	الادب، حفظ وتحليل ثلاثة عشر سطراً من قصيدة سفر ايوب في الشعر الحر للشاعر العراقي بدر شاكر السياب مع حياة الشاعر واهم الاوجه البلاغية والنحوية في القصيدة. الأدب، حفظ وتحليل ثمانية ابيات من قصيدة (ابى الدهر)للشاعر محمود سامي البارودي.
Week 4	الادب، حفظ وتحليل ثمانية ابيات من قصيدة(الحماسة) للشاعر ابي الطيب المتنبي مع حياة الشاعر مع اهم الاوجه البلاغية والنحوية في القصيدة.
Week 5	قواعد اللغة العربية وأهميتها معرفة اقسام الكلام(الاسم والفعل والحرف)واهم علاماتها. النكرة والمعرفة، انواع المعارف(العلم) شرح موضوع (اسم العلم والاسم المركب) مع الأمثلة.
Week 6	قواعد اللغة العربية، شرح موضوع(المبتدأ والخبر) تقديم وتأخير المبتدأ والخبر ، وماهي انواع الخبر.
Week 7	قواعد اللغة العربية، (الضمائر)شرح موضوع(ضمائر الرفع والنصب والجر) مع الامثلة.
Week 8	اللغة، حفظ وتفسير وتحليل سورة الاعلى مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية.
Week 9	الادب، حفظ وتحليل ثمانية ابيات من قصيدة (كن بلسما) للشاعر (ايليا ابي ماضي)مع حياة الشاعر مع اهم الحالات الاعرابية والبلاغية. حفظ وتحليل ثمانية ابيات من قصيدة (ارح ركابك)للشاعر محمد مهدي الجواهري.
Week 10	قواعد اللغة العربية، شرح موضوع (اسماء الاشارة) مع الأمثلة وحالات الاعراب، شرح موضوع (المعرف بالإضافة) مع الأمثلة وحالات الاعراب.
Week 11	قواعد اللغة العربية، شرح موضوع (الحال)معرفة الحال وصاحبها وما هي انواع الحال مع الأمثلة وحالات الاعراب. الأملاء في اللغة العربية، علامات الترقيم واهميتها في اللغة العربية.
Week 12	قواعد اللغة العربية، شرح موضوع (العدد)معرفة تميز العدد وماهي اقسام العدد مع الأمثلة وحالات الاعراب.
Week 13	الأملاء في اللغة العربية، احكام الهمزة(حمزة الوصل، حمزة القطع، كتابة الهمزة في وسط الكلمة).
Week 14	قواعد اللغة العربية، شرح موضوع (كان واخواتها) مع الامثلة وحالات الإعراب. الأملاء في اللغة العربية: احكام كتابة الضاد والظاء
Week 15	قواعد اللغة العربية، شرح موضوع (إن واخواتها) مع الامثلة وحالات الإعراب. الأملاء في اللغة العربية: احكام كتابة التاء المربوطة والمفتوحة والالف الممدودة والمقصورة.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1. القرآن الكريم. 2. كتاب البلاغة والتطبيق. 3. كتاب الأملاء الواضح .	Yes

	4. منهاج اللغة العربية لغير الاختصاص.	
Recommended Texts	1. كتاب شرح ابن عقيل على الفية ابن مالك/ ابن عقيل عبد الله بن عبد الرحمن. 2. كتاب الميسر في اللغة العربية لغير الاختصاص/ الدكتور زياد طارق شولي 3. كتاب الأملاء الواضح/ للدكتور عباس حسن. 4. منهاج اللغة العربية العامة لغير الاختصاص/ عبد القادر حسن امين	Yes
Websites	4- مكتبة المصطفى http://www.al-mostafa.com/index.htm 5- مكتبة مشكاة الإسلام http://www.almeshkat.net/books/index.php 6- الجمعية العلمية للغة العربية http://www.imamu.edu.sa/arabiyah منتديات الكتب المصورة http://pdfbooks.net/vb/login.php	

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.

المستوى الاول: الفصل الثاني

First Level: Second Course

MODULE DESCRIPTION FORM: Integral calculus

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Integral calculus**			**Module Delivery**	
Module Type	**C**			☐ **Theory** ☒ **Lecture** ☐ **ab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	Math1211				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Jamil M. Jamil		**e-mail**	Jamil291078@yahoo.com	
Module Leader's Acad. Title	Assistant Prof.		**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	2/9/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	16. Remember what definite and indefinite integrals are.

	17. Give examples of the Fundamental Theorem of Calculus and the Mean-Value Theorem. 18. Define the general exponential, general logarithmic, natural logarithmic, and natural exponential functions, as well as their derivatives and integrals. 19. Understand and realize some integration method such as substitution method and special substitution method 20. Identify the various integration methods (by parts, trigonometric integrals, partial fractions). 21. Utilize the formulas for computing the area of a plane region, the volume of a solid in revolution, the length of an arc, and the surface area in revolution.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 20. Recall the definition of indefinite and definite integrals. 21. State the Mean – Value Theorem and the Fundamental Theorem of Calculus. 22. Define the natural logarithmic, natural exponential, general exponential, general logarithmic functions, their derivatives and integrals. 23. Recognize the different techniques of integration (by parts, trigonometric integrals, partial fractions). 24. Recall formulas for calculating: Area of a plane region, volume of solid of revolution, Arc length, and the area of a surface of revolution 25. Recognize the different types of indeterminate forms and improper integrals
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Preliminaries AND Review Definite integral, Indefinite integral and the Fundamental Theorem of calculus, integration by substitution. [15 hrs] Exponential and Logarithmic functions, derivative and integrals involving Logarithmic, derivative and integrals involving inverse trigonometric functions. [20 hrs] An overview of integration methods, integration by parts, trigonometric integrals, trigonometric substitution, integrating rational functions by partial fractions. [20 hrs] Revision problem classes [6 hrs] Part B – area and volume Area between two curves [10 hrs] Volumes by slicing: disks and washers. [15 hrs] Volume by cylindrical shells. [17 hrs]

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 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 الاسبوعي النظري

	Material Covered
Week 1	Definite integral
Week 2	Definite integral (solved problems)
Week 3	Indefinite integral and the Fundamental Theorem of calculus
Week 4	Logarithmic Functions Derivative and Integral
Week 5	Exponential function derivative and integral
Week 6	Integral of inverse trigonometric functions
Week 7	Mid-term Exam
Week 8	Integration by substitution and Integration by special substitution
Week 9	Integral of trigonometric functions
Week 10	, The Natural Exponential Function, General Exponential Function , General Logarithmic Function, Hyperbolic Functions, Calculus of Hyperbolic Functions,
Week 11	The Inverse Hyperbolic Functions, Calculus of The Inverse Hyperbolic Functions.
Week 12	Methods of Integration, Integration by Parts, Integration by Partial Fractions.

Week 13	Trigonometric Integrals, Integration by Substitution
Week 14	Integrals Involving the Square of a quadratic Functions, Integration of Rational Functions
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Anton. H, Bivens .I & Davis. S. ,"Calculus ",7th ,2002. Thomas. G. B. & Finney. R. L ,"Calculus and Analytic Geomatry",6th ,1984	Yes
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM: Advanced Topics in Foundation of Mathematics
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Advanced Topics in Foundation of Mathematics**			**Module Delivery**	
Module Type	C			☐ **Theory** ☒ **Llecture** ☐ **lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	Math1212				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Amal mohi al-dean		**e-mail**	amalmuhi@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Lec.		**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2/9/2024		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Introduction to Foundation of Mathematics	**Semester**	1
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- Preparing graduates specializing in mathematics to contribute to the development of the country. 2- . To meet the education sector with highly qualified cadres. 3- Encourage distinguished students to work in the department. 4- Activate research programs. 5- Achieving quality and academic accreditation. Cognitive goals 1- Identify the basic characteristics of the nature of scientific material. 2- To have the ability to link and conclude between materials. 3- Create and organize statistical tables. 4- Developing his analytical capabilities to reach logical solutions to various issues. 5- His ability to evaluate the academic program. The department is interested in graduating cadres specialized in mathematics 2- Preparing outstanding students who are able to complete their postgraduate studies from masters and doctorates, in which the country suffers from a shortage 3- Graduating qualified students to work as research assistants in all scientific institutions in the field of mathematics 4- Preparing specialized cadres to work in the various state institutions, such as teaching in schools and others in the field of mathematics A. Knowledge and Understanding A1 – That the student be able to familiarize himself with the basic concepts and principles of all courses in the Mathematics Department. A 2- That the student be able to know the importance of the branches of mathematics and link them to life reality . A3 - That the student be able to understand the definitions, mathematical facts, and theories related to the vocabulary and courses of the mathematics department. A4- The student learns about the relationship between the curricula of the Mathematics Department. A 5- That the student becomes familiar with the applications of the courses in practical life B. Subject-specific skills B 1- The student acquires the skill of solving mathematical problems of all kinds and forms . B 2- To be able to employ theories in solving mathematical problems, and to have the ability to prove and prove proper mathematical proof . B 3- Develop the student's ability to deal with new and advanced cases and to deal with mathematical problems with all skill and high accuracy.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- The student will do the homework exercises. 2- That the student resolves with self-confidence. 3- That the student is enthusiastic about solving the assignment. 4- That the student is keen to attend the mathematics class. 5- The student is keen not to miss the math class. 6- That the student loves mathematics more than others. 7- The student should not interrupt his colleagues while discussing an issue. 8- That the student participate in the activities of mathematics. 9- That the student seriously discusses in the mathematics class. 10- The student tries to think of solving a mathematical problem.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. A general introduction to Some Algebraic Systems. [10 hrs] The Natural Numbers Introduction, Construction of Natural Numbers, Axiom of Infinity, Peanos Axioms for Natural Numbers, Arithmetic of the Natural Numbers, Ordered on the Set of Natural Numbers, The set of counting number, Mathematical Induction. [10 hrs] The integers numbers . Introduction, Construction of Integers, Arithmetic of the Integers, Order on the Set of Integers, Absolute Value. [5 hrs] The rational numbers Introduction, Construction of Rational Numbers, Arithmetic of the Rational Numbers, Order on the Set on Rational Numbers, Properties of Rational Numbers . [5 hrs] Sequences in ordered fields Sequences, Convergence, Cauchy Sequences, Cut, Positive Sequence. [5 hrs] The Real Numbers Introduction, Construction of Real Numbers, Arithmetic of the Real Numbers, Order on the Set on Real Numbers, The Completeness, Properties of Real Numbers. [10 hrs] The Complex Numbers Introduction, Construction of Complex Numbers, Arithmetic of the Complex Numbers, Order on the Set on Complex Numbers, Geometric Representation of Complex. [10 hrs] Introduction to Numbers Theory Divisibility, Greatest Common Divisor, Prime Numbers and the Distribution of Them , The Fundamental Theorem of Arithmetic, Perfect numbers, Congruence. [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• After studying this course - the student - God willing - will be able to find solutions to many types of mathematics topics such as the foundations of mathematics . Understand the basic principles of mathematical logic. • Understand the basic principles in groups. • Using the basics of the foundations of mathematics. Preparing the student to absorb advanced materials

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 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**	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Binary Operations, Mathematical Systems.
Week 2	Groups, Rings, Fields.
Week 3	Introduction, Construction of Natural Numbers, Axiom of Infinity, Peanos Axioms for Natural Numbers.
Week 4	Arithmetic of the Natural Numbers, Ordered on the Set of Natural Numbers, The set of counting number, Mathematical Induction.
Week 5	Introduction, Construction of Integers, Arithmetic of the Integers., Order on the Set of Integers, Absolute Value.
Week 6	Introduction, Construction of Rational Numbers, Arithmetic of the Rational Numbers, Order on the Set on Rational Numbers, Properties of Rational Numbers.
Week 7	Mid-term Exam
Week 8	Sequences, Convergence, Cauchy Sequences, Cut, Positive Sequence.
Week 9	Introduction, Construction of Real Numbers, Arithmetic of the Real Numbers.
Week 10	Order on the Set on Real Numbers, The Completeness, Properties of Real Numbers.

Week 11	Introduction, Construction of Complex Numbers, Arithmetic of the Complex Numbers, Order on the Set on Complex Numbers, Geometric Representation of Complex Numbers.
Week 12	Modulus of Complex Number, Polar Representation of Complex Numbers, Roots of Complex Numbers.
Week 13	Divisibility, Greatest Common Divisor, Prime Numbers and the Distribution of Them .
Week 14	The Fundamental Theorem of Arithmetic, Perfect numbers, Congruence
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	• "أسس الرياضيات", نوري فرحان المياحي, الطبعة الأولى, 2019 • Frank A., "Modern Algebra", Schaum's Outline Series 1965. • Wildal R., "Introduction to the Foundation of Mathematics", New York 1965.	
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM: Introduction of Linear Algebra
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Introduction of Linear Algebra**	**Module Delivery**	
Module Type	B	☐ **Theory** ☒ **Lecture** ☐ **ab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	Math1213		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Hamza Barakat Habib	**e-mail**	Hamza.alsaadi@uodiyala.edu.iq
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**	M.Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	2/9/2024	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Finite Mathematics	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	22. The ability to have the knowledge of the basic algebraic operations of the Vectors and their properties. 23. The ability to prove the algebraic statements about vector addition, scalar multiplication, inner products, projections. 24. The ability to represent the vectors geometrically and calculating their lengths and directions 25. The ability to find the vectors components from their known lengths and directions. 26. Finding the areas of triangles and parallelograms from the given vectors.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 26. Demonstrate knowledge of the underlying concepts and principles associated with linear algebra.

	27. Demonstrate an understanding of symbolic logic, basic properties of vectors. 28. Representing the vectors geometrically. 29. Demonstrate the capability to make sound judgments in accordance with the basic theories, concepts, and applications in linear algebra, whilst demonstrating a reasonable level of skill in calculation and manipulation of the material. 30. Apply the underlying concepts and principles associated with linear algebra in several well-defined contexts, showing an ability to evaluate the appropriateness of different approaches to solving problems in this area. 31. Applying the theory of vectors in finding the areas of some Trigonometric shapes, such as, triangles and parallelograms.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Introduction to Vectors</u> A general introduction to vectors, the definition of the vector and the basic algebraic operations of the vectors, such as, the addition, subtraction of the vectors. <u>Vectors Multiplications</u> Introducing the dot product and the cross product of the vectors along with the basic theorems and properties. <u>Finding the vectors components from their known lengths and directions.</u> The vector's component can be found if its length and direction is given. Also, representing the result vector geometrically. The resulting vectors can be added geometrically.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Provides an overview of current research on the nature of difficulties and students' thought processes in the context of learning linear algebra • Discusses the use of technology in teaching and learning linear algebra • Offers practical advice on how to improve student engagement in linear algebra courses

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 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**	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	An Introduction to vectors, Definitions and examples
Week 2	The direction of vectors.
Week 3	Unit Vectors and representing vectors in Terms of Unit vectors.
Week 4	Algebraic Operations on Vectors: Addition Properties.
Week 5	Algebraic Operations on Vectors: Multiplication by a Scalar Properties
Week 6	Some Theorems regarding the angles among the Vectors.
Week 7	Mid-term Exam
Week 8	The Dot product, Theorems and examples.
Week 9	The Properties of the Dot Product.
Week 10	The Scalar Projection and the Vector Projection.
Week 11	Finding the vectors from length and direction.
Week 12	Orthogonal and Parallel vectors.
Week 13	The Cross Product, Theorems and examples.
Week 14	The Properties of the Cross Product, Finding the area of a Parallelogram and Triangle.
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• M.L. Lial, R.N. Greenwell, N.P. Ritchey (2015). Finite Mathematics, 11th edition. London: Pearson.	

	• Hefferon, J. (2020). Linear algebra forth edition.	
Recommended Texts		No
Websites		

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

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MODULE DESCRIPTION FORM: Computer\Office Applications
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Computer\Office Applications**	**Module Delivery**	
Module Type	**B**	☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Math1204**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		

Module Level	1	**Semester of Delivery**	2
Administering Department		**College**	Type College Code
Module Leader	Firas Ali Mohammed	**e-mail**	firas@uodiyala.ud.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	M Sc.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	2024/9/2	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Introduction to computer science	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	Module objectives for a Microsoft Office 2010course typically outline the specific knowledge and skills that students are expected to acquire upon completion of the course. Here are some common module objectives for a Numerical Analysis course: 9. Learn and understand some basic terms and concepts of computer science. 10. Knowledge of the historical development and life cycle of the computer industry and its areas of use

	11. Identify the basic components of a computer and distinguish between them and the method of the actor among them. 12. Learn the concepts of security and confidentiality of information, software licensing agreements, and methods of preserving data and information 13. Understanding what operating systems are and what are their advantages, especially the operating system (Windows 7) and the ability to use it easily. 14. Learn about the people of the features and characteristics of applied software such as (Microsoft Office Word 2010 and Microsoft Office PowerPoint 2010). 15. The student acquires the ability and skill to use the program (Word 2010 and PowerPoint 2010) and benefit from them in carrying out the required scientific tasks as well as practical life with ease. 16. Increasing students' understanding and awareness that learning the computer curriculum and information technology techniques is a science in itself and is the basis for scientific development and progress in the world.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Module Learning Outcomes for a Microsoft Office 2010 course may vary depending on the specific curriculum and educational institution. However, here are some common learning outcomes that are typically associated with a Numerical Analysis course: 5. Efficiency and skill in using the computer and how to deal with its basic components. 6. The ability to enter data, methods of saving and retrieving it, and protecting it from theft and hacking. 7. Acquire new skills and different methods in Word 2010 applications, PowerPoint 2010 Microsoft Office. 8. The possibility of using a computer to process data, obtain information, and solve many problems.
Indicative Contents المحتويات الإرشادية	" Microsoft Office 2010" Application software aims to provide services to the user in performing tasks through the use of a computer, such as (Microsoft Office), which is an office package that includes many application programs, where word processing programs appeared. (Word Processor) as an application program used for editing texts, formatting and printing texts as an application (Microsoft Word 2010), which is one of the programs dedicated to word processing and entering words in electronic form on virtual documents (pages), then processing and outputting them in the required form according to the user's need with the ability to print them on paper, either.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies

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

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3

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

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	2 and 7	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 10	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 الاسبوعي النظري

	Material Covered
Week 1	Introduction to Microsoft Word 2010
Week 2	Operating program Microsoft Word 2010
Week 3	Microsoft Word 2010 interface tabs
Week 4	Microsoft Word 2010 program tabs
Week 5	Inserting objects into Microsoft Word 2010
Week 6	Microsoft Extra Tasks 2010
Week 7	Additional tasks for Microsoft Word 2010
Week 8	Introduction to Microsoft PowerPoint 2010
Week 9	Operating program Microsoft PowerPoint 2010
Week 10	Microsoft PowerPoint 2010 interface tabs
Week 11	Microsoft PowerPoint 2010 program tabs
Week 12	Inserting objects and adding animations in Microsoft PowerPoint 2010
Week 13	Insert objects in Microsoft PowerPoint 2010
Week 14	Presentation Views
Week 15	Add animations in Microsoft PowerPoint 2010
Week 16	**FINAL EXAMS**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Run Microsoft Word 2010

Week 2	File tab - Home tab
Week 3	Page layout tab -View tab
Week 4	Insert tab
Week 5	Table Tools tabs - Design and Layout
Week 6	Image Tools tabs
Week 7	References tab - Correspondence tabs - Revision tabs
Week 8	Run Microsoft PowerPoint 2010
Week 9	File tab - Home tab
Week 10	Design tab
Week 11	Slides show tab
Week 12	View tab
Week 13	Add and format AutoShapes - Insert tab
Week 14	Transitions tab
Week 15	Animations Tab
Week 16	**FINAL EXAMS**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1.computer basics and office applications, part two Written by: Prof. Dr. Ziyad Tariq Muhammad Abboud, Prof. Dr. Ghassan Hamid Abdel Majeed, Dr. Mustafa Diaa Al-Hasani, 2016, Curriculum of the Ministry of Higher Education and Scientific Research - Department of Research and Development .	Yes
Recommended Texts	1. LeBlanc, Brandon." A closer look at the Windows 7 SUKs". Windows Team Blog. Microsoft, 2009. 2. Computer Literacy BISICS: A Comprehensive Guide to IC3 by Connie Morrison and Dolores Wells (2012). 3. John W. Jacobs, Introduction to Microsoft Word 2010 Technology Center. 2010. 4. Michael Miller "Computer Basics Absolute Beginner's Guide, Windows® 10 Edition, Copyright © 2020 by Pearson Education.	Yes
Websites	1. MS- Word 2010 Advanced : part 1. Templates, Forms and styles. http://book boon.com/. 2. . MS- PowerPoint 2010 Advanced : part 1. Templates, Forms and styles. http://book boon.com/	yes

Grading Scheme
مخطط الدرجات

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MODULE DESCRIPTION FORM: General Mechanics
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**General Mechanics**			**Module Delivery**	
Module Type	**B**			☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	COS1102				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Mathematics		**College**	Science	
Module Leader	Maher Nadher Abdullah		**e-mail**	maherm@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	x		**e-mail**	X	
Peer Reviewer Name	x		**e-mail**	X	
Scientific Committee Approval Date	2024/9/2		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The course aims to develop the student's ability to understand and apply a number of issues based on basic mechanical principles, and to provide the student with the ability to interpret some environmental phenomena related to movement and their applications, and to build the basic basis for understanding the subsequent courses.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of the course the student is expected to be able to: 1. Dealing with systems of physical units, distinguishing between physical quantities, and vector analysis and its applications. 2. The use of linear motion relations, Newton's laws of motion, work-energy theory and its transformations in various applications. 3. Determine the center of mass of a system of bodies and calculate its velocity and acceleration. 4. Distinguish between types of collisions. 5. Distinguish between linear, circular and rotational motions, and between the moment of inertia and the moment of coupling. 6. Applying the laws of conservation of energy and the quantities of linear and angular motion. 7. Distinguishing between the moment of inertia and the moment of coupling, and calculating the moment of inertia of solid bodies containing common shapes. 8. Determine the center of gravity and achieve the conditions of static balance. 9. Use the law of general gravitation on motion near the Earth's surface and on planetary motion.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Vectors. Directed line segment. Opposite vector and null vector. Vector addition and its properties. Vector subtraction. Scalar multiplication of a vector and its properties. Scalar products between two vectors and its properties. Particle Kinematics. Point particle. Reference frames and Cartesian coordinate triads. Short history of the time unit. The Static Force. Dynamometer. The vector nature of a force. Force units in International System of Units. Weight-force. Calibration of a Dynamometer. Particle Dynamics. Dynamics and its principles. Frame of reference. Particle subject to null net force. Work and energy. Elementary work. Exact differentials and differential forms. Line integral of a vector field. Work done by a force on a point particle moving on a curve. Examples of work calculation. Dynamics of particle systems and of rigid bodies. Action-reaction law. Resultant and resultant moment of internal forces. Closed systems.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Follow the method of discussion, dialogue and brainstorming. 2. Starting the lecture by raising questions from the student's environment about some of the phenomena surrounding the student related to the topic of the lecture. 3. Using the appropriate technical means and educational technology, such as: the overhead projector, Power Point, and computer simulations.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem)	36	**Unstructured SWL (h/w)**	3

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

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	2 and 7	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 10	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 الاسبوعي النظري

	Material Covered
Week 1	Introducing the course physical quantities. Elementary and Non-Primary Quantities - Standard Quantities - Units. Vectors: general properties of vectors - scalar product - cross product - unit vector - decomposition of vectors into components.
Week 2	Motion in a Straight Line: Motion in One Dimension - Newton's Relations for Constant Acceleration .
Week 3	Movement in two dimensions - projectiles - movement in a circular path at a constant speed.
Week 4	Newton's Laws: Description of the laws of motion (Newton's) - static friction - and kinetic friction
Week 5	Central force - types of forces in nature - applications of the laws of motion (Newton).

Week 6	Work and energy: kinetic energy-work-work-energy theory, work resulting from motion in one direction and with a constant force- work resulting from a variable force.
Week 7	Exercises and discussion
Week 8	Conservative forces - Work resulting from conservative forces - Non-conservative forces Potential energy and equilibrium in one dimension - Conservation of mechanical energy
Week 9	MID TERMS
Week 10	Linear momentum and collisions: center of mass - motion of the center of mass - Newton's second law for a system of particles
Week 11	Linear momentum of a system of particles- Conservation of linear momentum- Collisions- Push and linear momentum- Elastic and inelastic collisions in one and two dimensions.
Week 12	Rotation of rigid bodies and angular momentum: transition and rotation - rotational variables - rotation with constant angular acceleration - the relationship between linear and angular variables
Week 13	Rotational kinetic energy - calculation of the torque of rotational inertia - torque - Newton's second law of rotation - rolling - angular momentum - conservation of angular momentum - quantization of angular momentum.
Week 14	Static equilibrium: static equilibrium conditions - center of gravity - applications - static equilibrium in an accelerating framework - stable rotational equilibrium.
Week 15	The law of universal gravitation: the two shell theories - the principle of superposition - gravitational potential energy - escape velocity - classification of orbits relative to energy.
Week 16	**FINAL EXAMS**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab1:.
Week 2	Lab2:
Week 3	Lab3:
Week 4	Lab4:
Week 5	Lab5:
Week 6	Lab:6:
Week 7	Lab 7:
Week 8	Lab 8:
Week 9	MID TERMS
Week 16	**FINAL EXAMS**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. *Physics for Scientists and Engineers* with. Modern Physics, Ninth Edition. Raymond A. *Serway* and John W. Jewett, Jr. Publisher, Physical Sciences	Yes
Recommended Texts	1. General Physics: Mechanics and Molecular Physics. By L D Landau · 2013 2. General Physics - Volume 2. Douglas C. Giancoli · 1984 ·	yes
Websites	https://books.google.iq/books?id=JZCOzQEACAAJ&dq=general+physics&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwjr6eHNv7T_AhVER_EDHcL3B5cQ6AF6BAgDEAI	yes

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: English Language
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	**UOD1103**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Fatima M. ABOUD		**e-mail**	Fatima.Aboud@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**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	2/9/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	• The main objectives of the syllabus are: • to provide material for the students to learn pronunciation of the English sounds, to learn to read, write, and to know the fundamentals of English grammar and vocabulary;

	• to develop the students' reading skills to enable them to skim an adapted text for main idea, to scan an adapted text for specific information, to interpret an adapted text for inferences; • to develop the students' writing skills to enable them to respond to input applying information to a specified task, to elicit, to select, to summarize information in essays (140-160 words); • to develop the students' listening skills to enable them to understand and apply specific information from the input (within the framework of Breakthrough level); • to develop the students' speaking skills to enable them to use general, social and professional language (within the framework of Breakthrough level); • to develop the students' general capacity to a level that enables them to use English in their professional and academic environment (within the framework of Breakthrough level). •
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Speak English, to some extent, with confidence. • Use and practice the language in different social situations. • Get better reading comprehension skills to improve their reading abilities to read clearly and carefully. • Master the given rules of grammar. • Do written tasks free from grammatical mistakes. • Achieve noticeable progress in the 4 English language skills. • Use and function the English language skills with more confidence. • Prioritize the first 2 skills while learning the language.
Indicative Contents المحتويات الإرشادية	• English language overlaps computer science discipline as it is the lingua franca for computing. Within the same line of thought, most computer science terminology is loaned from the English language. On account of technical restrictions of computer and limitations of International criteria on the Internet, internet users and software engineers along with analysts programmers, not least Computer Science students, and their instructors are required to fully use English keywords when using the network, coding and analyzing a computer program and so forth.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Assessment is by coursework (10%), which integrates the following: • Individual and group oral presentations

	• Oral interactions (including pair work) • Written tests and tasks of various length (memoranda, notes) • Essays • Listening/ viewing • Communicating the gist of simple reading passages • Translation of simple texts on economics.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	28	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
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 #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1			
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (20)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	introduction to the course Planning a conference

Week 2	Spoken reception, Written reception
Week 3	Spoken production, Written production
Week 4	Spoken interaction, Written interaction
Week 5	Mediating a text
Week 6	Lleading group wor
Week 7	Building on plurilingual repertoire
Week 8	Mid exam
Week 9	Sociolinguistic appropriateness
Week 10	Spoken Reception - Watching TV, film and video
Week 11	Written Reception - Reading correspondence
Week 12	Written Reception - Reading for information and argument
Week 13	Written Reception - Reading as a leisure activity
Week 14	Spoken Production - Public announcements
Week 15	Written Production - Written reports and essays
Week 16	Online Interaction - Online conversation and discussion

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	М.А. Шевелева. English on Economics. М., 1998. Cotton D., Falvey D., Kent S. Market Leader. Intermediate Business English. Longman, 2001. .	Yes
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.

Second Level

MODULE DESCRIPTION FORM: Ordinary Differential Equations

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Ordinary Differential Equations**			**Module Delivery**	
Module Type	C			☐ **Theory** ☒ **Lecture** ☐ **lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	Math2112				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Mathematics		**College**	Science	
Module Leader	Dr. Ahmed Murshed Kareem		**e-mail**	ahmedmorshed@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	23/9/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The main purpose for this course to introduce the following concepts: 27. Study methods of solving first-order and first-degree linear ordinary differential equations. 28. Study methods of solving homogeneous higher-order ordinary differential equations. 29. Study of methods for solving Linear Differential Equations of the Second Order with Constant Coefficients.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After the end of the semester, the student will be able to 1- The student will have the ability to distinguish between linear and nonlinear differential equations. 2-The student can solve first-order and first-degree differential equations in several different ways. 3- The student can solve second-order linear differential equations with homogeneous and non-homogeneous constant coefficients.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. The course will provide students with the basic concepts of ordinary differential equations, for example, knowing the order and degree of a differential equation, as well as knowing whether the equation is linear or nonlinear. Through this course, the student will learn about various methods for solving homogeneous and non-homogeneous ordinary differential equations.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Motivate students to participate in the lecture by giving marks to the student who participates in solving the homework on the board. 2. Daily surprise tests and monthly exams 3. Encourage students to consult some of the modern sources related to the subject of ordinary differential equations.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	???	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	???
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 #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	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	- **Introduction**
Week 2	The Order and Degree of an Ordinary Differential Equations.
Week 3	Solution of the Ordinary Differential Equations(General Solution and Partical Solution).
Week 4	Finding the Differential Equations From the general solution
Week 5	First Order Differential Equations of the First Degree.
Week 6	Equations with variable Separable.
Week 7	Equations that lead to separable Equations.
Week 8	Homogeneous Equations.
Week 9	Equations that Lead to Homogeneous Equations.
Week 10	Exact Differential Equations.
Week 11	Equations that Lead to Exact Differential Equations By using the Integrating Factor.
Week 12	Linear Differential Equations.
Week 13	Bernoulli's Equation.
Week 14	Differential Equations of first order and Higher Degree.
Week 15	Linear Differential Equations of the Second Order with Constant Coefficients
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	None
Week 2	None

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Chicone, C. C. (2006). *Ordinary differential equations with applications* (Vol. 34). New York: Springer.	Available online
Recommended Texts	2 – طرق حل المعادلات التفاضلية :تأليف دكتور خالد احمد السامرائي	Yes
Websites	https://www.google.com/search?q=ordinary+differential+equations+pdf+notes&sca_esv	

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: Advanced Calculus
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Advanced Calculus**			**Module Delivery**	
Module Type				☐ **Theory** ☒ **Lecture** ☐ **lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)	150				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Mathematics		**College**	Science	
Module Leader	Dr. Hadeel Omar Muslim		**e-mail**	hadeel.o.alkhaled@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	25/9/2024		**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The main objective of the course is to expand many of the basic concepts that the student studied in the previous stage and to give them the ability to find derivatives and partial derivatives of functions in more than one variable and to help them identify sequences of all types and how to deal with them and know their convergence. It also helps students to identify vector functions in three-dimensional space and double integrals and apply
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After the end of the semester, the student will be able to 1- Using the course textbooks. 2-Solving problems related to the scientific material. 3-Writing scientific reports and analyzing data. 3-Proficiency in communicating mathematical ideas clearly and logically, orally and in writing.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1-Thinking and observation skills. 2-Inference, evaluation and analysis skills. 3-Providing students with the basics and additional topics related to thinking outcomes to analyze advanced differential and integral calculus. 4-Asking students a set of thinking questions to form discussion groups during the lecture. 5-Giving students homework to develop thinking and analysis skills.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	4. Motivate students to participate in the lecture by giving marks to the student who participates in solving the homework on the board. 5. Daily surprise tests and monthly exams 6. Encourage students to consult some of the modern sources related to the subject of Calculus.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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 #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	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction**
Week 2	Sequences, the real sequence, the convergent sequence.
Week 3	Cauchy sequence, Monotonic and Bounded sequences.
Week 4	Infinite Convergence, Infinite Series, Geometric Series.
Week 5	Harmonic Series, Converging Test, Alternations Series, Absolute Convergence.
Week 6	Rearrangements of series, Product Infinites Series.
Week 7	Power Series, Calculus of Power Series,
Week 8	Taylors and Maclorian Series with Applications.
Week 9	Vectors Functions, Acceleration and Arc Length.
Week 10	Curvature, The Laws of Planctary Motion.
Week 11	Multiple variables Functions, Limits and Continuity.
Week 12	Partial Derivatives, Increments and defferentials of functions of several variables.
Week 13	Chain Rule, the derivative and the Gradient.
Week 14	Tangent and orthogonal planes on the surface.
Week 15	Extreme of a Functions of two variables.

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	None
Week 2	None

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1-Anton. H, Bivens. I& Davis. S.,"Calculus", 7th, 2002. 2-Craw I."Advanced Calculus and analysis MA1002", 2000. 3- Thomas. G.B.&Finney.R.L, "Calculus and Analytic Geomatry", 6th, 1984. 4-Thomas. G. B.,"Calculus and Analytic Geomatry", 4th, 1968.	Yes
Recommended Texts	1- Dovermann. K.H., "Applied Calculus" math215,1999. 2- Durfee. W.HB.,"Calculus and Analytic Geomatry", 1971.	Yes
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	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: Advance linear algebra and its application

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Advance linear algebra and its application**			**Module Delivery**	
Module Type				☐ **Theory** ☒ **Lecture** ☐ **lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	mathematics		**College**	Science	
Module Leader	Israa najm abood		**e-mail**	**israanajim@uodiyala.edu.iq**	
Module Leader's Acad. Title	Assistant lecturer		**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/10/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The main purpose for this course to introduce the following concepts: 1-ان يكون الطالب قادر على تعريف كل من المفاهيم التالية القيم الذاتية والمتجهات الذاتية , والفضاء الاقليدي والاساسات المعيارية ومبرهنة كالي هاملتون و متراجحة كوشي شوار والمتراجحة المثلثية و عمليات كرام شمت 2-ان يكون الطالب قادر على تطبيق الجبر الخطي في مجال البرجمة الخطية والصيغ التربيعية ونظرية البيانات 3-ان يكون الطالب قادر على توظيف القيم الذاتية والمتجهات الذاتية في مجال البرمجة
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	اكتساب الطالب المهارات الخاصة في حل المسائل الخاصة في حل اللمسائل الخاصة بالمصفوفات والنظم الخطية
Indicative Contents المحتويات الإرشادية	Indicative content includes the following.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	طريقة القاء المحاضرة والمناقشة مع الطلبة اثناء المحاضرة واستخدام طريقة التغذية الراجعة

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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 #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	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Eigenvalues, Eigenvectors and its Applications
Week 2	Complex Eigenvalues , Cayley-Hamilton Theorem
Week 3	Applications of Eigenvalues and Eigenvectors , Positive Definite Matrices, Positive Semi Definite Matrices
Week 4	Negative Definite Matrices, Negative Semi Definite Matrices
Week 5	Some Applications in Genetics
Week 6	Exam 1
Week 7	Autosomal Recessive Diseases
Week 8	Inner product space
Week 9	Caushy – Schwarz inequality , Triangle inequality , orthonormal basis
Week 10	orthonormal basis
Week 11	Gram-schmidt process with examples
Week 12	Some application of linear algebra : linear programming
Week 13	Quadratic forms
Week 14	Graph theory
Week 15	Exam 2

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	None
Week 2	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Elementary linear algebra with supplemental applications Howard Anton and Chris Rorres , 10th edition	
Recommended Texts	Linear algebra and its application Dived C.lay , steven C.lay and Judi J.Macdonald	
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: Physics (Mathematical Physics)

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Physics (Mathematical Physics)**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	1	
Administering Department	mathematics		**College**	Science	
Module Leader	Maher Nadher Abdullah		**e-mail**	maherm@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Prof. Dr.		**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/10/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course aims to develop the student's abilities to understand and comprehend the phenomena of Mathematical Physics, and to benefit from these concepts in explaining the Vector Analysis, and to Newton 's Laws of Motion for understanding the subsequent related courses. This course presents the basic concepts of the principles of Harmonic Oscillators in general, and focuses on methods for Simple Pendulum Movement, calculating the dynamic of Coordination System, building and analyzing Radiation Decay, and calculating the Electrical Circuit Analysis
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completing this course, the student is expected to be able to: 1 Definition of vector, definition of axes and their types, addition, subtraction, multiplication and division of vectors, scalar triple multiplication and vector triple multiplication. 2- Derivative of vectors, vector gradient, vector divergence, vector convolution, vector integration, some applications of vector analysis, solving problems and examples of vector operations. 3- Define Newton's three laws, work, energy, torque, momentum, power, conservation laws. 4- Define Harmonic Oscillators, Basic principles, differential equation of motion, solution of equation, initial conditions of motion, some applied examples. 5- Definition Simple pendulum motion, objective of this topic, differential equation that describes the motion, and solution of the equation based on initial conditions of motion. 6- Description reference axes motion of Cartesian, polar and cylindrical axes, meaning of reference axes motion, displacement, real and apparent velocity, real and apparent acceleration in the concept of reference axes motion. 7- Define centripetal acceleration, Coriolis acceleration and acceleration of moving axes, with applied examples. 8- Describe Radioactive decay and this decay mathematically through the differential equation and solve this equation. 9- Description of electrical circuits, how to express their terms mathematically, the mathematical representation of these circuits, and how to solve these equations.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Vector analysis is a mathematical shorthand. The vector form helps to provide a clearer understanding of the physical laws. This makes the calculus of the vector functions the natural instrument for the physicist and engineers in solid mechanics, electromagnetism, and so on. Vector algebra is introduced early in the text. The unit deals with vector functions and extends the differential calculus to these vector functions. 1.Vector Product (Cross Product) General Properties of Vector Product. Typical Applications of Vector Product. 2. Vector Product (Cross Product) General Properties of Vector Product Typical Applications of Vector Product Gradient Divergence General Properties of Divergence Physical Interpretation of Divergence Curl General Properties: Physical Interpretation: Coordinate Systems Coordinate systems is an artificial mathematical tool that used to describe the position of an object in space. There are three coordinate systems: 1. One dimension coordinate system (1D). 2. Two-dimension coordinate system (2D). 3. Three-dimension coordinate system (3D). Cylindrical coordinates can be thought of as an extension of the polar coordinates. We keep the same Cartesian coordinate z to indicate the height above the x-y plane, however, in spherical coordinates, a point P is described by the radius, r, the polar angle, and the azimuthal angle. -Velocity and Acceleration in Plane Polar Coordinates

	Let the polar coordinates r, □ to express the position of a particle moving in a plane. -Velocity and Acceleration in Cylindrical Coordinates In the case of three-dimensional motion, the position of a particle can be described in cylindrical coordinates -Velocity and Acceleration in Spherical Coordinates. The periodic motion Simple Harmonic Motion (SHM) This motion is described as simple harmonic motion where the displacement x is described by the periodic function as follow, $x = A\cos(\omega t + \delta)$ **The periodic time** The periodic time is defined as the time required for the particle to go through one cycle 2p of its motion. Mass attached to a spring When a mass m is attached to a spring, the mass is free to move on a horizontal frictionless surface with simple harmonic motion. To prove that we need to know about the restoring force of the spring. **Total energy of the simple harmonic motion** The total mechanical energy of the mass-spring system is the sum of the kinetic energy and the potential energy $E = K + U$ **The simple pendulum** The simple pendulum consists of a point mass *m* suspended by a light string of length *l*. We should prove that the simple pendulum exhibits a simple harmonic motion. **The torsional pendulum** a typical torsional pendulum. It obeys Hooke's law when the body is twisted through some angle q, the twisted wire exerts a restoring torque on the body proportional to the angular displacement. **Radioactive decay (also known as radioactivity, radioactive disintegration or nuclear disintegration) is the random process in which a nucleus loses energy by emitting radiation.** **Law of radioactive decay:** **Unstable nuclei decay spontaneously and randomly, this process doesn't occur quickly, if it was done quickly, there were no radioactive elements heavier than lead on the earth's surface.** **The half-life($t_{½}$):** **The time required for the activity of any radionuclide to decrease to one-half of its initial value. Range from microseconds to billions of years.** **Electrical Circuits** In its simplest form, this consists of an *electric source*, a *load* and *connecting wires*. *Electric source* provides energy to the circuit in the form of electricity. *Load* consumes the energy generated by the source and converts it into other forms such as heat, magnetic, or chemical energy. The *connecting wires* serves as the transmission medium between the source and the load. The resistance of the load generally accounts for a major part of the total circuit resistance, therefore most of the available *source emf* is applied across the load while a fraction part is *dropped* in the connecting wires and other equipments used in the system. Load resistance may be connected in two fundamental ways: *series circuits* and *parallel circuits*.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Follow the method of discussion, dialogue and brainstorming. 2. Starting the lecture by raising questions from the student's environment about some of the phenomena surrounding the student related to the topic of the lecture. 3. Using the appropriate technical means and educational technology, such as: the overhead projector, Power Point, and computer simulations.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	2 and 7	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 10	LO #3, #4 and #6, #7
	Projects	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 الاسبوعي النظري

	Material Covered
Week 1	Vector analysis, Scalar Product (dot product) of two vectors, General Properties of Scalar Product, Typical Applications of Scalar Product, Vector product of two vectors, General Properties of Vector Product, Typical Applications of Vector Product
Week 2	Scalar Triple Product, General Properties of Scalar Triple Product:, Geometrical Interpretation of Scalar Triple Product, Vector Triple Product, gradient, General Properties, Geometrical Interpretation of gradient

Week 3	Directional Derivate, Physical Interpretation:, Self Learning Exercise, Divergence, General Properties of Divergence, Physical Interpretation of Divergence:
Week 4	Curl, General Properties, Physical Interpretation, Self Learning Exercise, Summary, Glossary, Exercise
Week 5	Coordinate Systems, Introduction Coordinate systems, (1D) Coordinate system, 2D Coordinate systems, 3D Coordinate systems, Cylindrical coordinates, spherical coordinates
Week 6	Velocity and Acceleration in Plane Polar Coordinates, Velocity and Acceleration in Cylindrical Coordinates, Velocity and Acceleration in Spherical Coordinates
Week 7	Exercises and discussion
Week 8	Periodic Motion, Simple Harmonic Motion (SHM,, The periodic time, The frequency of the motion, The angular frequency, The velocity and acceleration of the periodic motion, The maximum velocity and the maximum acceleration
Week 9	MID TERMS
Week 10	The amplitude of motion from the initial condition, Mass attached to a spring, Total energy of the simple harmonic motion, The simple pendulum
Week 11	The torsional pendulum, Representing the simple harmonic motion with the circular motion, Question with solution, Problems
Week 12	Radioactive decay, Activity, Becquerel, Curie, Law of radioactive decay.
Week 13	The activity A(t), The half-life(t½), Mean or average life (Ţ), Specific activity (SA)
Week 14	Introduction – Electrical Circuits, **[1] Series Circuits [2] Parallel Circuits I. DC Network Laws and Theorems [1] Ohm's Law [2] Total resistance in series circuit [3] Total resistance in parallel circuit**
Week 15	**[4] Kirchhoff's Laws [5] Voltage and Current Divider Principles [6] Thevenin's and Norton's Theorem [7] Mesh Analysis [8] Superposition**
Week 16	**FINAL EXAMS**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Theory and problems of theoretical mechanics. "Schum's Outline Series", by Murray R. Spiegel, McGraw Hill Book Company. 2. Mathematical Methods for Physics, Sixth edition, George B. Arfken , Hans J. Weber 3. Advanced Engineering mathematics, 7th Edition, PETER V. O'NEIL, The University of Alabama at Birmingham.	Yes

Recommended Texts	1. Physics for Scientist and Engineers by Serway 2. Physics by Tippler	yes
Websites	https://books.google.com/books?id=XaAlAQAAQBAJ&printsec=frontcover&dq=electricity&hl=en&newbks=1&newbks_redir=1&sa=X&ved=2ahUKEwjz9Z-f1bT_AhWvSPEDHX5oCPMQ6AF6BAgGEAI	yes

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.

Third Stage

(COURSES System)

Course Description Form of (Number Theory)

1. Course Name:
Number Theory
2. Course Code:
3. Semester / Year:
1st Session/ Third
4. Description Preparation Date:
01/05/2024
5. Available Attendance Forms:
Weekly– compulsory
6. Number of Credit Hours (Total) / Number of Units (Total)
90 hours
7. Course administrator's name (mention all, if more than one name)
Name: Assist. Prof. Hamza B. Habib Email:
8. Course Objectives

Course Objectives	• Students get knowledge of basic mathematics principles • Students get the skills that enable them to teach mathematics. • Practice different types of mathematical proofs.
9. Teaching and Learning Strategies	
Strategy	Delivering and lecturing strategy with discussion and problem solving.
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Number Theory	An introduction to Number Theory and its applications	Whiteboard with the head projector	Quizzes and homework, addition to midsession and

					final exams
2	=	=	Some Basic theorems and propositions	=	=
3	=	=	Prime numbers	=	=
4	=	=	The Greatest Common Divisor with basic theorems, gcd	=	=
5	=	=	The Fundamental Theorem of Arithmetic	=	=
6	=	=	The Division Algorithm Theorem with examples	=	=
7	=	=	The gcd theorem with examples	=	=
8	=	=	The Extension of Euclidian algorithm to find the gcd	=	=
9	=	=	The Congruence with some bas theorems	=	=
10	=	=	Linear congruences	=	=
11	=	=	Chinese Remainder Theorem	=	=
12	=	=	Euler's phi function	=	=
13	=	=	Euler's Theorem	=	=
14	=	=	Fermat's Little Theorem	=	=
15	=	=	Continued Fractions	=	=

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Elementary Number Theory and Applications
Main references (sources)	Elementary Number Theory and Applications
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form of (Real Analysis)

1. Course Name:
Real Analysis/ First and Second courses
2. Course Code:
3. Semester / Year:
course one and Two 2023-2024
4. Description Preparation Date:
5/5/2024
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
3
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Lieth A Majed Email: liethen84@yahoo.com
8. Course Objectives

Course Objectives	**Developing his analytical capabilities to reach logical solutions** **Identify the basic characteristics of mathematical analysis** **Develop logical thinking**
9. Teaching and Learning Strategies	
Strategy	Lectures Presentations Conducting oral and written examinations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	6	Definitions	Real numbers	Board	Class exam, assignment
2	6	Bounded above	Bounded set	Board	Class exam, assignment
3	6	Proof	Density of rational number	Board	Class exam, assignment
4	6	properties	Density of irrational number	Board	Class exam, assignment
5	6	Examples	Cut set	Board	Class exam, assignment
6	6	Examples	Finite and infinite set	Board	Class exam, assignment
7	6	Theorems	Countable set	Board	Class exam, assignment
8	6	Definitions	Uncountable set	Board	Class exam, assignment
9	6	Examples	Metric space	Board	Class exam, assignment
10	6	Examples	Examples of metric space	Board	Class exam, assignment
11	6	Examples	Neighborhood	Board	Class exam, assignment
12	6	Examples	Interior set	Board	Class exam, assignment
13	6	Theorems	Open set	Board	Class exam, assignment
14	6	Examples	Limit point	Board	Class exam, assignment
15	6	Properties	Closed set	Board	Class exam, assignment
16	6	Definition	Properties of open and close	Board	Class exam, assignment
17	6	Definition	Separated set in metric spac	Board	Class exam, assignment
18	6	Theorems	Connected set	Board	Class exam, assignment
19	6	Proof	Dense set	Board	Class exam, assignment
20	6	Examples	Cover set	Board	Class exam, assignment
21	6	Theorems	Compact set	Board	Class exam, assignment
22	6	Examples	Proprieties of compact set	Board	Class exam, assignment
23	6	Examples	Hein Borel Theorem	Board	Class exam, assignment
24	6	Theorems	Sequences	Board	Class exam, assignment
25	6	Definition	Convergence sequence	Board	Class exam, assignment
26	6	Examples	Divergence sequence	Board	Class exam, assignment
27	6	Examples	Cauchy sequence	Board	Class exam, assignment
28	6	Properties	Properties of sequences	Board	Class exam, assignment
29	6	Examples	Series	Board	Class exam, assignment
30	6	Definition	Test of series	Board	Class exam, assignment
		Theorems	Continuous	Board	Class exam, assignment
			Derivative	Board	Class exam, assignment
			Integral	Board	Class exam, assignment
			Riemann sum	Board	Class exam, assignment
			Riemann integral	Board	Class exam, assignment
			Measure set	Board	Class exam, assignment
			Lebesgue integral	Board	Class exam, assignment
			Properties	Board	Class exam, assignment

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	ة في التحليل الرياضي تاليف: الاستاذ الدكتور عادل غسان نعوم
Main references (sources)	Real analysis, Royden ,new York ,2010. Principles of Mathematical analysis,Rudin, 2000. Introduction of Mathematical analysis, WilliamR. 20

Recommended books and references (scientific journals, reports…)	The most important books and special sources on mathematical analysis located in the central library, the science library, and the department.
Electronic References, Websites	Virtual library Websites

Course Description Form of C++

1. Course Name:
Computer science c++
2. Course Code:
3. Semester / Year:
\ third
4. Description Preparation Date:
2024
5. Available Attendance Forms:
Weekly- compulsory
6. Number of Credit Hours (Total) / Number of Units (Total)
120 hours
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Amaal Mohi Nassief Asst .lec.Israa Najam Email: amalmuhi@uodiyala.edu.iq
8. Course Objectives

Course Objectives	• Introducing the student to the basic principles of C++ programming, which are used in most applied mathematics topics, including engineering applications and all science departments. • Acquire the skill of using a computer and the ability to program. • Acquiring mental skills and thinking about mathematics solutions using computer programs. • Building algorithms, flowcharts, and teaching programming.

9. Strategies
• Discussions that are presented during the lecture and an attempt to involve the largest number of students, address the details of the topics, and discuss them in an objective and directed discussion. • Guiding students to use sources and training them on electronic research

10. Course Structure

Week	Hours		Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	theoretical	practical				
1	2	2	Introducing the student to the principles of programming	Introduction to programming in C++ (Program interface, running and exiting the program, desktop, simple calculations and graphs)	Whiteboard+ computer	Quizzes, homework and final exams
2-3	4	4	Introducing the student to the principles of algorithms	study procedural programming principles	=	=
4-5	=	=	=	Algorithms and flowcharts, properties and design	=	=
6	2	2	The student defines the concept of variables in the programming language	C++ Language Basics (Character set, Identifiers, keywords Variables, Constants	=	=
7-8	4	4	Introducing the student to the concept of transactions in the language	C++ operators (Arithmetic Operators, Assignment operators, relational operator, comparison and logical operators, bitwise logical operators), type conversion	=	=
9-10	=	=	The student's definition of	Statements, getting started		

			programming sentences	with C++, order evaluation, The “math.h” Library, UnaryMinus, Increment and /decrement Operators.			
11-12	=		The student introduces the concept of choice sentences	Selection Statements (Selection Statements, The Single If Statement Structure, The Single If Statement Structure (Blocks), The If/else Statement Structure			
1316	=		=	Nested If and If/else Statements, else if statement			
14-19	2	2	The student's definition of conditional sentences	Switch statement, nested			
15	=	=	The student’s definition of the repetition sentence	loop iteration Statements (while)Repetition Structure			
16	=	=	=	For Statement, More about			
17	=	=	The student’s definition of repetitive phrases	Nested for Loops			
18	=	=	=	Break and Continue Contro			
19	=	=	=	Statements, goto			
20	=	=	=	Functions			
21	=	=		actual and formal arguments			

22-23	4	4	The student's definition of global and local variables	local and global variables,		
23-25	=	=	Student definition of Array	Arrays (Array of One)		
26-27			=	Two Dimension		
28-29	=	=	Student definition of series	string		

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**C++ learning**
Main references (sources)	**step by step c++**
Recommended books and references (scientific journals, reports…)	**step by step c++**
Electronic References, Websites	

Course Description Form of (Advanced statistics)

1. Course Name:
Advanced statistics
2. Course Code:
MAAS 305
3. Semester / Year:
Semester
4. Description Preparation Date:
4/5/2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours (an average of 3 hours in week
7. Course administrator's name (mention all, if more than one name)
Name: Huda Amer Abdule Ameer Email: hudaamer@uodiyala.edu.iq
8. Course Objectives

Course Objectives	**• Introducing the student to the basic principles of advanced statistics, which are included in all fields of mathematics and its applications, which are included in engineering applications and all departments of science** **• Students acquire the skills that enable them to teach mathematics** **• Acquiring mental skills and thinking in mathematics**

9. Teaching and Learning Strategies

Strategy	**Giving lectures and using methodological books** **Solving issues related to the scientific subject** **Writing scientific reports and analyzing data** **Using e-learning in teaching according to available capabilities**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**3**	**Definition of the concept of**	**Random sample, a sample census that follows a normal**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to**

		samples and sample statistics	**distribution and other distributions**		**monthly and final exams.**
2	**3**	**Define the concept of ordered statistics**	**The concept of ordered statistics, some of its applications**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
3	**3**	**Define ordered statistics**	**Distribution of ranked statistics with their applications**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
4	**3**	**Definition of sufficiency**	**The concept of sufficiency with examples**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
5	**3**	**Family of exponential density functions, parameter space.**	**Definition of the family of exponential density functions, parameter space**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
6	**3**	**Definition Efficiency function**	**The concept Efficiency function**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
7	**3**	**Definition of the average square error of non-bias, consistency, modern probability density function**	**The concept of non-biased square error rate, consistency**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
8	**3**	**Definition of Cramer-Rao efficiency, Fisher**	**The concept of Cramer-Rao efficiency, Fisher**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
9	**3**	**Solve some different exercises on the topic of Estimation**	**Exercises and discussion**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
10	**3**	**Definition of a concept that is estimated, unbiased, and has the least variance**	**What is the estimated, unbiased, and has the least variance**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
11	**3**	**Definition of Rao-Blackwell and Ryman theorem**	**Rao-Blackwell and Ryman theorem with its application**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to**

					monthly and final exams.
12	3	Defining the concept of estimation methods (likelihood).	Estimation methods (maximum odds and moments).	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
13	3	Definition of loss function, risk function	Definition of loss function, risk function	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
14	3	Methods of finding confidence limits, confidence limits for conditional non-parameters	Methods of finding confidence limits, confidence limits for conditional non-parameters	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
15	3	A week of preparation before the final exam		Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, any)	1- Introduction to Mathematical Statistics Hogg and Cruisy Probability Theory , Mood'et-al.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://www.syriamath.net/library

Course Description Form of (Test of Hypothesis)

13. Course Name:
Test of Hypothesis
14. Course Code:
UoB12345
15. Semester / Year:
Semester
16. Description Preparation Date:
4/5/2024
17.Available Attendance Forms:
18.Number of Credit Hours (Total) / Number of Units (Total)
45 hours (an average of 3 hours in week
19. Course administrator's name (mention all, if more than one name)
Name: Huda Amer Abdule Ameer Email: hudaamer@uodiyala.edu.iq
20. Course Objectives

Course Objectives	**• Introducing the student to the basic principles of Test of Hypothesis statistics, which are included in all fields of mathematics and its applications, which are included in engineering applications and all departments of science** **• Students acquire the skills that enable them to teach mathematics** **• Acquiring mental skills and thinking in mathematics**
21. Teaching and Learning Strategies	
Strategy	**1- Giving lectures and using methodological books** **2- Solving issues related to the scientific subject** **3- Writing scientific reports and analyzing data** **4- Using e-learning in teaching according to available capabilities**

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Hypothesis tests	Determine Hypothesis tests	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
2	3	Definition of the concept of testing and critical area	The concept of the concept of testing and critical area	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
3	3	Definition of the concept of errors	Types of errors: Type-one error and Type-two error	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
4	3	Definition of the concept of test power	Test power function	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
5	3	Solve some different exercises on the test topic	Solve some different exercises on the test topic	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
6	3	Neyman-Pearson test	The concept Neyman-Pearson test	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
7	3	Determine the sample size, the best critical area, and the best test force	Determine, the best critical area	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
8	3	Sampling From The Normal Distribution	The concept of Sampling From The Normal Distribution	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.
9	3	Some rules for testing hypotheses using a normal distribution	The concept of Some rules for testing hypotheses using a normal distribution	Blackboard, data show, and introductory videos	Daily exams and homework, in addition to monthly and final exams.

10	**3**	**Solve questions dealing with hypothesis testing using the normal distribution**	**Solve questions**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
11	**3**	**Definition of rank odds ratio**	**Definition of rank odds ratio**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
12	**3**	**Introduction to the SPRT test**	**Definition to the SPRT test**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
13	**3**	**Estimating the optimal sample size in the case of SPRT**	**Definition Estimating the optimal sample size in the case of SPRT**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
14	**3**	**Analysis of Variance**	**Definition Analysis of Variance**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
15	**3**	**A week of preparation before the final exam**		**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**

23. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

24. Learning and Teaching Resources

Required textbooks (curricular books, any)	2- **Introduction to Mathematical Statistics Hogg and Cruisy** **Probability Theory , Mood'et-al.**
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1. Ash, R. B." Probability and Measure Theory" New York, 2000 2. Athreya. K.B.& Lahiri. S.N. " Measure Theory and Probability Theory " Springer, 2006 3. Banuelos. R, "Lecture Notes Measure Theory and Probability " 2003. 4. Billingsley "Probability and Measure" 1979 5. Charles M. G. & Lauriesnell. J. " Introduction To Probability"
Electronic References, Websites	**https://www.syriamath.net/library**

Course Description Form of (Number Theory)

13. Course Name:	
Number Theory	
14. Course Code:	
15. Semester / Year:	
1st Session/ Third	
16. Description Preparation Date:	
01/05/2024	
17.Available Attendance Forms:	
Weekly– compulsory	
18.Number of Credit Hours (Total) / Number of Units (Total)	
90 hours	
19. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Hamza B. Habib Email:	
20. Course Objectives	
Course Objectives	• Students get knowledge of basic mathematics principles • Students get the skills that enable them to teach mathematics. • Practice different types of mathematical proofs.
21. Teaching and Learning Strategies	
Strategy	Delivering and lecturing strategy with discussion and problem solving.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Number Theory	An introduction to Number Theory and its applications	Whiteboard with the head projector	Quizzes and homework, addition to

					midsession and final exams
2	=	=	Some Basic theorems and propositions	=	=
3	=	=	Prime numbers	=	=
4	=	=	The Greatest Common Divisor with basic theorems, gcd	=	=
5	=	=	The Fundamental Theorem of Arithmetic	=	=
6	=	=	The Division Algorithm Theorem with examples	=	=
7	=	=	The gcd theorem with examples	=	=
8	=	=	The Extension of Euclidian algorithm to find the gcd	=	=
9	=	=	The Congruence with some bas theorems	=	=
10	=	=	Linear congruences	=	=
11	=	=	Chinese Remainder Theorem	=	=
12	=	=	Euler's phi function	=	=
13	=	=	Euler's Theorem	=	=
14	=	=	Fermat's Little Theorem	=	=
15	=	=	Continued Fractions	=	=

23. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Elementary Number Theory and Applications
Main references (sources)	Elementary Number Theory and Applications
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form of (Geometry)

25. Course Name:	
Geometry	
26. Course Code:	
27. Semester / Year:	
2nd Session/ Second	
28. Description Preparation Date:	
01/05/2024	
29.Available Attendance Forms:	
Weekly– compulsory	
30.Number of Credit Hours (Total) / Number of Units (Total)	
90 hours	
31. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Hamza B. Habib Email:	
32. Course Objectives	
Course Objectives	• Students get knowledge of basic mathematics principles • Students get the skills that enable them to teach mathematics. • Practice different types of mathematical proofs.
33. Teaching and Learning Strategies	
Strategy	Delivering and lecturing strategy with discussion and problem solving.

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Geometry	Introduction to axiomatic systems and their properties	Whiteboard with the head projector	Quizzes and homework, addition to midsession and final exams

2	=	=	Euclidean Geometry: Euclidean Postulates	=	=
3	=	=	Some equivalent statements for Euclid's fifth axiom: the Playfair axiom	=	=
4	=	=	The Axiomatic System 1	=	=
5	=	=	Some theorems of the Axiomatic System 1	=	=
6	=	=	The Axiomatic System 2 with the theorems	=	=
7	=	=	The Axiomatic System 3: Fano's Geometry	=	=
8	=	=	Some Theorems of the Axiomatic System 3	=	=
9	=	=	The Axiomatic System 4: The Pappus Finite Geometry	=	=
10	=	=	Some Theorems of the Axiomatic System 4	=	=
11	=	=	The Axiomatic System 5	=	=
12	=	=	Some Theorems of the Axiomatic System 5	=	=
13	=	=	Hilbert's Incidence Axioms	=	=
14	=	=	Hilbert's Order Axioms	=	=
15	=	=	Hilbert's Congruence Axioms	=	=

35. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to Euclidean Geometry
Main references (sources)	Books on plane geometry
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form of (Applied Mathematics)

25. Course Name:	
Applied Mathematics	
26. Course Code:	
27. Semester / Year:	
2st Session/ Third	
28. Description Preparation Date:	
01/05/2024	
29.Available Attendance Forms:	
Weekly– compulsory	
30.Number of Credit Hours (Total) / Number of Units (Total)	
90 hours	
31. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Rifaat Z. Khalaf Email:	
32. Course Objectives	
Course Objectives	• Students get knowledge of basic mathematics principles • Students get the skills that enable them to teach mathematics • Practice different types of mathematical proofs.
33. Teaching and Learning Strategies	
Strategy	Delivering and lecturing strategy with discussion and problem solving.

34. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Applied Mathematics	Elementary Differenetial Equations	Whiteboard with the head projector	Quizzes and homework, addition to

					midsession and final exams
2	=	=	Ceaser Cipher	=	=
3	=	=	Vigener Cipher	=	=
4	=	=	Multiplicative Cipher	=	=
5	=	=	Hill-Cipher	=	=
6	=	=	Linear Feedback Shift Regis	=	=
7	=	=	Randomness	=	=
8	=	=	Randomness Methods	=	=
9	=	=	Difee-Hellman Protocol	=	=
10	=	=	Special Function	=	=
11	=	=	Gamma Function	=	=
12	=	=	Beta Function	=	=
13	=	=	Legendre and Beseel Functic	=	=
14	=	=	Perodic Function	=	=
15	=	=	Fourier Series	=	=

35. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Elementary Differenetial Equations
Main references (sources)	Elementary Differenetial Equations
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Fourth Class

Course Description Form of (Complex Analysis)

37. Course Name:
Complex Analysis
38. Course Code:
MAAS 305
39. Semester / Year:
Semester
40. Description Preparation Date:
4/5/2024
41.Available Attendance Forms:
42.Number of Credit Hours (Total) / Number of Units (Total)
60 hours (an average of 4 hours in week
43. Course administrator's name (mention all, if more than one name)
Name: Asmaa Khawam AbdUL_rahman Email: asmaaalshaibi@uodiyala.edu.iq
44. Course Objectives

Course Objective	**• Introducing the student to the basic principles of** Complex Analysis**, which are included in all fields of mathematics and its applications, which are included in engineering applications and all departments of science** **• Students acquire the skills that enable them to teach mathematics** **• Acquiring mental skills and thinking in mathematics**

45. Teaching and Learning Strategies

Strategy	**Giving lectures and using methodological books** **Solving issues related to the scientific subject** **Writing scientific reports and analyzing data** **Using e-learning in teaching according to available capabilities**

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**4**	**Definition of student With the principles of complex**	complex number definition, properties Geometric representation	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to**

		numbers, their algebraic properties, and geometric representation			**monthly and final exams.**
2	**4**	**The student defines the field of complex numbers as a metric space**	field of complex number as metric field .	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
3	**4**	**Definition of student Some terminology about a group of complex numbers**	Root of complex number	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
4	**4**	**Defining the student what is the concept of regions in the complex plane and regions**	Regions in The Complex Plane	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
5	**4**	**Introducing the student to the concept of complex functions**	Function of a complex Variable	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
6	**4**	**Definition of student Continuous complex functions**	Limits, Continuity	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
7	**4**	**Definition of student Differentiable complex functions**	Derivatives,	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
8	**4**	**Introducing the student to the concept of analytical functions**	Analytic Function	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
9	**4**	**Introduce the student to some applications of the Cauchy-Riemann theorem**	Cauchy- Riemann Equations	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
10	**4**	**Introducing the student to the concept of**	Harmonic Functions	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in**

		harmonic functions and their properties			**addition to monthly and final exams.**
11	**4**	**Introducing the student to the concept of prime functions and their properties**	Exponential Function	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
12	**4**	**Introducing the student to the concept** Trigonometric Function **and their properties**	Trigonometric Function	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
13	**4**	**Introducing the student to the concept of Logarithmic Function** and **Hyperbolic Functions and their properties**	Logarithmic Function**,** Hyperbolic Functions	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
14	**4**	**Introducing the student to the concept of sequences and series**	**Convergence of Sequence, Convergence of Series, Pour Series, Convergence Pour Series, Taylor Series, Laure Series**	**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**
15	**4**	**A week of preparation before the final exam**		**Blackboard, data show, and introductory videos**	**Daily exams and homework, in addition to monthly and final exams.**

47. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

48. Learning and Teaching Resources

Required textbooks (curricular books, any)	Complex Variable and Applications By : Churchill
Main references (sources)	Complex Analysis by : Ahlfyors M.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	**https://www.syriamath.net/library**

Course Description Form of (Operations Research)

37. Course Name: Operations Research	
38. Course Code: 405MAOR	
39. Semester / Year: Semester	
40. Description Preparation Date: 2/5/2024	
41.Available Attendance Forms: Attendance - Online	
42.Number of Credit Hours (Total) / Number of Units (Total) 45hours/ 3units	
43. Course administrator's name (mention all, if more than one name)	
Name: Assist. Prof. Dr. Adawiya Ali Mahmood Email: Dr.Adawiya@uodiyala.edu.iq	
44. Course Objectives	
Course Objectives	The students know principles of operations research. The students learn thinking in Mathematics. The students know the importance of Mathematics.
45. Teaching and Learning Strategies	
Strategy	Giving lectures and using books. Solving problems. Using electronic learning in teaching.

46. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1 2,3 4,5 6,7,8 9,10,11	3 6 6 9 9	The students know operation research The students learn mathematical model The students learn linear programming methods The students learn simplex method ,Big M method The students learn dual problem	Introduction in operations research Building mathematical model linear programming methods Simplex method, M Dual problem	White board and data show = = = = = = = =	Oral and edited examinations = = = = = = = =

47. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

48. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Operations Research Author Hamdy Taha Linear programming Author Hillier
Main references (sources)	Introduction of operations research Author Hamdy Taha Linear and non linear programming Author Hillier
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	1. https://notendur.hi.is 2. https://eco.nahrainuniv.edu.iq