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



Academic Program Description Form

University Name: Al-Nahrain University Faculty/Institute: College of Sciences Scientific Department: Department of Mathematics and Computer Applications Academic or Professional Program Name: Bachelors Final Certificate Name: Bachelor in Mathematics and Computer Applications Academic System: Semester Description Preparation Date: 2024 File Completion Date: \& / \\ / 2024

Signature: \

Head of Department Name: Prof. Dr. Fadhel Subhi Fadhel Date: 18 /11 / 2024



Signature: Scientific Associate Name: Assist. Prof. Dr. Manaf Adnan Saleh Date: 25 / 11 / 2024

The file is checked by: Orooba Nodhim Harbi Department of Quality Assurance and University Performance Director of the Quality Assurance and University Performance Department: Lect. Dr. Orooba Nadhim Harbi Date: 257 // /2024 Signature:

Education

Approval of the Dean of. Dr. Asmaa Hadi Mohammed

First Stage

Course Description Form

Module Information معلومات المادة الدراسية					
Module Title	Calcul	us (I)	Module Delivery		
Module Type	Cor	e			
Module Code	MATH1101		⊠ Lecture ⊠ Lab		
ECTS Credits	8		⊠ Tutorial □ Practical		
SWL (hr/sem)	200		□ Seminar		
Module Level		Semester of Delivery	1		
Administering Department	Mathematics and Computer Applications	College	College of Sciences		
Module Leader	Ibtisam Kamil Hanan	e-mail	ibtisam.kamil@nahrainuniv.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	me	e-mail	E-mail		
Scientific Committee Approval Date	1/9/2024	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 الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Aims أهداف المادة الدراسية	The aim of this course is for student to gain proficiency in computations. In calculus, we use two main tools for analyzing and describing the behavior of functions: limits and derivatives. Students will use these tools to solve			

	application problems in a variety of setting ranging from physics and			
	chemistry to business and economics.			
Madula	1. To determine the solution set of inequalities involving absolute value,			
loorning	2. To determine domain, range and operation of some one variable			
Learning	functions and the graphs.			
Outcomes	3. To determine limit and continuity of one variable functions.			
tti t	4. To determine derivate of one variable functions.			
محرجات التعلم	5. To determine the solution of problems involving the derivate of one			
للمادة الدراسية	C. To determine inverse function and its derivative			
	5. To determine inverse function and its derivative.			
	/. To learn about application of derivatives.			
Indicative Contents المحتويات الإرشادية	 Real number, inequalities, absolute value, Cartesian coordinate system, function and its graph, operation on function, trigonometry function. Definition, theorems of limit, trigonometry function limit, limit on infinity, infinite limit, continuity function, Definition and rule of derivate, derivate of trigonometry function, chain rule, higher order derivate, implicit derivate, related rate, basic concept of differential, Maximum and minimum, monotonicity and concavity, graphing one variable function, mean value theorem for derivate. Natural logarithm function, inverse function and its derivate, natural exponential function, general exponential function, general logarithm function, hyperbolic function and its inverse. 			

Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	The module will be presented to the students through a specified series of lectures, supported by problem solving practice carried out in interactive tutorials. These tutorials will be supported by practice and directed study outside the classroom. Formative assessment takes place throughout the module during tutorials and feedback is given during these tutorials.		

Student Workload (SWL) الحمل الدراسي للطالب				
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	106	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.06666666667	
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					
	Quizzes	2	10% (10)	3, 8	LO #1, 2, and 3	
Formative	Assignments	2	10% (10)	6, 9	LO # 4 and 5	
Formative assessment	Projects / Lab.	1	10% (10)	continuous		
	Report	1	10% (10)	12	LO # 5 and 6	
Summative assessment	Midterm Exam	2	10% (10)	5,10	LO # 1-5	
	Final Exam	4hr	50% (50)	16	All	
Total assessment		100% (100 Marks)				

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
	The Rate of Change of Function:
weeк 1	Coordinates, Increments and Distance, Slope of the straight line, Equations of straight lines, Circle, Equation of circle.
Week 2	Inequalities, Intervals, Absolute value, Properties of Absolute values.
Week	Functions and graphs: Odd function, Even function, Domain, Range, Composition
3	function, Shift Formula, Axes intercept points, Symmetry, Asymptotes.
Week 4	Limits and continuity : Theorems of limits, One sided and two-sided limits.
Week 5	Mid Term Exam + Limit at infinity, Oblique asymptote.
Week 6	Sandwich theorem, Continuous functions.
Week	The slope of the curve and derivatives: Formal differentiation, Rules of derivatives
/	(with proofs)
Week	Chain rule
0	
Week	Parametric equations, Derivatives of the Parametric Equations, L'Hopital's rule
9	(First Form), L'Hopital's rule (Stronger Form).
Week	Mid Term Exam + Transcendental Functions: Properties and derivatives (with
10	proofs) for Trigonometric functions.
Week 11	Properties and derivatives (with proofs) for Inverse of trigonometric functions.
Week 12	Properties and derivatives (with proofs) for Logarithmic, exponential functions and The exponent function a^x
Week	Properties and derivatives (with proofs) for (Hyperbolic functions and Inverse of
13	Hyperbolic Functions)

Week 14	Applications of Derivatives: Curve sketching, Maxima and minima problems
Week 15	Related rate, Roll's and mean value theorems, Velocity and acceleration.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الأسبوعي للمختبر			
	Material Covered		
Week 1	Lab 1: Introducing Simple Mathematical Expressions		
Week 2	Lab 2: Names for Common Constant in MATLAB		
Week 3	Lab 3: Using variables in MATLAB		
Week 4	Lab 4: Using Built-in Functions in MATLAB		
Week 5	Lab 5: Plotting Functions		
Week 6	Lab 6: Calculating Limit		
Week 7	Lab 7: Computing Derivative		
Week 8	Lab 8: L'Hopital's Rule		
Week 9	Lab 9: Transcendental Functions, Convert angle from radians to degree		
Week 10	Lab 10: Inverse of trigonometric functions.		
Week 11	Lab 11: Exponentials and Logarithms		
Week 12	Lab 12: Hyperbolic Functions and their inverse		
Week 13	Lab 13: Velocity and acceleration		
Week 14	Lab 14: Concavity and Inflection Points		
Week 15	Lab 15: Finding Minima and Maxima		

اساتذة المختبر 1-ا.م.د. ابتسام كامل حنان 2- م.م. حنين عبد الكريم أمين 3- م.م.رقية سعدي هاشم 4- م.م.فرح لطيف جوي

Learning and Teaching Resources مصادر التعلم والتدريس			
Text Available in the Libra			
Required Texts	Calculus and Analytic Geometry by Thomas	Yes	
Recommended Texts	Calculus Labs for MATLAB	No	
Websites	www.mathhandbook.com		

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

Module Information معلومات المادة الدراسية						
Module Title	Calculus (II)		Module Delivery			
Module Type	Cor	e	□Theory ⊠ Lecture ⊠ Lab			
Module Code	MATH	[1203				
ECTS Credits	7		⊠ Tutorial □Practical			
SWL (hr/sem)	17:	5	Seminar			
Module Level		Semester of Delivery	2			
Administering Department	Mathematics and Computer Applications	College	College of Sciences			
Module Leader	Ibtisam Kamil Hanan	e-mail	ibtisam.kamil@nahrainuniv.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 me		e-mail	E-mail			
Scientific Committee Approval Date	01/09/2024	Version Number	1.0			

Relation with other Modules العلاقة مع المواد الدراسية الأخرى						
Prerequisite module	MATH1101	Semester	1			
Co-requisites module	None	Semester				

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية				
Module Aims أهداف المادة الدراسية	The aim of this course is to introduce the concept of integration, study various techniques of integration, test improper integrals for convergence and illustrate some applications of integration. Student will gain proficiency to use integration to solve real world problems such as area and volumes problems.			
Module Learning Outcomes	After completing the course, students have the ability To determine proper integral of one variable functions.			

تخرجات مخرجات مخرجات مخرجات To determine integral involving the fundamental theorem of Calculus and method of substitution. To determine the solution of problems involving the integral of one variable function. To compute integral involving transcendental functions. To compute integral with advanced integration techniques	
مخرجات method of substitution. To determine the solution of problems involving the integral of one variable function. To compute integral involving transcendental functions. To compute integral with advanced integration techniques	
To determine the solution of problems involving the integral of one variable function. To compute integral involving transcendental functions. To compute integral with advanced integration techniques	
الدراسية variable function. To compute integral involving transcendental functions. To compute integral with advanced integration techniques	
To compute integral involving transcendental functions.	
To compute integral with advanced integration techniques	
To compute integral with advanced integration techniques.	ļ
To demonstrate ability to think critically by recognizing patterns and	
determining and using appropriate techniques for solving a variety of	
integration problems.	
To solve indeterminate forms and improper integral problems.	
To calculate the length of a plane curve and solving area and volume	
application problems.	
To sketch the graph of a polar equation and the area problems in the polar	
coordinate system.	
To demonstrate an intuitive and computational understanding for integral	
applications by solving a variety of problems from physics, engineering	
and mathematics.	
Proper integral, Fundamental Theorem of Calculus, basic rules of	
integration.	
Indicative Methods of integrations, method of substitution, partial integration method,	
trigonometry integral and integral of rational function with partial fraction.	
Improper integrals, test for convergence and divergence of improper	
integrals.	
Application of Definite Integrals, Mean value theorem of integration,	
Area, solid revolution volume and Arc length.	
polar coordinates.	
Learning and Teaching Strategies	
استر اتبحبات التعلم والتعليم	
The module will be presented to the students through a specified series of lectur	es.
supported by problem solving practice carried out in interactive tutorials. The	ese
strategies tutorials will be supported by practice and directed study outside the classroo	m.
Formative assessment takes place throughout the module during tutorials a	nd
feedback is given during these tutorials.	-

Student Workload (SWL) الحمل الدراسي للطالب						
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب أسبوعيا						
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.4			
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						
	Quizzes	2	10% (10)	3, 8	LO #1, 2, and 4	
Formative assessment	Assignments	2	10% (10)	6, 9	LO # 3 and 6	
	Projects / Lab.	1	10% (10)	continuous		
	Report	1	10% (10)	12	LO # 5, 7 and 8	
Summative assessment	Midterm Exam	2	10% (10)	5,10	LO # 1-7	
	Final Exam	4hr	50% (50)	16	All	
Total assessment		100% (100 Marks)				

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Indefinite integrals, Definite integrals, The fundamental theorems of integrals, Basic Integration Formulas.
Week 2	Integration by substitution
Week 3	Integration of certain powers of trigonometric and hyperbolic functions
Week 4	Integrals involving trigonometric substitutions, Integrals involving hyperbolic substation.
Week 5	Mid-Term Exam + Integrals involving quadratic substation
Week 6	Integration by parts
Week 7	Integration of Rational Functions
Week 8	Integration of Irrational Functions, Integration of Rational Functions of Trigonometric
Week 9	Improper integrals: Definition of improper integral and examples
Week 10	Mid-Term Exam + Test for convergence and divergence of improper integrals (P-test, Domination test, Limit comparison test)
Week 11	Application of Definite Integrals: Mean value theorem of integration, Area under the curve
Week 12	Area between two curves, Volume of solid of revolution (Disk (washer) and shell) methods
Week 13	Arc length, Area of surface of revolution
Week 14	Area in polar coordinates
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الإسبوعي للمختبر			
	Material Covered		
Week 1	Lab 1: Integration in MATLAB		
Week 2	Lab 2: Definite Integrals		
Week 3	Lab 3: Indefinite integrals		
Week 4	Lab 4: Sine and Cosine Integral functions		
Week 5	Lab 5: Hyperbolic Sine and Cosine Integral functions		
Week 6	Lab 6: Integration by parts in MATLAB		
Week 7	Lab 7: Integrating inverse trigonometric Functions		
Week 8	Lab 8: Partial Fraction Expansion in MATLAB		
Week 9	Lab 9: Solving an improper Integral		
Week 10	Lab 10: Area in MATLB		
Week 11	Lab 11: Area between two curves in MATLAB		
Week 12	Lab 12: Compute Volumes of Revolution		
Week 13	Lab 13: Arc length		
Week 14	Lab 14: Using Polar Coordinates in MATLAB		

اساتذة المختبر 1- م.د. ابتسام كامل حنان 2- م.م. حنين عبد الكريم أمين 3- م.م. عباس ابراهيم خليف

4 - م.م. ايمان خالد خلف

Learning and Teaching Resources مصادر التعلم والتدريس					
	Text	Available in the Library?			
Required Texts	Calculus and Analytic Geometry by Thomas	Yes			
Recommended Texts	Calculus Labs for MATLAB	No			
Websites	www.mathhandbook.com				

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

Module Information معلومات المادة الدر اسية							
Module Title	Con	omputer		N	Module Delivery		
Module Type	Bas	ic		x	⊠ Theory		
Module Code	URC	СОМ			□ Lecture		
ECTS Credits	3] Tute	orial	
SWL (hr/sem)	75				□ Practical □ Seminar		
Module Level 1		1	Semester of Delivery 1		1		
AdministeringMDepartmentA		Mathematics and Computer Applications Science	College	College of Sciences			
Module Leader	Moha	mmed Q. Ali	e-mail	moha	amme	d.q.ali@nahrain	univ.edu.iq
Module Leader's Acad. Title		Assistant Lecturer	Module Leader's Qualification		M.Sc.		
Module Tutor	Name	(if available)	e-mail E-		E-mail		
Peer Reviewer Name me		e-mail	E-ma	ail			
Scientific Committee Approval Date		19/12/2024	Version Number				

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

Module Aims, Learning Outcomes and Indicative Contents					
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية					
Module Aims أهداف المادة الدراسية	The History of the Personal Computer Understanding Digital Components Processing, Storage, and Connectivity Input and Output peripherals				
Understanding Number systems The Applications Software and OS Communication and Computer networks					

	The Internet and World Wide Web
	Cloud computing
	You will be able to describe the history of personal computer hardware and software
	development.
	You will be able to describe the devices that make up a computer system.
	You will be able to describe how computers process and store data and how devices
	connect to a computer system
Module Learning	You will understand the differences between input and output devices
Outcomes	You will be able to explain the types and functions of operating systems
	Describe the different types of application software
	Vou will be able to use Microsoft Office applications (Word Evenl and PowerPoint)
مخرجات التعلم للمادة الدراسية	You will be able to use Microsoft Office applications (word, Excel and PowerPoint)
	You will be able to convert numbers in binary and other number system with binary
	arithmetic operations
	You will be able to explain the basics of networking, including the components needed to
	create a network, and describe the different ways a network can connect to the Internet.
	Describe the Cloud computing
	Understanding Digital Components, Understanding Your Computer, Input Devices,
	Output Devices.
	Processing, Storage, and Connectivity, Processing and Memory on the Motherboard,
	Storing Data and Information, Connecting Peripherals to the Computer.
Indicative Contents	Application Software, Productivity and Business Software, Multimedia and Educational
7.1.4 NI	Software, Productivity and Dusiness Software, Multimedia and Educational
المحتويات الإرشادية	Software.
	Understanding System Software. Operating System Fundamentals. What the Operating
	System Does Starting Your Computer.
	System 2000 Statung Four Computer.
	Understanding Networks, the Internet and Cloud computing.
	1

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
Strategies	The main strategy that will be adopted in delivering this module is by explaining lectures in an interactive way by letting the students to participate in the presenting through questions and answers while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and labs.			

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

Module Evaluation تقييم المادة الدر اسية									
	Time/Nu Weight (Marks) Week Due Relevant Learning								
		mber			Outcome				
	Quizzes	5	10% (10)	Continuous	All				
Formative	Assignments	2	10% (10)	7,8	All				
assessment Report		1	10% (10)	Continuous					
	Lab	2	10%(10)	8,14	All				
Summative Midterm Exam 2hr		2hr	10% (10)	7,15	All				
assessment	assessment Final Exam 3hr 50% (50) 16 All								
Total assessm	Total assessment100% (100 Marks)								

Delivery Plan (Weekly Syllabus)				
المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Introducing computer system			
Week 2	Evolutions of Computer (computer generations)			
Week 3	Basic Computer System Organization			
Week 4	Essential Computer Hardware (Processer and Memory)			
Week 5	Essential Computer Hardware (Secondary storage)			
Week 6	Essential Computer Hardware (Input/Output Units)			
Week 7	Mid-term Exam 1			
Week 8	Computer Number Systems			
Week 9	Computer Arithmetic (Operations in Binary)			
Week 10	Computer Software and Operating System			
Week 11	Data Communication and Computer Networks			
Week 12	The Internet and WWW (Web Browsers)			
Week 13	The Internet and WWW (Communications and Emails)			
Week 14	Cloud computing and Services			
Week 15	Mid-term Exam 2			

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Computer Hardware and Understanding Operating Systems
Week 2	Lab 2: Working with Windows (Windows Features, Decorating Widows and Basic windows)
Week 3	Lab 3: Working with Windows (Folders and Files)
Week 4	Lab 4: Working with Windows (Window Settings)
Week 5	Lab 5: Starting Microsoft Word (Application environment, entering Your Text, fonts styles)
Week 6	Lab 6: Starting Microsoft Word (Documents features, create a table and insert an equation)
Week 7	Lab 7: Starting Microsoft Word (Document decorate as output)
Week 8	Practical Exam 1
Week 9	Lab 8: Data analysis with Microsoft excel (create data model and formatting tools)
Week 10	Lab 9: Data analysis with Microsoft excel (using formula and basic functions)
Week 11	Lab 10: Data analysis with Microsoft excel (filtering data)
Week 12	Lab 11: Presentation authoring with Microsoft PowerPoint (Creating a New Presentation)
Week 13	Lab 12: Presentation authoring with Microsoft PowerPoint (Enhancing Presentation - Visuals and
	Media)
Week 14	Practical Exam 2
Teaching	
Staff	

Learning and Teaching Resources					
مصادر التعلم والتدريس					
Text Available in the Library?					
Required Texts					
	Cambridge IGCSE Information and Communication Technology (3 rd . Edition) by David Watson, Graham Brown 2021				
Recommended Texts	Fundamentals Of Computers (1st Edition) by E. Balagurusamy 2009	No			
	Microsoft Office 2019 Step by Step (1st Edition) by Joan Lambert, Curtis Frye 2019				
Websites					

Grading Scheme مخطط الدرجات						
Group	Grade Marks (%) Definition					
~ ~	A - Excellent	امتياز	90 - 100	Outstanding Performance		
Success Group (50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
	C - Good	جيل	70 - 79	Sound works with notable errors		

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

Module Information معلومات المادة الدر اسية							
Module Title	Con	Computer Programming 1			Module Delivery		
Module Type	Core	9		🗷 Th	I Theory		
Module Code	CRC	COMPRO1		□ Leo ☑ La			
ECTS Credits	5	5 Internal					
SWL (hr/sem)	125 C			□ Pra	□ Practical □ Seminar		
Module Level		1	Semester of Delivery 2		2		
Administering Department		Mathematics and Computer Applications Science	College	College	College of Sciences		
Module Leader	Moha	mmed Q. Ali	e-mail	mohamm	ed.q.ali@nahrain	univ.edu.iq	
Module Leader's Acad. TitleAssistant Lecturer		Module Leader's Qualification M.Sc.		M.Sc.			
Module Tutor	Name	(if available)	e-mail E-mail				
Peer Reviewer Name me			e-mail	E-mail			
Scientific Committee Approval Date19/12/2024Version Number							

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

Module Aims, Learning Outcomes and Indicative Contents					
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية					
Module Aims	Module Aims Understanding the computer languages and their features				
Learn how to analysis a problem using algorithms					
	The ability using flowcharts and pseudocode for expressing the problem and converting it				
	to program in C++				

	Equip students with a solid understanding of the basic syntax and structure of C++
	programs.
	Enable students to declare, initialize, and work with various data types, and understand the
	importance of type conversion and type safety in C++.
	Develop students' ability to implement conditional logic using if, else, and switch
	statements, allowing them to control the flow of their programs.
	Foster an understanding of the importance of logical operations and conditions in solving real-world problems.
	How to use for, while, and do-while loops to repeat operations efficiently, introducing
	control structures like break and continue for managing loop execution.
	Provide a strong understanding of how to define, call, and pass arguments to functions, enabling students to write modular, reusable, and maintainable code.
	the differences between passing by value and by reference and how to handle return
	values.
	Introduce arrays and their role in handling collections of data, as well as how to
	manipulate strings operations like concatenation, comparison, and length manipulation.
	Encourage students to develop problem-solving skills by applying their knowledge of C++
	concepts to solve practical problems.
	Students should be able to:
Module Learning	Write an algorithm, flowchart and pseudocode in order to convert to program in C++
Outcomes	Write and Execute Simple C++ Programs.
Outcomes	Understand and Use Variables and Data Types.
	Implement Conditional Logic and Decision-Making.
مخرجات التعلم للمادة الدراسية	Define and Call Functions and user defined functions
	Work with Arrays and Strings
	Algorithm, flowchart and pseudocode
	Overview of C++ (Setting C++ Environment and Structure of a C++ Program)
Indicative Contents	Variables, Data Types, and Constants
	Operators in C++ (Arithmetic, relational and logic Operators)
المحتويات الإرشادية	Control Flow: Conditional Statements and Loops
	Functions and user defined function
	Arrays and String in C++

Learning and Teaching Strategies				
استراتيجيات التعلم والتعليم				
	The main strategy that will be adopted in delivering this module is by explaining			
Strategies	through questions and answers while at the same time refining and expanding their			
	critical thinking skills. This will be achieved through classes and labs.			

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا					
Structured SWL (h/sem)63Structured SWL (h/w)4.2الحمل الدراسي المنتظم للطالب أسبوعيا					

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدر اسية							
	Time/Nu Weight (Marks) Week Due Relevant Learning Where Outcome Outcome						
	Quizzes	4	10% (10)	3,6,10,13	All		
Formative	Assignments	4	10% (10)	4,7,11,14	All		
assessment	Project	1	10% (10)	Continuous			
	Lab	2	10% (10)	8,15	All		
Summative	Midterm Exam	2hr	10% (10)	8,15	All		
assessment	Final Exam	3hr	50% (50)	16	All		
Total assessm	ient	•	100% (100 Marks)				

	Delivery Plan (Weekly Syllabus)				
	المنهاج الاسبوعي النظري				
	Material Covered				
Week 1	Computer Languages				
Week 2	Planning of Computer Program (Algorithms and Flowcharts)				
Week 3	Planning of Computer Program (Pseudocodes)				
Week 4	Operators in C++				
Week 5	Conditional Statements				
Week 6	Conditional Loops				
Week 7	Loop Control Statements				
Week 8	Mid-term exam				
Week 9	Functions: Basics and Parameters (definition, declaration, and calling)				
Week 10	Recursive Functions				
Week 11	Arrays: Basics and Manipulation (Declaring, initializing, and accessing array elements)				
Week 12	Arrays: Multi-dimensional arrays				
Week 13	Introduction to C-strings (null-terminated arrays of characters)				
Week 14	Basic string operations: concatenation, comparison, length, etc.				
Week 15	Mid-term Exam 2				

	Delivery Plan (Weekly Lab. Syllabus)					
المنهاج الاسبوعي للمختبر						
	Material Covered					
Week 1	Lab 1: Introduction to C++ Programming (Writing, compiling, and running your first "Hello, World!" program)					
Week 2	Lab 2: Introduction to Variables and Data Types (Identifiers, Introduction to variables and constants)					
Week 3	Lab 3: Arithmetic and Relational operators					
Week 4	Lab 4: Logical operators, Assignment operators, increment, and decrement operators					
Week 5	Lab 5: if, else if, else statements, Nested if conditions and switch statement					
Week 6	Lab 6: for loop, while loop and do-while loop					
Week 7	Lab 7: break and continue statements					
Week 8	Practical Exam 1					
Week 9	Lab 8: Write a user defined function					
Week 10	Lab 9: Recursive Functions examples					
Week 11	Lab 10: one dimension array declaration with examples					
Week 12	Lab 11: two-dimension array declaration with examples					
Week 13	Lab 12: Using the string class (Standard Library)					
Week 14	Lab 13: Other string functions in C++ with examples					
Week 15	Practical Exam 2					
Teaching Staff						

Learning and Teaching Resources					
مصادر التعلم والتدريس					
	Available in the Library?				
Required Texts					
Recommended Texts	A Complete Guide to Programming in C++ by Ulla Kirch- Prinz, Peter Prinz 2001 Schaum's Outline of Programming with C++ (2 nd . Edition) by John Rast Hubbard 2000 Introduction to Algorithms, Second Edition (2 nd . Edition) by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein 2001	No			
Websites					

Grading Scheme

	مخطط الدرجات						
Group	Group Grade		Marks (%)	Definition			
	A - Excellent	امتياز	90 - 100	Outstanding Performance			
~ ~	B - Very Good	جيد جدا	80 - 89	Above average with some errors			
Success Group (50 - 100)	C - Good	جيد	70 - 79	Sound work with notable errors			
(20 100)	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			

Module Information معلو مات المادة الدر اسبة						
Module Title	ELECTRICITY AND MAGNETISM I				Module Delivery	
Module Type	Basic			☐ Theory		
Module Code	CREQ1212	,		 ☑ Lecture ☑ Lab □ Tutorial □ Practical □ Seminar 		
ECTS Credits	5					
SWL (hr./Sem)	125					
Module Level		1	Semester of	emester of Delivery 2		2
Administering Department		Mathematics and Computer Applications	College	College of Science		
Module Leader	Dr. Ammar A. A	Alrawi	e-mail	ammar.alrawi@nahrainuniv.edu.iq		niv.edu.iq
Module Leader's Acad. Title Lecturer		Lecturer	Module Lea	ule Leader's Qualification Ph.D.		Ph.D.
Module Tutor Dr. Ammar A. Alrawi		e-mail	ammar.alrawi@nahrainuniv.edu.iq		niv.edu.iq	
Peer Reviewer Nan	Peer Reviewer Name me		e-mail			
Scientific Committee Approval 8/11/2024			Version Nu	mber 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				
	Understand electric charge and electric field.			
Module Aims Knowing the materials.				
Identify the electric field of charges and electric field lines.				
Identifying the forces, moments and electric potential energy.				
Learn about the electrostatic field.				

	Identification of a point change inside a subsyingle surface						
	Identification of a point charge inside a spherical surface.						
	Identify the resistance and capacitance.						
	Make the student able to:						
	Understand electric charge and electric field.						
	Knowing the composition of the material.						
Module Learning	Know the types of matter.						
Outcomes	Know the types of electric charge.						
	earn about Coulomb's law.						
مخرجات التعلم للمادة الدراسية	Identify the electric field of charges and electric field lines.						
	earn about the electrostatic field.						
	Learn about Ohm's Law.						
	Identify the resistance and capacitance.						
	Indicative content includes the following.						
Indicative Contents	electric charge and electric field, electric charge and structure of matter,						
المحتويات الإر شادية	capacitance, use of capacitance, calculating the capacitance, current and						
	resistance, moving charges and electric current, electric current, current density,						
	resistance and resistivity, ohm's law: a microscopic view, energy and power in an electric						
	circuit, the magnetic field, the magnetic field, the definition of b, discovering the electric						

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

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ أسبو عا						
Structured SWL (h/Sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	4			
Unstructured SWL (h/Sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.13			
Total SWL (h/Sem) 125 الحمل الدر اسي الكلي للطالب خلال الفصل						

Module Evaluation

تقييم المادة الدراسية

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

	Dolivory Plan (Wookly Syllabus)
	Denvery Fran (weekry Synabus)
	المنهاج الأسبوعي النطري
	Material Covered
Week 1	Electric charge: Electromagnetism, Electric Charge, Conductors and Insulators and Semiconductors, Coulomb's Law, Charge is Quantized, Charge is Conserved.
Week 2	Electric charge: Problem solving
Week 3	The Electric Field: Charge and Force, Lines of Force A Point Charge, Calculating the Field: An Electric Dipole
Week 4	The Electric Field: Problem solving
Wook 5	Capacitance: The Use of Capacitance, Calculating the Capacitance, Capacitors in Series and in Parallel,
Week 5	Strong Energy in an Electric Field
Week 6	Capacitance: Problem solving
Week 7	Mid exam
Week 8	Current and Resistance: Moving Charges and Electric Current, Electric Current, Current Density
Week 9	Current and Resistance: Resistance and Resistivity, Ohm's Law: A Microscopic View, Resistor in Series and in Parallel, Strong Energy in an Electric Field, Energy and Power in an Electric Circuits
Week 10	Current and Resistance: Problem solving
Week 11	The Magnetic Field: The Magnetic Field, The Definition of Discovering the Electric
Week 12	Ampere's Law: Current and Magnetic Field, Calculating the Magnetic Field
Week 12	Faraday's Law of Induction: Two symmetries, Two Experiments, Faraday's Law of Induction, Lenz's
Week 15	Law
Week 14	Mid exam
Week 15	Preparatory Week

Delivery Plan (Weekly Lab. Syllabus)						
	المنهاج الأسبوعي للمختبر					
	Material Covered					
Week 1	Lab 1: Ohms law					
Week 2	Lab 2: Ohmic and Non Ohmic materials					
Week 3	Lab 3: Series and parallel of capacitor and energy					
Week 4	Lab 4: Electrical resonance phenomenon					
Week 5	Lab 5: Voltage difference for the resistance and capacitance					
Week 6	Lab 6: Voltage and resistance for the battery					
Week 7	Lab 7: parallel and series for resistance and equivalent resistance					

Learning and Teaching Resources مصادر التعلم والتدريس						
	Text	Available in the Library?				
Required Texts	Edward Purcell, Electricity and magnetism,3 rd edition	No (Available as an e- book)				
Recommended Texts	University physics with modern physics, 13 th edition					
Websites						

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

Module Information الدر اسية المادة معلومات							
Module Title	Englisl	n Language		1	Module Delivery		
Module Type	S			r	Theory	,	
Module Code	UREN	G – UREQ1101		1	Lecture Lab	9	
ECTS Credits	2				Tutoria Practic	ıl al	
SWL (hr/sem)	50			9	Semina	r	
Module Level		UGI	Semester of	er of Delivery One			One
Administering Department		Mathematics and Computer Applications	College	ollege Science			
Module Leader	Shaym	a Abdul-Sattar	e-mail	Shayr	na.abdu	ılsatter@nał	nrainuniv.edu.iq
Module Leader's Aca Title	ıd.	Assistant Lecturer	Module Lea	Leader's Qualification MSc Mathematics			MSc Mathematics
Module Tutor	-		e-mail	-			
Peer Reviewer Name	9	naf Adnan	e-mail	mail Manaf.adnan@nahrainuniv.edu.iq			iiv.edu.iq
Review Committee Approval		1/11/2024	Version Nu	sion Number			

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى								
Prerequisite module None Semester								
Co-requisites module	None Semester							
Module Aims, Learning Outcomes and Indicative Contents الإرشادية والمحتويات التعلم ونتائج الدراسية المادة أهداف								
Module Aims اهداف المادة الدر اسية	The main objective of this course is to strer language for the first year's students by foct Encouraging students to use the English lar the classroom and focusing on the importan vocabulary and enhancing their ability to un curriculum-based conversations concerning description, life styles, families, personality, and the related every day's English phrases numbers, the alphabet, days of the week, a expressions. Reinforcing the related English grammar like types including short answers, possessive a tense, the adverb frequency, and pronouns	ngthen the English using on: nguage in convers nce of their knowle derstand and liste habits, and prefer and vocabulary i nd some social e auxiliary verbs, adjectives, presen	ations in edge of en to nds, self- rences; ncluding question t simple					

	Enhancing their reading and writing skills that help them communicate with new friends, making a questionnaire, or writing a holiday's postcard.
Module Learning Outcomes الدر اسية للمادة التعلم مخرجات	 A- Cognitive goals. A1- To encourage students to speak English. A 2- Enrich them with an adequate amount of vocabulary. A3- Understand syntax using grammar. A4- Know the difference between the tenses of the English language. B. The skills goals special to the course. B1 - Learn how to break up sentences and analyze them grammatically. B2 - improve listening, speaking and writing abilities.
Indicative Contents المحتويات الإرشادية	Students should be able to understand the basic concepts of English Language that deals with the subjects of Mathematics.
Lea	rning and Teaching Strategies استراتيجيات التعلم والتعليم
Strategies	The New Headway Beginner student's book is mainly taught which is enriched with a digital revising material provided by the Oxford university press, in addition to English for the Students of Mathematics book that focuses on Mathematics' history and its subjects' classification and mathematics phrases that help them in their first year of study at the Mathematics Dept. Discussions and questions will be performed to help students break the barrier of speaking the English language by using the suitable vocabulary and grammar. Besides listening to the conversations Writing on a white board with a marker in the classroom for demonstration and an audio device might be used to help the students listening to the taught conversations and hear the words and their pronunciation loudly to be able to repeat them properly.

Student Workload (SWL) الحمل الدراسي للطالب				
Structured SWL (h/sem) الفصل خلال للطالب المنتظم الدر اسي الحمل	33	Structured SWL (h/w) أسبو عيا للطالب المنتظم الدر اسي الحمل	2.2	
Unstructured SWL (h/sem) الفصل خلال للطالب المنتظم غير الدراسي الحمل	17	Unstructured SWL (h/w) أسبوعيا للطالب المنتظم غير الدراسي الحمل	1.13	
Total SWL (h/sem) الفصل خلال للطالب الكلي الدراسي الحمل	50			

Module Evaluation الدراسية المادة تقييم							
Time/NumberWeight (Marks)Week DueRelevant Learning 							
	Quizzes	3	10% (10)	5, 10	LO #1, 2, and 3		
Formative assessment	Assignments	2	10% (10)	2, 12	LO # 1, 2, 3, 6, and 7		
	Seminars / Lab.	1	10% (10)	14	LO # 6, 7, and 8		
	Report	1	10% (10)	13	LO # 4, 5 and 8		
Summative	Midterm Exam	2 hr	10% (10)	7	LO # 1-7		
assessment	Final Exam	2hr	50% (50)	16	All		
Total assessment			100% (100 Marks)				

Delivery Plan (Weekly Syllabus) المنهاج الإسبوعي النظري				
	Material Covered			
Week 1	This is How are you? Good morning			
Week 2	What's this in English? Numbers 1-10 Plurals			
Week 3	Countries He/she/they, his/her Where's he from?			
Week 4	Fantastic/awful/beautiful Numbers11-30Jobs			
Week 5	Am/are/is Negatives and questions Personal information Social expressions (1)			
Week 6	First Mid written exam+ listening test + an Oral test (and /or) Groups competition			
Week 7	Our/their Possessive 's			
Week 8	The family Has/have The alphabet			
Week 9	Sports/Food/Drinks Present simple – I/you/we/they			
Week 10	a/an Languages and nationalities Numbers and prices			
Week 11	The time Present simple – he/she Always/sometimes/never			
Week 12	Words that go together Days of the week			
Week 13	Question words Me/him/us/them This/that Adjectives Can I?			
Week 14	Second mid exam of the first semester			
Week 15	Preparatory Week (Study Material review for the final exam)			

Week 16 Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	New Headway Beginner Plus Student's Book + the workbook	No		
Recommended Texts	English for the Students of Mathematics book (Extra material for the Department's purposes)	No		
Websites	www.oup.com/elt			

PPEI DIX:

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

Module Information معلومات المادة الدراسية						
Module Title	Finite N	/lathematics	Module Delivery			
Module Type		Core	Theory			
Module Code	MA	ATH1205	⊠ Lecture			
ECTS Credits		4	⊠ Tutorial □ Practical			
SWL (hr/sem)		100	Seminar			
Module Level		Semester of Delivery	1			
Administering Department	MATH	College	Type College Code			
Module Leader	Ranen Zaid Ahmood	e-mail	ranen.z.ahmood@nahrainuniv.edu.iq			
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.			
Module Tutor	Name (if available)	e-mail	E-mail			
Peer Reviewer Name	me	e-mail	E-mail			
Scientific Committee Approval Date	01/10/2024	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 Aims اهداف المادة الدراسية	The aim of this course is for the students to be primarily concerned with applying mathematics problem-solving and reasoning to real-world phenomena, making finite mathematics a critical area of knowledge for students pursuing careers in business, social sciences, computer science, and other practical career disciplines.		

Module Learning Outcomes	Learning the basic concepts of mathematics, such as: To be able to deal with Sigma Notation, and mathematical induction. To be familiar with complex numbers and their properties. To deal with matrices: definition and some applications, and solution of
مخرجات التعلم للمادة الدراسية	mathematical equations with first, and higher degrees. To learn about polynomials and their properties with applications and definitions. To have experience in applications of Linear functions.
Indicative Contents المحتويات الإرشادية	Mathematical induction: summation, induction. Complex numbers: definitions, solutions, polar coordinates, Demoiver's Theorem, square roots of complex numbers. Matrices: definitions, type of matrices, operations on matrices, determinants, the inverse of matrices, linear systems, solving linear systems. Polynomials: definitions, properties, number of the roots, Cardan method, solution of nonlinear systems. Applications: linear functions, definitions, slope, two methods of the graph of linear equations.

	Learning and Teaching Strategies استراتيجيات التعلم والتعليم
Strategies	The subject will be given to the students on a whiteboard through a series of lectures with problem-solving practice carried out in interactive tutorials. These tutorials will be supported by practice and directed study outside the classroom. Formative assessment takes place during tutorials and feedback is given during these tutorials.

Student Workload (SWL) الحمل الدراسي للطالب					
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.2		
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.46		
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
	Quizzes	2	10% (10)	2, 6	LO #1, 3
Formative	Assignments	2	10% (10)	3, 8	LO # 2 and 3
assessment	Projects / Lab.	-	10% (10)	continuous	
	Report	1	10% (10)	14	LO # 4, 5

Summative	Midterm Exam	2	10% (10)	4,12	LO # 1,2 and 2-4
assessment	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100		
		Marks)			

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري			
	Material Covered		
Week 1	Sigma Notation: Summation, changing index summation, properties of Sigma notation, summation formulas		
Week 2	Mathematical Induction, principles, definition, method of solution		
Week 3	Complex Numbers: Definitions, Properties, Some areas of applications, Operations on complex numbers		
Week 4	Mid-Term Exam + Complex conjugates, laws of Algebra, solving for parameters		
Week 5	Polar representation for complex numbers, Demoiver's Theorem		
Week 6	Matrices: definitions, types, properties, operations of matrices		
Week 7	Determinants, different methods of computing determinants, properties, solving linear systems using determinants		
Week 8	The inverse of matrices, definition, two methods of computing matrix inversion		
Week 9	solving linear systems using the inverse of matrices, solving equations formulas		
Week 10	Polynomials: definitions, properties, operations		
Week 11	A quick method for computing the quotient of two polynomials, roots of a polynomial equation		
Week 12	Mid-Term Exam + upper and lower bounds of the real roots of the polynomial equation,		
Week 13	Relation between roots and coefficients of (2 by 2) polynomials, (3 by 3) polynomials, (4 by 4) polynomials, and (n by n) polynomials		
Week 14	Applications of Linear functions: the slope, increasing and decreasing of functions		
Week 15	Calculating the rate of change, two methods of graphing linear functions		
Week 16	Preparatory week before the final Exam		

Learning and Teaching Resources مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	د. رياض شاكر نعوم , د. سليم الكتبي,د. كاظم محمد , Applied method الصومعي Introduction to finite mathematics, , د. مصطفى احمد , د.محمد سردار د. جلال نعوم , د.محمد سردار	Yes
Recommended Texts	Mathematics with application brief version	No
Websites	https://www.khanacademy.org/math, www.mathhandboo www.google.com,	<u>bk.com</u> ,

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

Module Information معلومات المادة الدر اسبة						
Module Title	Foundation of	Mathematics (I)		Module Delivery		
Module Type	Core			□ Theory		
Module Code	MATH1102			⊠ Lecture		
ECTS Credits	7			☐ Lab ⊠ Tutorial	□ Lab ⊠ Tutorial	
SWL (hr/sem)	175 Deminar					
Module Level		1	Semester	of Delivery 1		
Administering Department		MATH	College	Science		
Module Leader	Ayat Abdulaa	li Neamah	e-mail <u>ayatneamah@nahrainuniv.edu.iq</u>		<u>iniv.edu.iq</u>	
Module Leader's Acad. Title		Lecturer	Module L	eader's Qualification	Ph.D.	
Module Tutor			e-mail			
Peer Reviewer Name			e-mail			
Scientific Committee Approval Date		01/10/2024	Version N	umber		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإر شادية		
Module Aims أهداف المادة الدر اسية	To understand the concepts of sets, logic and functions and enable the student to study the theorems that are related to them. To understand the need for proofs and develop the skills to enable the student to construct for themselves formal proofs. To develop the manipulative skills and mathematical intuition necessary for the study of mathematics at university.	

Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	 Understand and use logical notation and arguments. Construct simple mathematical proofs. To express correctly statements and proofs of simple mathematical theorems. To explain the properties of sets and their operations. Understand theorems related with algebra of sets and their proofs. Recognize the domain and the range of a function, draw the graph of a function Recognize the inverse of a function and the inverse image of a function. Understand the cardinal number and its applications. Recognize the countable sets. 			
Indicative Contents المحتويات الإر شادية	Indicative content includes the following. Chapter One – Mathematical Logic Mathematical statements, Compound statements, Negation, Connective, Conjunction, Disjunction, Conditional and biconditional statements, Logical equivalence, Tautology, Contradiction, Algebra of statements, Idempotent laws, Associatively, De Morgan's laws, Arguments, Valid arguments, Invalid arguments. Chapter Two – Set Theory Set, Subset, Belongs, Equal sets, Union, Intersection, Complement, Disjoint, Partition, Empty set, Universal set, Power set, Algebra of sets, Idempotent law, Commutative law, Distributive law, De Morgan's law, Cartesian product of sets. Chapter Three– Mappings Basic concepts and definition, Domain, Codomain, Range, Graph of mapping, 1-1 mappings, Onto mapping, Bijective mapping, Equality of mappings, types of mapping, Identity mapping, Constant mapping, Restriction of mapping and inverse mapping, Direct images and inverse images under mapping. [21 hrs] Chapter Four– Cardinality, Cardinal Numbers, Arithmetic on Cardinal <u>Numbers</u> Finite and infinite sets, Countable and uncountable sets.			
	Learning and Teaching Strategies			
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	استراتيجيات التعلم والتعليم			
	The main strategy that will be used in this module is to encourage the students			
Strategies	to participation in the module activities. This strategy will be by giving the			
	students quizzes, assignments, projects and midterm exams throughout the			
	semester.			

Student Workload (SWL) الحمل الدراسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	5.2	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	6.466666 7	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	175			

Module Evaluation تقييم المادة الدر اسية						
Time/Nu Weight (Marks) Week Due Relevant Learning mber Outcome					Relevant Learning Outcome	
	Quizzes	2	10% (10)	3, 9	LO #1, 2, 4 and 5	
Formative	Assignments	2	10% (10)	5,11	LO # 1,2, 3, 6 and 7	
assessment	Projects	1	10% (10)	Continuous		
	Report	1	10% (10)	14	LO # 4, 5 and 8	
Summative	Midterm Exam	2	10% (10)	6,12	LO # 1-7	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessment			100% (100 Marks)			

	Delivery Plan (Weekly Syllabus)			
	المنهاج الاسبوعي النظري			
	Material Covered			
Week 1	Mathematical statements, Compound statements, Negation, Connective,			
Week 2	Veek 2 Conjunction, Disjunction, Conditional and biconditional statements,			
Week 3	Logical equivalence, Tautology, Contradiction			

Week 4	Algebra of statements, Idempotent laws, Associatively, De Morgan's laws
Week 5	Arguments, Valid arguments, Invalid arguments
Week 6	Mid-term Exam+ Set, Subset, Belongs, Equal sets, Union, Intersection, Complement
Week 7	Disjoint, Partition, Empty set, Universal set, Power set, Algebra of sets
Week 8	Idempotent law, Commutative law, Distributive law, De Morgan's law
Week 9	Cartesian product of sets, Basic concepts and definition, Domain, Codomain, Range
Week 10	Graph of mapping, 1-1 mappings, Onto mappings, Bijective mapping, Equality of mappings
Week	types of mapping, Identity mapping, Constant mapping, Restriction of mapping, Extension
11	of mapping, Absolute value function
Week 12	Mid-term Exam + Composition mapping and inverse mapping
Week 13	Direct images and inverse images under mapping, cardinal number of a set
Week 14	Finite and infinite sets
Week 15	Countable and uncountable sets
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	أسس الرياضيات, هادي جابر مصطفى واخرون, الجزء الاول ١٩٨٣, جامعة البصرة-العراق.	Yes		
Recommended Texts	Schaum's Outline of Set Theory and Related Topics	No		
Websites	https://www.britannica.com/science/foundations-of-mathem	natics		

Grading Scheme مخطط الدر جات				
Group	Grade	التقدير	Marks (%)	Definition
	A - Excellent	امتياز	90 - 100	Outstanding Performance

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

Module Information معلومات المادة الدر اسية						
Module Title	Foundation o	f Mathematics (II)		Mod	ule Delivery	
Module Type	Core				neory	
Module Code	MATH1204				ecture	
ECTS Credits	8				itorial	
SWL (hr/sem)	200			□ Pı ⊠ Se	ractical minar	
Module Level 1		1	Semester	of Delivery 2		2
Administering I	Department	MATH	College	Science		
Module Leader	Ayat Abdulaali Neamah		e-mail	ayatne	amah@nahrain	univ.edu.iq
Module Leader's Acad. Title		Lecturer	Module L Qualifica	leader's		Ph.D.
Module Tutor			e-mail			
Peer Reviewer Name			e-mail			
Scientific Committee 5 Approval Date 5		5/10/2024	Version Number			

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Aims أهداف المادة الدر اسية	To become familiar with different types of relations between two sets. To understand the complete and well ordered sets. Perform appropriate proofs of properties within a given number system.			
Module Learning Outcomes	Understand and use relations on a set and arguments. Construct the equivalence relations and find the equivalence classes. Understand Partial order and total order relations.			

مخرجات التعلم للمادة الدراسية	Recognize the bounded sets and complete sets.
	Understand the construction of the integer numbers and understand their properties
	properties
	Use the mathematical induction in proofs within a given number system.
	Understand the construction of the complex numbers and perform appropriate
	calculations within this number system.
	Understand the binary operation and groups.
	Indicative content includes the following.
	Chapter One – Relations
	Type of relations, Reflexive, Symmetric, Transitive, Anti-symmetric, Equivalence
	relations, Equivalent classes, Properties of equivalent classes, Partition.
	Chapter Two –Ordering
	Partial order and total order, Least and greatest elements, Bounded sets, Upper bound,
	Lower bound, Least upper bound, Greatest lower bound, Complete sets, Well-ordered
	set .
	Chapter Three – The set of Natural Numbers N
	Peano's Axioms, Arithmetic of the natural number, Addition, Subtraction,
	Multiplication, Properties, Associative law of addition and multiplication, Distribution
	law Cancelation law of addition and multiplication. Ordering on \mathbb{N} Well ordering of
	N.
Indicative Contents	
المحتويات الإرشادية	Chapter Three – The set of Integer Numbers \mathbb{Z}
	Construction of the set of integers. The addition and multiplication on integers
	Properties, Associative law of addition and multiplication, Commutative law of addition
	and multiplication, Distribution law, Cancelation law of addition and multiplication,
	Ordering on Z.
	Chapter Four The set of Integer Numbers
	Construction of the rational numbers. The addition and multiplication on rational and its
	Construction of the rational numbers, The addition and multiplication on rational and its
	properties, Ordering on \mathbb{Q} , Density of \mathbb{Q} .
	<u>Chapter Five–The set of Real Numbers</u> \mathbb{R}
	Completeness property of real numbers, Additional Properties of the Integer Numbers,
	Divisibility and primes, Greatest common divisor and least common multiple, The
	fundamental theorem of arithmetic.
	Chapter Six- The Set of Complex Numbers
	Addition and multiplication on complex numbers.

	Chapter Seven-Basic Concepts in Group Theory
	Binary Operation, Basic definitions, Groups, Commutative group, Subgroup, Order of
	group.

Learning and Teaching Strategies			
Strategies	The main strategy that will be used in this module is to encourage the students to participation in the module activities. This strategy will be by giving the students quizzes, assignments, projects and midterm exams throughout the semester		

Student Workload (SWL) الحمل الدراسي للطالب				
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدر اسي المنتظم للطالب أسبو عيا	5.2	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	122	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	8.1333333	
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	200			

Module Evaluation تقييم المادة الدر اسية					
		Time/Nu mber	Weight (Marks)	Week Due	Relevant Learning
	Onimas		100/ (10)	2.0	LO#1.2.4 and 5
	Quizzes	Z	10% (10)	5,9	LO #1, 2, 4 and 5
Formative	Assignments	2	10% (10)	5,11	LO # 1,2, 3, 6 and 7
assessment	Projects	1	10% (10)	Continuous	
	Report	1	10% (10)	14	LO # 4, 5 and 8
Summative	Midterm Exam	2	10% (10)	6,11	LO # 1-7
assessment	Final Exam	3hr	50% (50)	16	All
Total assessment 100% (100)					

Delivery Plan (Weekly Syllabus)		
المنهاج الاسبوعي النظري		
	Material Covered	
Week 1	Type of relations, Reflexive, Symmetric	
Week 2	Transitive, Anti-symmetric,	
Week 3	Equivalence relations, Equivalent classes	
Week 4	Properties of equivalent classes, Partition	
Week 5	Partial order and total order, Least and greatest elements	

Week 6	Mid-term Exam+ Bounded sets, Upper bound, Lower bound
Week 7	Least upper bound, Greatest lower bound
Week 8	Complete sets, Well-ordered set
Week 9	The set of Natural Numbers N
Week 10	The set of Natural Integer \mathbb{Z}
Week 11	Mid-term Exam+ The set of Rational Numbers \mathbb{Q}
Week 12	The set of Real Numbers \mathbb{R}
Week 13	The Set of Complex Numbers C
Week 14	Binary Operation, Basic definitions, Groups
Week 15	Commutative group, Subgroup, Order of group
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس				
Text Available in the Library?				
Required Texts	أسس الرياضيات, هادي جابر مصطفى واخرون, الجزء الثاني ١٩٨٣, جامعة البصرة- العراق.	Yes		
Recommended Texts	Schaum's Outline of Set Theory and Related Topics	No		
Websites	https://www.britannica.com/science/foundations-of-mathematics	•		

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

Module Information معلومات المادة الدراسية					
Module Title	General Cł	nemistry	Module Delivery		
Module Type	S		⊠ Theory		
Module Code	CRGENCHE		⊠ Lecture ⊠ Lab		
ECTS Credits			Tutorial Practical		
SWL (hr/sem)			🗆 Seminar		
Module Level	1	Semester of Delivery	1		
Administering Department	Type Dept. Code	College	Type College Code		
Module Leader	Dr. Ahmed Al-Ani	e-mail	ahmed.sabeeh@nahrainuniv.edu.iq		
Module Leader's Acad. Title	Lecturer Module Leader's Qualification		PhD		
Module Tutor	Name (if available)	e-mail	E-mail		
Peer Reviewer Name	Ahmed Al-Ani	e-mail	E-mail		
Scientific Committee Approval Date	10/9/2024	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 Aims أهداف المادة	The primary objective of this course is to acquire basic concepts, principles, and techniques of modern chemistry that would empower students with an analytical mind set and the abilities to solve diverse analytical problems in an efficient and quantitative way that conveys the importance of accuracy and precision of the analytical results. On successful completion of this course, students will be able:			
الدراسية	 To develop an understanding of the range and uses of analytical methods in chemistry. To establish an appreciation of the role of chemistry in quantitative analysis To develop an understanding of the broad role of the chemist in measurement and problem solving for analytical tasks. 			
	4. To provide an understanding of chemical methods employed for elemental and compound analysis.			
	5. To provide experience in some scientific methods employed in analytical chemistry.			

	6. To develop some understanding of the professional and safety responsibilities residing in working on chemical analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After attending this course in general Chemistry, the students have to be able to develop a basic knowledge of main principles of chemical methods as follows To understand qualitative and quantitative properties of solutions, understanding all kinds of analytical concentrations. To describe and explain chemical equilibriums of acid base reactions Understanding the periodic table and atomic structure Understanding ionic compounds, types of bonds and Metal and nonmetal Understanding the acid/base reactions and titration methods Effectively teach practical science through the context of general chemistry Design problem solving activities to challenge student understanding of analytical method Understanding the safe handling of chemicals and the principles apparatus and unit operation in general chemistry
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Areas of general chemistry The current role of general chemistry Improve the student's mind by how he or she can deal with chemicals and its uses Teach students about hazardous chemicals and how can avoid any risk in the lab

Learning and Teaching Strategies استراتيجيات التعلم والتعليم		
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises presented during the class, home works and quizzes. Furthermore, encourage the student participation in panel discussion.	

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

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

Summative assessment	Midterm Exam	2 hr	30% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment		100% (100 Marks)			

Delivery Plan (Weekly Syllabus) المنهاج الإسبوعي النظري		
	Material Covered	
Week 1-2	Matter, measurements and significant figures	
Week 3-5	Atomic weight, molecular weight and moles calculations	
Week 6-8	Chemical reactions in solutions and concentrations	
Week 9-11	Periodic table and atomic structure	
Week 12-14	Ionic compounds and types of bonds	
Week 15	Acid base reactions and titrations	
Week 16	Preparatory week before the final Exam	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر		
	Material Covered	
Week 1	Lab 1: Safety rules and Laboratory equipments	
Week 2	Lab 2: PH and indicators	
Week 3	Lab 3: Acid base titration	
Week 4	Lab 4: Preparation of sodium hydroxide	
Week 5	Lab 5: Effect of concentration on reaction rate	
Week 6	Lab 6: Preparation and reaction of barium peroxide	
Week 7	Lab 7: Calculation the percentage of water in hydrated salt	

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Fundamental of analytical chemistry: Nine edition, Skoog	Yes		
Recommended Texts	Fundamentals of chemistry: Fourth Edition, David E. Goldberg	Yes		
Recommended Texts	Basic Inorganic Chemistry F. Albert Cotton, Geoffrey Wilkinson, Paul L. Gaus, , 3rd Edition, 1995	Yes		
Websites	Different wabsites			

Grading Scheme

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

	Module Information معلومات المادة الدراسية					
Module Title		Mechanics		Modu	lle Delivery	
Module Type	Basic	Basic			eory	
Module Code	CREQ1111		⊠ Leo ⊠ Lal	eture D		
ECTS Credits	5		□ Tutorial □ Practical			
SWL (hr./Sem)	125			ninar		
Module Level		1	Semester of	f Delivery	7	1
Administering Department		Mathematics and Computer Applications	College	Colle	ge of Science	
Module Leader	Dr. Ammar A. Alrawi		e-mail	ammar.a	alrawi@nahrainu	niv.edu.iq
Module Leader's Acad. Title Lecturer		Module Lea	ader's Qu	alification	Ph.D.	
Module Tutor	Dr. Ammar A. A	Alrawi	e-mail	ammar.a	alrawi@nahrainu	niv.edu.iq
Peer Reviewer Nan	ne	me	e-mail		ſ	
Scientific Committee Approval Date		8/11/2024	Version Nu	mber	1.0	

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

Module	Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدر اسية	Introduce students to basic concepts related to static and mobile systems. Introducing the student to the methods of classifying mechanical systems, the laws related to them, and the life applications that simulate their theories. Introducing the student to the methods of mathematical solutions to problems related to kinetic systems
Module Learning Outcomes مخرجات التعلم للمادة الدر اسية	Providing the student with sufficient experience to deal with kinetic systems according to the mathematical theories and laws compatible with them. Enhancing the student's mental ability to analyze kinetic systems according to those theories to find the required solutions to the problems that the

	student may face during study and after graduation.
Indicative Contents المحتويات الإرشادية	The instructional content includes the following: In our practical life we need to indicate the location of an object, whether it is stationary, non-stationary, or moving, and to determine the location of that object we use so-called "coordinates." There are several types of coordinates we can apply, such as rectangular coordinates and polar coordinates. And studying the usefulness of applying vectors in our lives [6 hours] Mechanics is one of the branches of physics that studies motion, and includes two main sections: kinematics, a science that describes the motion of objects without paying attention to the causes of motion. (Dynamics) is a science concerned with the causes of movement such as force and energy. We will first learn about the concepts of position, displacement, velocity and acceleration of objects to move in one dimension and in two dimensions with some nomenclature [10 hours] Physicist Isaac Newton based his theory of motion through three laws known as Newton's laws of motion, where he described the forces acting on the motion of bodies by these laws and the difference between mass and weight. [6 hours] While solving an exercise in kinesiology it is important to correctly analyze the forces acting on the body or system, and therefore the body. The forces acting on it will be illustrated, and this method is called a free body diagram. [4 hours] The concept of equilibrium, tensile equilibrium, rotational equilibrium, torque, vector torque, couple, center of mass, center of gravity. [10 hours] Work, Energy, Energy, Momentum, Energy Type [6 hours] Explain periodic motion, rotational motion, simple harmonic motion, relationship between uniform circular motion and simple harmonic motion, simple pendulum, simple harmonic motion, wave motion [10 hours]

Learning and Teaching Strategies				
استر اتيجيات التعلم والتعليم				
	Enabling students to solve problems related to the theoretical framework			
Strategies	of the lecture material.			
	Enabling students to thinking about life problems related to the subject of			
	the lecture.			
	Linking the lecture curriculum with practical applications, especially with			
	our daily life.			

Student Workload (SWL)				
Structured SWL (h/Sem) 63 Structured SWL (h/w) 4				

الحمل الدراسي المنتظم للطالب خلال الفصل			
Unstructured SWL (h/Sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	4.13
Total SWL (h/Sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
	Material Covered
Week 1	Introduction to vectors: Scalar Quantity, Vector quantity, resultant, graphical addition of vectors, Parallelogram method, subtraction of vectors, trigonometric functions, components of a vector, unit vectors
Week 2	Introduction to vectors: Problem solving
Week 3	Equilibrium under the action of concurrent forces: Concurrent forces, an object in equilibrium, first condition in equilibrium, Problem solution method.
Week 4	Equilibrium under the action of concurrent forces: Problem solving
Week 5	Equilibrium under the action of coplanar forces: Torque or momentum, two conditions for equilibrium, center of gravity
Week 6	Equilibrium under the action of coplanar forces: Problem solving
Week 7	Mid-term exam
Week 8	Uniformly accelerated motion: Speed, velocity and acceleration. Uniformly accelerated motion on straight line, projectiles.
Week 9	Uniformly accelerated motion: Problem solving
Week 10	Newton's Laws: Mass, Force, External force. Newton first law, Newton second law, Newton third law. Law of universal gravitation. Weight. Types of forces.

Wook 11	Newton's Laws:
WEEK II	Problem solving
	Work, Energy and Power:
Week 12	Work, kinetic energy, gravitational potential energy, conservation of energy, Power,
	Kilowatt-hour
Week 13	Work, Energy and Power: Problem Solving
	Impulse and Momentum:
Week 14	Linear momentum, impulse causes change in momentum, conservation of linear
	momentum, collisions and explosions. Elastic collision, coefficient of restitution.
Week 15	A week of preparation before the final exam

	Delivery Plan (Weekly Lab. Syllabus)			
	المنهاج الأسبوعي للمختبر			
	Material Covered			
	Instructions to students, Basic personal needs and other requirements. Writing			
Week 1	experiment calculations, Introduction to graphical representation of experimental			
	data, Errors, their determination and minimization, least square fitting and units.			
Week 2	Forces and Equilibrium			
Week 3	Spiral Spring and Hooks Law			
Week 4	Simple Pendulum and determination of gravitational acceleration (g).			
Week 5	Surface tension measurement			
Week 6	calculate the refractive index of light using a moving microscope			

Learning and Teaching Resources				
	مصادر التعلم والتدريس			
	Text	Available in the Library?		
Required Texts	University Physics, By Zemansky and Young	No (Available as an e-book)		
Recommended Texts	Fundamental of Physics by Halliday, Resnick and Walker	No (Available as an e-book)		
Websites				

Grading Scheme مخطط الدر جات					
Group	Grade	التقدير	Marks (%)	Definition	
	A – Excellent	امتياز	90 - 100	Outstanding Performance	
Success Group (50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors	
	C – Good	ختر	70 – 79	Sound works with notable errors	

	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficientمقبول50 - 59Work meets n		Work meets minimum criteria	
Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0-49)	F – Fail	راسب	(0-44)	Considerable amount of work required



Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Department of Math and Computer Application



MODULE DESCRIPTOR FORM نموذج وصف المادة الدر اسية

Module Inform	ماتmation	راسية المادة معلو	الدر			
Module Title	Human Rights And Democracy			Mod	Module Delivery	
Module Type	Theory Leo	cture		Theo	ory Lecture	9
Module Code				Lab		
ECTS Credits				Tuto	orial	
SWL (hr/sem)				Practical Seminar		
Module Level		First stage	st stage Semester of		Delivery Second Seme	
Administering Department		Math and Computer Application	College	llege College of sciences		
Module Leader	Dr. Ahmed Neama Jouda		e-mail	: ahme	: ahmedjuda68@gmail.com	
Module Leader's Acad. Title			Module Le Qualificati	ader's on		University Doctor Assistant
Module Tutor -			e-mail	-		
Peer Reviewer Name			e-mail			
Review Committee Approval		10/12/2024	Version Nu	ımber		

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى

Prerequisite module

Semester

Co-requisites module	Semester				
Module Air	ns, Learning Outcomes and Indicative Contents				
اف	الإرشادية والمحتويات التعلم ونتائج الدراسية المادة أهدا				
Module Aims الدراسي ة المادة أهداف	The aim of human rights and democracy lectures is to simplify the principles of human right and to assure democracy disciplines applying by equally and properly distribution among people in the society.				
	Cognitive objectives:				
	A1- Introducing the student to the principles of human rights.				
	A2- Briefly introduce the student to the nature of human rights and freedoms and the nature of democracy and its types. A3- Comprehensive knowledge of human rights and basic freedoms in light of the existing reality and types of political systems and states.				
	A4- Introducing the bullying stereotype and the Iraqi historical performance in Iraqi governments in the ancient and modern era.				
Module Learning					
outcomes	The skills objectives of the course:				
مخرجات التعلم للمادة الدراسية	B1 - Introducing the student to human rights and freedoms and how to deal with international and regional treaties and their internal legislation.				
	B2 - Deriving knowledge related to human rights and how they are reflected and their true civilizational role in the lives of peoples.				
	B3 - Knowing how different governments and ideologies deal with human rights and democracy in practice in countries of the world.				
Indicative Contents المحتويات الإرشادية					
	Learning and Teaching Strategies استراتيجيات التعلم والتعليم				
Strategies	This is done through a booklet that was prepared by me using external sources such as books, newspapers, and the information network, through in-person lectures, and				
	supporting this with illustrative means in Word or PDF format. It is carried out through weekly lectures and through observations made by the teacher and measuring the extent of students' knowledge.				

Student Workload (SWL) الحمل الدر اسي للطالب						
Structured SWL (h/sem)Structured SWL (h/w)أسبو عي ا للطالب المنتظم الدراسي الحمل						
Unstructured SWL (h/sem) خلال للطالب		Unstructured SWL (h/w) أسبو عي ا للطالب المنتظم غير الدراسي الحمل				
Total SWL (h/sem) الفصل خلال للطالب الكلي الدراسي الحمل						

Module Evaluation الدراسية المادة تقييم							
	Time/NumberWeight (Marks)Week DueRelevant Learning Outcome						
	Quizzes	2 times	10 marks				
	Assignments	once	20 marks				
Formative assessment	Seminars / Lab.						
	Report	once	10 marks				
Summative	Midterm Exam	once	10 marks				
assessment	Final Exam	once	50 marks				
Total assessme	ent		100 marks				

Delive	ry Plan (Weekly Syllabus)
	المنهاج الاسبوعي النظري
	Material Covered
Week 1	Concepts about human rights and fundamental freedoms.
Week 2	Categories and Features of Human Rights.
Week 3	Characteristics and advantages of human rights in Islam.
Week 4	The difference between human rights and public freedoms.
Week 5	Freedom, its concept and types.
Week 6	Human rights In ancient civilizations (Mesopotamia civilization).

Week 7	Human rights in ancient civilizations (Chinese, Hindu, Pharaonic and Greek Egypt) .
Week 8	Human rights in the heavenly religions (Christianity and Islam).
Week 9	Human rights in the Middle Ages.
Week 10	Human rights in the modern era and the international organizations responsible for implementing them.
Week 11	The concept of democracy and it's characteristics.
Week 12	Types of democracy.
Week 13	Pictures of democratic systems.
Week 14	Democratic political rights.
Week 15	Preparatory Week (Study Material review for the final exam).
Week 16	Final Exam

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

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	 Universal Declaration of Human Rights (Drafting Committee of the Universal Declaration of Human Rights). Human Rights (Thomas Paine). Human rights in Islam (Ali Abdul Wahid). 	Not available		

Recommended Texts	Human rights in the Arab world (Hussein Jameel) .	Not available
Websites		

APPENDIX:

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

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

marker(s) will be the automatic rounding outlined above.



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

Second Stage

Module Information معلومات المادة الدراسية							
Module Title	ADVANCE	ADVANCED CALCULUS I				ıle Deliver	ſy
Module Type	Core				⊠Theory		
Module Code	MATH 211				⊠Leo ⊠Lal	cture b	
ECTS Credits	8				⊠Tu □Pra	torial actical	
SWL (hr/sem)	200						
Module Level			Semester of Delivery 1		1		
Administering D	epartment	partment Department of Mathematics and Computer Applications College		llege of	ge of Science		
Module Leader	Nabaa Hussai	n Fakhry	e-mail	Na	baa.hu	issein@nal	hrainuniv.edu.iq
Module Leader's	Acad. Title	Assistant Teacher	er Module Leader's Qualification Ph			Ph	
Module Tutor	Name (if avail	able)	e-mail E-mail				
Peer Reviewer N	Peer Reviewer Name e-mail E-mail						
Review Committee Approval20/10/2024Version N			lum	ber			

	العلاقة مع المواد الدراسية الأخرى									
	C C		العلاقة مع المواد الدراسية الأخرى							
Prerequisite module No	lone	Semester								
Co-requisites module No	lone	Semester								
Module Ain	ms, Learning Outcomes and Indicative	e Contents								
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية									
Module Aims أهداف المادة الدراسية Sr ex S	To introduce the students to the sequences and infinite series infinite series and the test for convergence of series, absolute onvergence. Study and solutions of power series with its convergence, T xpansion of different functions and applications. Studying dimensional coordinate systems, distance in sp	s and studying the s e convergence and d aylor's series, Mac pace, Vectors and u	equences, conditional lurian series mit vectors.							

	Studying vector and distance in space: scalar (Dot), product (Cross). Lines and plane in space.
	Studying quadratic surfaces: paraboloid, ellipsoid and hyperboloid.
	That students gain proficiency in computations, in advance calculus.
Module Learning	That students to be able knowledge and understanding oh how laws are linked.
Outcomes	That Students enhance their logical thinking and problem structuring abilities.
مخرجات التعلم للمادة الدراسية	That students can obtain knowledge and understanding the advanced differentiation and integrations.
	The Support students in identify the most important applications in mathematics.
Indicative Contents المحتويات الإرشادية	 The student will be able to use new advanced methods and theorems in advance calculus. studying types of series, including tests, as well as binomial series and Taylor applications. The various vectors and the unit vector will be discussed in detail and studied extensively.
	Learning and Teaching Strategies
	استراتيجيات التعلم والتعليم
Strategies	The module will be presented to the students through a specified series of lectures, supported by problem solving practice carried out in interactives tutorials. These tutorials will be supported by practice and directed study outside the classroom. Completing homework is part of the learning experience. Students should review topics from prior courses as needed.

Student Workload (SWL) الحمل الدراسي للطالب						
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/N umberWeight (Marks)Week DueRelevant 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	Midterm Exam	2 hr	10% (10)	7	LO # 1-7	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assess	Total assessment 100% (100 Marks)					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Sequences of numbers, limit of sequences, bounded monotonic sequence.			
Week 2	Infinite series: definition of infinite series and examples, the n th term test for divergence, geometric series.			
Week 3	Test for convergence of series with Harmonic series.			
Week 4	Absolute convergences: Ratio tests and Root tests.			
Week 5	Alternating series and conditional convergence.			
Week 6	Power series for functions, convergence of power series.			
Week 7	Taylor's and Maclaurin series expansion of functions.			
Week 8	The binomial series and applications of Taylor series: integral and limit.			
Week 9	The dimensional coordinate systems, distance in space.			
Week 10	Vectors, unit vectors.			
Week 11	Dot product, vector projections.			
Week 12	Cross product, parallel vectors.			
Week 13	Lines and plane in space.			
Week 14	Quadratic surfaces: cylinder, ellipsoid, hyperbolic paraboloid.			
Week 15	Preparatory Week			
Week 16	Final Exam			

Delivery Plan (Weekly Lab. Syllabus)			
المنهاج الاسبوعي للمختبر			
Material Covered			
Week 1	Lab 1: introducing of limit of sequences and bounded monotonic sequence.		
Week 2	Week 2Lab 2: Using infinite series and geometric series in MATLAB.		

Week 3	Lab 3: Using Harmonic series in MATLAB.
Week 4	Lab 4: computing Power series for functions.
Week 5	Lab 5: Taylor's and Maclaurin series expansion of functions.
Week 6	Lab 6: Calculating Vectors and unit vectors.
Week 7	Lab 7: Using Dot product and Cross product in MATLAB.

Learning and Teaching Resources				
	مصادر التعلم والتدريس			
	Text	Available in the Library?		
Required Texts	Calculus and Analytic Geometry by Thomas	Yes		
Recommended Texts	Calculus Labs for MATLAB	No		
Websites	www.mathhandbook.com			

PPEN DIX:

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

Module Information						
		طومات المادة الدراسية				
Module Title	العربية	اللغة ا	Module Delivery			
Module Type	Secondary		⊠ Theory			
Module Code	URARA		⊠ Lecture □Lab			
ECTS Credits	2		Tutorial			
SWL (hr/sem)	50		⊠ Seminar			
Module Level	Preliminary studies	Semester of Delivery	2			
Administering Department	Physics Science	College	College of science			
Module Leader	Rana Majed Hamed	e-mail	Rana.Majid@nahrainuniv.edu.iq			
Module Leader's Acad. Title	Lecturer Module Leader's Qualification		M.D.			
Module Tutor	None	e-mail	E-mail			
Peer Reviewer Name	Fatimah Sahib Kadhim	e-mail	fatimah.altaie@nahrainuniv.edu.iq			
Scientific Committee Approval Date	20/11/2024	Version Number	1.0			

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية				
	The main objective of this semester is to strengthen the Queen of First Graders and			
	:develop their linguistic abilities and focus on			
Module	1.Acquiring knowledge skills about linguistic concepts			
Aims	2.Keep the tongue from falling into the word's pronunciation error			
أهداف المادة	3.Developing the student's expressive abilities			
الدراسية	4. Teaching students to analyze the speech system			
	5. Teach students to distinguish between the origins of the word or increase and what			
	.it does in increasing meaning			

	.6. Teaching students on methods and rules of control and drafting of vocabulary 7. Enabling the student to use the language vocabulary in the proper location			
	8. Provide trainings to strengthen the student's queen and develop his ability in			
	language practice and influential rhetoric, taking advantage of experiences and			
	training			
	9 Enabling students to read and analyze literary texts understand them and be able to			
	save them			
	.save mem Taashing students to read properly the words of the Holy Ouron learn its massing			
	reaching students to read property the words of the riory Quran, reach its meaning			
	and develop students' ability to keep and pronounce			
	The University of Nahrin works by teaching Arabic to strengthen the student's			
Module	linguistic queen.			
Learning	By adjusting and perfecting the rules of Arabic, introducing students to speech			
Outcomes	systems and the possibility of contributing to the teaching and refinement of writing			
	and damaged times, and being able to know the divisions of actions.			
مخرجات	This develops students' ability to understand the subject. and have the ability to detect			
التعلم للمادة	language errors.			
الدراسية	Teaching the right reading and understanding of educational grammatical systems and			
	developing the skill in addressing the problems faced by students in teaching Arabic			
	and directing it correctly			
	Students should be able to understand the basic principles of Arabi by			
	studying the sections of speech (name, verb and letter) and describing the definition			
	of each of them and what their connotation is			
Indicative	Innovative knowledge, experience and detailed knowledge of its types with			
Contents	representation			
المحتويات	The study was made by her sisters, her sisters, the statement of her meaning, her			
الاد شادية	work, what changes occurred in the sentence when she entered it, how to write the			
,	number, numbering marks, tied and open tags, and other topics of interest to the			
	student in learning the principles of Arabic			

Learning and Teaching Strategies استراتيجيات التعلم والتعليم					
Strategies	Strategies 1. POWERPOINT DISPLAY 2. Writing Reports 3. Quarterly Tests 4. Discussing and Solving Questions .5 Homework				
Structured SWL 33 Structured SWL (h/w) 2.2 الحمل الدراسي المنتظم المناطاب أسبوعيا الحمل الدراسي المنتظم المناطاب خلال الفصل المعالية المعا					
Unstructured SWL (h/sem)	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1		

الحمل الدر اسي غير المنتظم للطالب خلال الفصل		
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50	

Module Evaluation تقييم المادة الدراسية						
	Time/Number Weight (Marks) Week Relevant Learning Due Outcome					
	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11	
Formative assessment	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7	
	Seminar	1	10% (10)	13	LO # 5, 8 and 10	
Summative	Midterm Exam	2 hr	20% (20)	7	LO # 1-7	
assessment	Final Exam	2hr	50% (50)	16	All	
Total assessment			100% (100 Marks)			

	Delivery Plan (Weekly Syllabus) المنهاج الإسبوعي النظري
	Material Covered
Week 1	Grammar - Speech Section (Name, verb, letter), beginner, types, news and types
Week 2	It was her sisters, her sisters.
Week 2	Muthanna and his attachment, the collection of the peaceful masculine and his attachment,
week 5	the collection of the peaceful feminine and his attachment, the five names
Week 4	Building the past act, building the act.
Week 5	The tense act of building and godmother
Week 6	Assigned names (effect - absolute effect - effect - effect - effect - effect)
Week 7	Hair - Nazik Angels
Week 8	Poetry - Mohammed Mahdi Al Jawahiri
Week 9	Dictatorship - Writing the Shame (Connecting and Cutting)
Week 10	Intermediate and Extreme Shaking
Week 11	Writing Antidote and Adversity
Week 12	Writing short and long diversion
Week 13	Punctuation -The rule of a thousand paradoxes
Week 14	Writing Number
Week 15	The Holy Quran

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Expression, creation, written drawing and written dictation/a. d. Abdulrahman Matlak al-Jabouri	لا
Recommended Texts	Clarify the trajectory of the millennium of the son of Malik/Ibn Hisham. Qatar al-Nada and Bel al-Echo of Hisham's son. The hummus of the Sooty, as adequate as Abbas Hassan, is a shrewd custom in the art of drainage, polite in drainage.	ע
Websites	Adequate Grammar / Abbas Hassan.	

Grading Scheme مخطط الدر حات				
Group	Grade	التقدير	Marks (%)	Definition
	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
Success Group (50 - 100)	C – Good	ختر	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (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

Module Information معلومات المادة الدر اسية						
Module Title	Con	nputer programming 2		Mod	ule Delivery	
Module Type	Basi	С		IT I	neory	
Module Code	CRC	COMPRO2			ecture	
ECTS Credits	5				itorial	
SWL (hr/sem)	125 Practical Seminar					
Module Level	e Level 2		Semester of Delivery 1		1	
Administering Department	ent Mathematics and Computer Applications Science		College	College	College of Sciences	
Module Leader	Moha	mmed Q. Ali	e-mail	mohamr	ned.q.ali@nahrain	univ.edu.iq
Module Leader's Acad. TitleAssistant Lecturer		Module Leader's Qualification M.Sc.		M.Sc.		
Module Tutor	tor Name (if available)		e-mail	E-mail		
Peer Reviewer Name me		e-mail	E-mail	_		
Scientific Commit Approval Date	tee	15/9/2024	Version Number			

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية		
Module Aims أهداف المادة الدراسية	Cover fundamental programming concepts such as variables, data types, operators, expressions, and basic syntax specific to MATLAB. Introduce students to MATLAB's capabilities in handling and manipulating data, including arrays (vectors and matrices), indexing, and slicing. Teach students how to use conditional statements (if, else if, else) and iterative structures (for loops, while loops) in MATLAB to control the flow of their programs.	

	Familiarize students with writing and using functions and scripts in MATLAB, emphasizing good coding practices and code organization. Provide students with skills in performing numerical computations and basic mathematical operations using MATLAB's built-in functions and operations. Develop students' ability to apply MATLAB programming skills to solve simple computational problems and implement algorithms. Equip students with skills in debugging MATLAB programs to identify and resolve errors
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Understand MATLAB syntax and basic programming concepts (variables, operators, expressions). Work with different data types (numeric, character, logical, etc.) in MATLAB. Understand basic data structures such as arrays (vectors and matrices). Perform arithmetic and logical operations using MATLAB. Use conditional statements (if, else if, else) and loops (for, while) to control program flow. Create and call user-defined functions in MATLAB. Differentiate between scripts and functions. Perform basic numerical computations using MATLAB (e.g., solving equations, numerical integration). Debug simple MATLAB programs to identify and fix errors and utilize MATLAB Help and documentation to find information and resources.
Indicative Contents المحتويات الإرشادية	Overview of MATLAB environment (Basic operations and calculations in MATLAB, introduction to variables and data types and working with matrices and vectors) Control Flow and Loops in MATLAB Scripts and Basic Programming Concepts Functions in MATLAB (user defined functions) Introduction to symbolic computations (solving equations and calculus)

Learning and Teaching Strategies			
استر اتيجيات التعلم والتعليم			
Strategies	The main strategy that will be adopted in delivering this module is by explaining lectures in an interactive way by letting the students to participate in the presenting through questions and answers while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and labs.		

Student Workload (SWL) الحمل الدر اسي للطالب محسوب لـ ١٥ اسبو عا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.0
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.33
Total SWL (h/sem)	125		

الحمل الدراسي الكلي للطالب خلال الفصل

Module Evaluation تقييم المادة الدر اسية						
		Time/Nu	Weight (Marks)	Week Due	Relevant Learning	
	•	mber			Outcome	
	Quizzes	4	10% (10)	3,6,10,13	All	
Formative	Assignments	4	10% (10)	4,7,11,14	All	
assessment	Project	1	10% (10)	Continuous		
	Lab	2	10% (10)	8,15	All	
Summative	Midterm Exam	2hr	10% (10)	8,15	All	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessm	ient	Total assessment100% (100 Marks)				

	Delivery Plan (Weekly Syllabus)		
	المنهاج الأسبوعي النظري		
	Material Covered		
Week 1	Declaration variables, vectors and matrices		
Week 2	Programming Using Script Files		
Week 3	Input & Output Commands		
Week 4	Relational And Logical Operators		
Week 5	Conditional Statements		
Week 6	Conditional Loops		
Week 7	Conditional Loops cont.		
Week 8	Mid-term exam		
Week 9	User-Defined Functions		
Week 10	Anonymous Functions and Subfunctions		
Week 11	Symbolic Math Programming		
Week 12	Substituting A Numerical Value and Simplification an Equation		
Week 13	Solving Algebraic Equations		
Week 14	Calculus (Differentiation and Integration)		
Week 15	Mid-term Exam 2		

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Define variables vector and matrix
WEEK I	
Week 2	Lab 2: Create m-file and its properties
Week 3	Lab 3: I/O commands ("input", "disp" and "fprintf") statements and its properties
Week 4	Lab 4: Relational Operators and Logical ("and", "or" statements)
Week 5	Lab 5: {if - elseif - else - end} and {switch} statements
Week 6	Lab 6: {for loop} and {while loop} statements
Week 7	Lab 7: {break} and {continue} statements
Week 8	Practical Exam 1
Week 9	Lab 8: Write User-Defined Functions
Week 10	Lab 9: define Anonymous Functions and subfunctions
Week 11	Lab 10: Symbolic Variables and Expressions with "sym" and "syms" statements
Week 12	Lab 11: substitution and simplification Functions
Week 13	Lab 12: Solving Equations with {solve} statement
Week 14	Lab 13 and Calculus programming using {diff, and int} statements
Week 15	Practical Exam 2
Teaching	مرم عمد قاسه على امرم حنه، عبدالكرم امرم عباس الداهية / مرم ف- لطيف / مرم اعان خالد/ مرم نواس باس امرم عذراء عبدالسلام
Staff)،)، علنا عشم علي ()،)، على جداعارم ()،) جس بيرسيم ()،)، على عيد ()،)، ياده عند، ()،)، عرض يشر ()،)، عدود جدستر

Learning and Teaching Resources						
	مصادر التعلم والتدريس					
	Text	Available in the Library?				
Required Texts						
Recommended Texts	MATLAB: An Introduction with Applications (6 th . Edition) by Amos Gilat. 2017	No				
Websites	Documentation - MATLAB & Simulink (mathworks.c	<u>om)</u>				

Grading Scheme						
Group Grade Marks التقدير Definition						
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance		
	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
	C - Good	جيد	70 - 79	Sound work with notable errors		
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings		
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria		

Fail Group	FX – Fail	(45-49) راسب (قيد المعالجة)		More work required but credit awarded	
(0-49)	F – Fail	راسب	(0-44)	Considerable amount of work required	
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.					

Module Information معلومات المادة الدراسية							
Module Title	Cor	nputer II		М	Module Delivery		
Module Type	Bas	ic			Гheory		
Module Code	le Code			□ Lecture			
ECTS Credits	3				□ Tutorial		
SWL (hr/sem)	SWL (hr/sem) 75				□ Practical □ Seminar		
Module Level		Second	Semester of Delivery Second		Second		
Administering DepartmentMathematics and Computer Applications ScienceCollege		Colleg	College of Sciences				
Module Leader	Moha	mmed Q. Ali	e-mail mohammed.q.ali@nahrainuniv.edu.iq		nuniv.edu.iq		
Module Leader's Acad. Title		Assistant Lecturer	Module Leader's Qualification		M.Sc.		
Module Tutor	Name	e (if available)	e-mail E-mail				
Peer Reviewer Name me		e-mail	E-mail				
Scientific Committee Approval Date		25/12/2024	Version Number				

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	Network security Computer Troubleshooting E-commerce Artificial Intelligent (AI) Applications and Tools in AI. AI in Modern Smartphones		

	AI and Society
	Ethics In AI
	The AI Future
	You will be able to understand network and its types
	You will be able to Identify and understand the important of network security
	Understanding the E-commerce Application and how use them
Module Learning	You will be able to solve common HW and SW problems in computer
Outcomes	You will be able to explain the Fundamentals of AI
	You will be able to describe AI Applications and Real-World Problem Solving.
	You will be able to use the AI application in smartphones
مخرجات التعلم للمادة الدراسية	You will be able to Understand and Discuss the Ethics and Social Implications of AI
	You will be able to understand what is the AI future.
	You will be able to understand and use methos of digital image processing in
	MATLAB as practical application
	Introduction to Networking and Network Security
	Introduction to E-commerce (Types of E-commerce, E-commerce marketplaces and websites and online payment systems)
Indicative Contents	Hardware Troubleshooting, Software Troubleshooting and System Maintenance and Preventative Care.
المحتويات الإرشادية	Introduction to Artificial Intelligence (History and Evolution, Types of AI and
	Applications of AI)
	AI Ethics and Social Implications
	AI in Real-World Applications
	AI Tools
	Digital Image Processing

Learning and Teaching Strategies			
استر اتيجيات التعلم والتعليم			
Strategies	The main strategy that will be adopted in delivering this module is by explaining lectures in an interactive way by letting the students to participate in the presenting through questions and answers while at the same time refining and expanding their critical thinking skills. This will be achieved through classes and labs.		

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

الحمل الدراسي الكلي للطالب خلال الفصل

Lab

Summative

assessment

Total assessment

Midterm Exam

Final Exam

Module Evaluation							
		2	تقييم المادة الدراسية				
		Time/Nu	Weight (Marks)	Week Due	Relevant Learning		
		mber	0		Outcome		
	Quizzes	4	10% (10)	Continuous	All		
Formative	Assignments	3	10% (10)	Continuous	All		
assessment	Report	1	10% (10)	Continuous			

10%(10)

10% (10)

50% (50)

100% (100 Marks)

8,14

7,15

16

All

All

All

75

2

2hr

3hr

	Delivery Plan (Weekly Syllabus)					
	المنهاج الأسبوعي النظري					
	Material Covered					
Week 1	Security and Networking					
Week 2	E-Commerce					
Week 3	Computer troubleshooting					
Week 4	Computer troubleshooting (cont)					
Week 5	Introduction to AI (definition and evolution of AI)					
Week 6	Introduction to AI (Key characteristics and Benefits of AI)					
Week 7	Mid-term Exam 1					
Week 8	The Role of AI in Modern Smartphones (AI mobile technologies and virtual assistants)					
Week 9	The Role of AI in Modern Smartphones (Adaptive learning and real time translation services)					
Week 10	Applications and AI tools (overview of AI applications)					
Week 11	Applications and AI tools (Transportation, marketing, advertising, robotics and automation					
WCCK 11	technologies)					
Week 12	AI and Society					
Week 13	Ethics In AI					
Week 14	The future of AI					
Week 15	Mid-term Exam 2					

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Image Processing (Working with Image Types in MATLAB)
Week 2	Lab 2: Image Representation (read, display, save and information of an image)
Week 3	Lab 3: Display Array Data as Image
Week 4	Lab 4: Display Array Data as Image (Cont.)
Week 5	Lab 5: Spatial Transformations (crop, resize and rotate)
Week 6	Lab 6: Image Types and Type Conversions
Week 7	Lab 7: Image Types and Type Conversions (Cont.)
Week 8	Practical Exam 1
Week 9	Lab 8: Thresholding and Histogram tools
Week 10	Lab 9: Image Arithmetic
Week 11	Lab 10: Image Arithmetic (Cont.)
Week 12	Lab 11: Analyzing and Enhancing image
Week 13	Lab 12: Image registration
Week 14	Practical Exam 2
Teaching	
Staff	

Learning and Teaching Resources مصادر التعلم والتدريس						
Text					Available in the Library?	
Required Texts						
Recommended Texts		Introducti Banafa 20	ion to Artificial Inte	lligence (AI) by Ahmed	
		Cambridg Technolo Brown 20	ge IGCSE Information gy (3 rd . Ed.) by Dav 121	No		
		Technology In Action Complete (16 th . Ed.) by Alan Evans, Mary Anne Poatsy, Kendall Martin 2020 Fundamentals of Digital Image Processing: A Practical Approach with Examples in MATLAB by				
Websites		Chris Solomon 2011				
				ng Schem مخطط	e	
Group Grade		التقدير	Marks (%)	Definition		
	A - E	Excellent	امتياز	90 - 100	Outstanding F	Performance
Success Group (50 - 100)	B - V	ery Good	جيد جدا	80 - 89	Above average with some errors	
	C - C	Good	جيد	70 - 79	Sound work with notable errors	
	D - S	atisfactory	متوسط	60 - 69	Fair but with major shortcomings	
	E - S	ufficient	مقبول	50 - 59	Work meets minimum criteria	

Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded		
(0-49)	F – Fail	راسب	(0-44)	Considerable amount of work required		
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above						

Module Information معلومات المادة الدر اسية							
Module Title	Linear Algel	ora I		Mod	Module Delivery		
Module Type	Core				⊠ Theory		
Module Code	Math 212				ecture ab		
ECTS Credits	8				utorial		
SWL (hr/sem)	200	200					
Module Level		2	Semester of Delivery 1		1		
Administering I	Department	MATH	College	Scien	ce		
Module Leader	Dr.Zainab I	Riyadh Shaker	e-mail	-mail zaianb.riyadh22@nahrainuniv.ed		inuniv.edu.iq	
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		Ph.D.		
Module Tutor			e-mail				
Peer Reviewer Name			e-mail				
Scientific Committee Approval Date		01/09/2024	Version Number				

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

Mod	Module Aims, Learning Outcomes and Indicative Contents						
	أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية						
Module Aims أهداف المادة الدر اسية	The course provides students with an understanding of a number of topics and concepts in linear algebra. The course also introduce techniques of proof which are useful to other courses. The course aims to encourage students to develop interest in the subject and pursue other courses that require these skills.						
Module Learning Outcomes	 By the end of this course, successful students should be able to: Have a sound and broad understanding of how to solve systems of linear equations and matrix manipulation including computation of its inverse (when possible) and evaluate determinants 						

مخرجات التعلم للمادة	• Have a broad understanding of the concepts of vector and matrix algebra,				
الدراسية	including linear dependence/independence, basis and dimension of a				
	subspace, rank and nullity				
	• Have an understanding of the principles and applications of eigenvectors				
	and eigenvalues, Linear Transformations and present a rigorous analysis of				
	problems				
	• Be able to choose the correct method/strategy to solve problems using				
	appropriate mathematical routines and strategies				
Indicative Contents المحتويات الإر شادية	 Systems of linear equations; Row reduction and Matrix Equation Linear Transformations; Transformation Matrix; Matrix Operations; Inverse Matrix Vector Spaces; Null Space Vector Algebra, Basis, dimension and rank Eigenvectors and Eigenvalues Linear Transformation Orthogonality and Gram-Schmidt Process 				

Learning and Teaching Strategies استراتیجیات التعلم والتعلیم					
Strategies	The main strategy that will be used in this module is to encourage the students to participation in the module activities. This strategy will be by giving the students quizzes, assignments, projects and midterm exams throughout the semester.				

Student Workload (SWL) الحمل الدر اسي للطالب						
Structured SWL (h/sem) الحمل الدر اسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبو عيا	7			
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدر اسي غير المنتظم للطالب أسبو عيا	6			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	200					

Module Evaluation تقبيم المادة الدر اسية								
	Time/N umber Weight (Marks) Week Due Relevant Learning Outcome							
	Quizzes	2	10% (10)	3, 9	LO #1, 2, 4 and 5			
Formative assessment	Assignments	2	10% (10)	5,11	LO # 1,2, 3, 6 and 7			
	Projects	1	10% (10)	Continuous				
	Report	1	10% (10)	14	LO # 4, 5 and 8			
Summative assessment	Midterm Exam	2	10% (10)	6,12	LO # 1-7			
	Final Exam	3hr	50% (50)	16	All			
Total assess	nent		100% (100 Marks)					

Delivery Plan (Weekly Syllabus)				
المنهاج الأسبوعي النظري				
	Material Covered			
Week	Linear Equations and Matrices			
1				
Week	Systems of Lincor Equations			
2	Systems of Linear Equations			
Week	Matricos			
3	Matrices			
Week	Matrix Multiplication			
4				
Week	Algebraic Properties of Matrix Operations			
5				
Week	Special Types of matrices			
6				
Week	Solving Linear Systems			
7				
Week	Echelon Form of a Matrix			
8				
Week	Elementary Matrices: Finding A^{-1}			
9				

Week 10	Determinants
Week 11	Properties of Determinants
Week 12	Cofactor Expansion
Week 13	Inverse of a Matrix
Week 14	Other Applications of Determinants
Week 15	Vector space and its properties
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس					
Text Availab Libr					
Required Texts	Introduction to Linear Algebra and Application by Bernard Kolman	Yes			
Recommended Texts	Introduction to Linear Algebra by Franz hohn	No			
Websites	Websites Any website that specializes in the study of linear algebra				

Grading Scheme مخطط الدر جات						
Group Grade		Marks (%)	Definition			
	A – Excellent	امتياز	90 - 100	Outstanding Performance		
Success	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
Group	C – Good	ختر	70 – 79	Sound work with notable errors		
(50 - 100)	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings		
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria		
Fail Group (0-49)FX - Fail(قيد المعالجة)		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 Information							
معلومات المادة الدراسية							
Module Title	Probability	Theory	Module Delivery				
Module Type	Cor	e	Theory				
Module Code	MATH	2108	⊠ Lecture				
ECTS Credits			⊠ Tutorial				
SWL (hr/sem)	100		□ Practical □ Seminar				
Module Level	Semester of Delivery		1				
Administering Department	Mathematics and Computer Applications	College	College of Sciences				
Module Leader	Raneen Zaid	e-mail	Ranen.z.ahmood@nahrainuniv.edu.iq				
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.				
Module Tutor	Name (if available) e-mail		E-mail				
Peer Reviewer Name	Peer Reviewer Name e-mail		E-mail				
Scientific Committee Approval Date	23/10/2024 Version Number						

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية						
Module Aims أهداف المادة الدراسية	Describe discrete data graphically and compute of location and dispersions (mean and variance) Compute probabilities by modeling sample spaces and applying rules of permutations and combinations, additive and multiplicative laws and conditional probability Introducing basic statistical methodology of data analysis including; graphs, descriptive statistics Interpret probabilities and use probabilities of outcomes to calculate probabilities of events in discrete sample spaces- exclusive and independent events					

	The purpose of the random variable, some discrete and continuous distributions		
	Having successfully completed this module you will be able to:		
Module	A good understanding of elementary probability theory and its application		
Learning	A good understanding of the basic concepts of statistical inference		
Outcomes	A good understanding of the concept of a statistical distribution		
	A good understanding of the standard univariate distributions and their properties		
مخرجات التعلم	A good understanding of exploratory data analysis.		
المادة البياسة	A good understanding of the laws of probability and the use of Bayes theorem		
	A good understanding of the Central Limit Theorem and its application		
	Ability to write a short-report describing a simple statistical data set.		
Indicative Contents المحتويات الإرشادية	Exploratory data analysis: measures of location and spread; symmetry and skewness. Presentation and interpretation of data and report writing. Probability: Sample space, events, outcome, and axioms of probability. Addition and multiplication rules. The law of total probability, conditional probability, independence, Bayes Theorem. Practical applications. Random variables: Discrete and continuous random variables. Probability mass function, probability density function and cumulative distribution function. Expectation, variance and moments.		

Learning and Teaching Strategies				
	استراتيجيات التعليم			
Strategies	The module will be presented to the students through a specified series of lectures, supported by practice and directed study outside the classroom. Formative assessment takes place throughout the module during lectures and feedback is given during these lectures.			

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

Module Evaluation تقييم المادة الدراسية						
Time/NumberWeight (Marks)Week DueRelevant Learning Outcome						
	Quizzes	2	10% (10)	3, 8	LO #1, 2, and 3	
Formative	Assignments	2	10% (10)	6, 9	LO # 4 and 5	
assessment	Report	1	10% (10)	12	LO # 5 and 6	
Summative	Midterm Exam	2	20% (20)	5,10	LO # 1-5	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessment		100% (100 Marks)				

Delivery Plan (Weekly Syllabus)				
المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Introduction and overview of statistics			
Week 2	Organization and presentation of statistical data			
Week 3	Measures of central tendency (mean, median, mode,) of the simple data and the frequency distribution			
Week 4	Measures of dispersion (the range – the variance and the standard deviation			
Week 5	Coefficient of variation of the simple data and the frequency distribution			
Week 6	Sample space and events			
Week 7	Counting techniques (fundamental basics, addition rule – multiplication rule- permutation and combinations)			
Week 8	Definition of the probability and its applications			
Week 9	Conditional probability			
Week 10	Midterm exam.			
Week 11	Independence of events and bayes theorem and its applications			
Week 12	6definition of the random variable			
Week 13	The probability distribution			
Week 14	Some special probability distributions			
Week 15	The normal distribution.			
Week 16	Preparatory week before the final exam.			

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	 -Modern Mathematical Statistics with Applications, Jay L. Devore, Kenneth N. Berk, Springer, 2012. - MATHEMATICAL S T A T I S T I C S WITH APPLICATIONS, Dennis D. Wackerly, William Mendenhall III, Richard L. Scheaffer, Thomson Brooks, 2008. 	No		
Websites	www.mathhandbook.com			

Grading Scheme						
	مخطط الدرجات					
Group	Grade	التقدير	Marks (%)	Definition		
	A – Excellent	امتياز	90 - 100	Outstanding Performance		
Success Group	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
(50 - 100)	C – Good	جيد	70 - 79	Sound work with notable errors		
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings		

	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	F – Fail	راسب	(0-44)	Considerable amount of work required

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

Module Information					
معلومات المادة الدراسية					
Module Title	Operations Res	earch	Module Delivery		
Module Type	Core		Theory		
Module Code	MATH2211		Lecture		
ECTS Credits	5		Lab		
			Tutorial		
SWL (hr/sem)	75		Practical		
			Seminar		
Module Level	UGx11 UGI Semester of Delivery		One		
Administering Department	Mathematics and Computer Applications	College	Science		
Module Leader	Rewayda Razaq Mohsin	e-mail	rewayda.r.mohsin@nahrainuniv.edu.iq		
Module Leader's Acad. Title	Assistant Prof.	Module Leader's Qualification	PhD. Mathematics		
Module Tutor	-	e-mail	-		
Peer Reviewer Name	Fadhel subhi Fadhel	e-mail	Fadhel.subhi@nahrainuniv.edu.iq		
Review Committee Approval5\2\2025Version Number		Version Number			

Relation With O	ther Modules			
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	None	Semester		
Co-requisites module	None	Semester		
Module Aims, Le	earning Outcomes and In	dicative Contents		
التعلم والمحتويات الإرشادية	أهداف المادة الدراسية ونتائج			
Module Aims أهداف المادة الدراسية	Operations research is the application of scientific methods to reach optimal solutions to problems. It also helps to make better decisions. Furthermore, the term operational analysis is used in the British Army as an essential part of capability development and management. Operations research subject includes studying the topics of transportation models, assignment models, business network analysis, theory. The goal is to help the third stage study real-life problems and find mathematical solutions to them. 1- Develop a strategy to develop an understanding of real life problems. 2- Develop a strategy to write a model for clear and appropriate problems to solve them mathematically. 3- Encouraging students to use different methods to deal with new problems previously unknown to them through effective training of			
	 4- Exploring and evaluati identifying sources to ext 5-Promote independent le initial learning skills to st build and develop the ski 	ing research techniques, finding sources, and ract information. earning by encouraging students to return the imulate memory or to see how new skills of lls mentioned above	nd to the can	
Module Learning Outcomes	 The student learns the skill of building a mathematical model. The student learns the skill of solving the proposed model. 			
مخرجات التعلم للمادة الدراسية	3. The student learns many ways to solve.4. The student learns how to distinguish problems.5. learning programming by Matlab			

	-		
Indicative			
Contents			
المحتويات الإرشادية	Students should be able to understand the basic concepts of operations research that deals with the real life problems.		
Learning and Te	aching Strategies		
استراتيجيات التعلم والتعليم	١		
	- Teaching in the class and discussing the material with the students and ask questions.		
	- Writing on a white board with a marker in the classroom for demonstration the subject.		
	- Sudden daily and continuous weekly tests and participation in solving exercises.		
	- Exercises and activities in the classroom and electronically.		
Strategies	- Guide students to some sources that contain examples and exercises to benefit from them.		
	Develop the student's ability to work on the duties and deliver them on time.		
	- teaching them programming by using Matlab code		
	- Trying to apply the concepts by solving different types of exercises.		
	- Develop the student's ability to solve questions and discussion.		

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	Structured SWL (h/w) أسبوعيا الحمل الدراسي المنتظم للطالب	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	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

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

Delivery Plan (Weekly Syllabus)			
ة الاسبوعي النظري	المنهاج الاسبوعي النظري		
Week	Material Covered		
Week 1	Operations Research Models		
Week 2	Mathematical Formulation of Linear Programming (LP)		
Week 3	Graphical LP Solution		
Week 4	Simplex Method		
Week 5	Basic Solution, Big-M and Two-Phase simplex Method		
Week 6	Duality Theory		
Week 7	Transportation Problem		
Week 8	Network Analysis		

Week 9	CPM-PERT Methods for projects models
Week 10	Test for Optimality
Week 11	Assignment Problem
Week 12	Travel Salesman Problem
Week 13	Evolutionary Algorithms
	Genetic algorithm
XX7 1 1 4	Representation
Week 14	Genetic Operators
	Stopping Criteria
Week 15	Matlab Implementation
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus)		
المنهاج الاسبوعي للمختبر		
Week	Material Covered	
Week 1	Lab 1: drawing the constraints	
Week 2	Lab 2: drawing the feasible region	
Week 3	Lab 3: solve the LP by Graphical method	
Week 4	Lab 4: find the intersection points of the constraints	
Week 5	Lab 5: find the optimal solution	
Week 6	Lab 6: solve the LP model by simplex method	
Week 7	Lab 7: solve the LP by the genetic algorithm code	

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

Required Texts	Reeves, Colin, and Jonathan E. Rowe. <i>Genetic</i> algorithms: principles and perspectives: a guide to GA theory. Vol. 20. Springer Science & Business Media, 2002.	No
Recommended Texts	Engineering Optimization: Theory and Practice, Fourth Edition Singiresu S. Rao. 2009 by John Wiley & Sons, Inc.	No
Websites	www.oup.com/elt	

APPENDIX:

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

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4

will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module Information معلومات المادة الدراسية							
Module Title	ADVANCE	D CALCULUS	II		Modu	le Delive	ry
Module Type	Core		⊠Theory				
Module Code	MATH 211				⊠Leci ⊠Lab	ure	
ECTS Credits	8				⊠Tute □Prae	orial ctical	
SWL (hr/sem)	200				Sem	inar	
Module Level			Semester	• of	of Delivery 1		1
Administering Department		Department of Mathematics and Computer Applications	College	College of Science			
Module Leader	Nabaa Hussai	n Fakhry	e-mail	<u>Na</u>	ibaa.hus	ssein@na	hrainuniv.edu.iq
Module Leader's Acad. Title		Assistant Teacher	Module L Qualifica	eader's Ph		Ph	
Module Tutor Name (if available)		e-mail	E- :	E-mail			
Peer Reviewer Name			e-mail	E-mail			
Review Committee Approval		20/10/2024	Version N	Nun	ıber		

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							
	اهداف المادة الدراسية ونتائج التعلم وامحتويات الإرشادية						
Module AimsTo introduce the students to the partial derivatives for functions of two or more variables. Limit and continuity, chain rules.Study and solutions of the directional derivatives and tangent plans, maxima, minima and saddle points, Lagrange multiplier.							

ing double integral and iterated integrals over rectangles, double integral
general regions, area by double integration, triple integrals in rectangular
linates, Substitutions in double integrals and line integral.
ving Vector fields. Greens theorem Surface and area and Surface integrals
ing vector neuts, treens theorem, surface and area and surface integrals.
ing and understanding the Stokes theorem and The diverge theorem.
students gain proficiency in computations, in advance calculus.
students to be able knowledge and understanding oh how laws are linked.
Students enhance their logical thinking and problem structuring abilities.
students can obtain knowledge and understanding the advanced rentiation and integrations.
upport students in identify the most important applications in mathematics.
e student will be able to use new advanced methods and theorems in
nce calculus. dving the vector fields in details
e various types of integrations and its applications will be discussed and
ing intensively.
arning and Teaching Strategies
استراتيجيات التعليم والتعليم
nodule will be presented to the students through a specified series of lectures.
orted by problem solving practice carried out in interactives tutorials. These
als will be supported by practice and directed study outside the classroom.
bleting homework is part of the learning experience. Students should review
trom prior courses as needed.

Student Workload (SWL) الحمل الدراسي للطالب				
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا		
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) 200				

Module Evaluation								
تقييم المادة الدراسية								
	Time/N Weight (Marks) Week Due Relevant Learning 0utcome							
	Quizzes	2	10% (10)	5 and 10	LO #1, 2 and 10, #11			
Formative assessment	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	2 hr	10% (10)	7	LO # 1-7			
	Final Exam	3hr	50% (50)	16	All			
Total assessi	nent		100% (100 Marks)					

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Week 1	Function of two or more variables, Limit and continuity.			
Week 2	Partial derivatives, chain rules.			
Week 3	Directional derivatives and tangent planes.			
Week 4	Maxima, minima and saddle points.			
Week 5	Lagrange multiplier.			
Week 6	Double integral and iterated integrals over rectangles.			
Week 7	Double integral over general regions.			
Week 8	Area by double integration, triple integrals in rectangular coordinates.			
Week 9	Substitutions in double integrals, line integral.			
Week 10	Vector fields, Greens theorem.			
Week 11	Surface and area.			
Week 12	Surface integrals.			
Week 13	Stokes theorem.			
Week 14	The diverge theorem.			
Week 15	Preparatory Week			
Week 16	Final Exam			

Delivery Plan (Weekly Lab. Syllabus)				
المنهاج الاسبوعي للمختبر Material Covered				
Week 1	Lab 1: Introducing of Limit and continuity.			
Week 2	Lab 2: Computing derivatives.			
Week 3	Lab 3: Finding Maxima and minima.			
Week 4	Lab 4: Using Lagrange multiplier in MATLAB.			
Week 5	Lab 5: Computing Integral and double integral.			
Week 6	Lab 6: Calculating area by double integration and line integral.			
Week 7	Lab 7: Using Greens theorem in MATLAB.			

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Calculus and Analytic Geometry by Thomas	Yes		
Recommended Texts	Calculus Labs for MATLAB	No		
Websites	www.mathhandbook.com	-		

PPEN **DIX**:

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

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

Module Information معلومات المادة الدراسية					
Module Title	Solution of Ordinary Differential Equation (ODE)		Module Delivery		
Module Type	Core		□ Theory		
Module Code	MAT	ГН216	⊠ Lecture □ Lab		
ECTS Credits		4	⊠ Tutorial □ Practical		
SWL (hr/sem)	100		Seminar		
Module Level		Semester of Delivery	1		
Administering Department	Math. & Comp. Appl.	College	Type College Code		
Module Leader	Asst. Prof. Dr.Fatimah Al- Taie	e-mail	fatimah.altaie@nahrainuniv.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		e-mail	E-mail		
Scientific Committee Approval Date	15/2/2025	Version Number			

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

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

Module Aims أهداف المادة الدراسية	The aim of this course is for the students to be primarily concerned with learning the basic concepts of mathematics, application in reality, solution of ordinary differential equations with first-, and higher-order and their applications. In addition, different classes of ODEs are considered.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Learning the basic concepts of differential equations, such as: To be able to deal with ordinary differential equations (ODE) and their applications. To be familiar with first order ODE and learning how to solve such equations. To deal with higher order ODE and their solutions. To learn the difference between homogeneous and non- homogeneous differential equations. To have experience in applications of Laplace transform.
Indicative Contents المحتويات الإرشادية	Differential Equations: definition, properties, classifications. First-order DE: Types, methods of solution: separable, homogeneous, exact, non-exact, linear, Bernoulli differential equation. Higer-order DE: Definition, homogeneous linear DE., methods of solution. Non-homogeneous DE: definitions, properties, <ethods of="" solution.<br="">. Laplace Transform: Definitions, properties, applications.</ethods>

Learning and Teaching Strategies				
Strategies	The learning and teaching strategy is presented by: Providing the students with a sufficient amount of mathematical terms and definitions by attending lectures and presenting on the whiteboard to connect the students with the lecturer to solve as many real-life applications as possible. The pdf lectures, homework, quizzes, reports, seminar, and exercises are shared on Google Classroom. The subject will be given to the students through a series of lectures with problem-solving practice carried out in interactive tutorials. These tutorials will be supported by practice and directed study outside the classroom. Formative assessment takes place during tutorials and feedback is given during these tutorials.			

Student Workload (SWL) الحمل الدراسي للطالب					
Structured SWL (h/sem)63Structured SWL (h/w)4.2الحمل الدراسي المنتظم للطالب أسبوعيا					
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.46			

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100	
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Module Evaluation تقييم المادة الدراسية						
Time/Number Weight (Marks) Week Due Relevant Outcome						
	Quizzes	2	10% (10)	2, 6	LO #1, 3	
F	Assignments	2	10% (10)	3, 8	LO # 2 and 3	
Formative assessment	Projects / Lab.	-	10% (10)	continuous		
	Report	1	10% (10)	14	LO # 4, 5	
Summative assessment	Midterm Exam	2	10% (10)	4,12	LO # 1,2 and 2-4	
	Final Exam	3hr	50% (50)	16	All	
Total assessment			100% (100 Marks)			

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري				
	Material Covered			
Wook 1	Introduction to DE's:			
Definition and classification of Differential Equations (DE's)				
Week 2	First-order DE's: Separable DE.			
Week 3	Homogeneous first-order DE.			
Week 4	Exact differential equations			
Week 5	Non-exact differential equations.			
Week 6	Linear differential equation and Bernoulli equation.			
Week 7	Higher-order DE's: The general form of higher-order DE's			
Week 8	Homogeneous DE's			
Week 9	Definition and methods on solving homogeneous DE's			
Week 10	Nonhomogeneous DE's			
Week 11	Definition, properties, and methods of solving non-homogeneous DE's			
Week 12	Mid-Term Exam			
Week 13	Reducing second-order DE to first-order DE			
Week 14	Laplace Transform			
Week	Definition / properties of Laplace transform and then using Laplace			
15	transformation in solving DE's			
Week 16	Preparatory week before the final Exam			

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر			
	Material Covered		
Week 1			
Week 2			
Week 3			
Week 4			
Week 5			
Week 6			
Week 7			
Week 8			
Week 9			
Week 10			
Week 11			
Week 12			
Week 13			
Week 14			
Week 15			

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

Grading Scheme مخطط الدرجات					
Group Grade التقدير Marks (%) Definition					

	A Eventlant	4.4.1	00 100	Outstanding Daufamaanaa
Success Group (50 - 100) Fail Group (0 – 49)	A - Excellent	المتيار	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	ختر	70 - 79 Sound work with r errors	
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدر اسية						
Module Title	Linear Alge	Linear Algebra II			7	
Module Type	Core			 ☑ Theory ☑ Lecture ☑ Lab ☑ Tutorial 		
Module Code	Math 213					
ECTS Credits	8					
SWL (hr/sem)	200			□ Practical ⊠ Seminar		
Module Level		2	Semester	of Delivery 2		
Administering Department		MATH	College	Science		
Module Leader	Dr. Zainab Riyadh Shaker		e-mail	zaianb.riyadh22@na	hrainuniv.edu.iq	
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		Ph.D.	
Module Tutor			e-mail			
Peer Reviewer Name			e-mail			
Scientific Committee Approval Date		01/02/2025	Version Number			

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدر اسية ونتائج التعلم والمحتويات الإرشادية				
Module Aims أهداف المادة الدر اسية	The course provides students with an understanding of a number of topics and concepts in linear algebra. The course also introduce techniques of proof which are useful to other courses. The course aims to encourage students to develop interest in the subject and pursue other courses that require these skills.			

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	 Study of vector spaces and their solutions. Solving linear systems by RREF and GJRR methods. Inner product space and its applications. Gram Schmidt method and their applications.
Indicative Contents المحتويات الإر شادية	 Real Vector Spaces Linear Independence Vector Spaces; Null Space Isomorphism's Rank of a Matrix Gram-Schmidt Process Eigenvalues and Eigenvectors and Similarity

Learning and Teaching Strategies استراتیجیات التعلم والتعلیم				
Strategies	The main strategy that will be used in this module is to encourage the students to participation in the module activities. This strategy will be by giving the students quizzes, assignments, projects and midterm exams throughout the semester.			

Student Workload (SWL)						
	الحمل الدراسي للطالب					
Structured SWL (h/sem)	100	Structured SWL (h/w)	7			
الحمل الدر اسي المنتظم للطالب خلال الفصل	109	الحمل الدراسي المنتظم للطالب أسبو عيا	/			
Unstructured SWL (h/sem) الحمل الدر اسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبو عيا	6			
Total SWL (h/sem) الحمل الدر اسي الكلي للطالب خلال الفصل	200					

Module Evaluation تقييم المادة الدر اسية						
	Time/N Weight (Marks) Week Due Relevant Learnin umber Outcome					
	Quizzes	2	10% (10)	3, 9	LO #1, 2, 4 and 5	
Formative	Assignments	2	10% (10)	5,11	LO # 1,2, 3, 6 and 7	
assessment	Projects	1	10% (10)	Continuous		
	Report	1	10% (10)	14	LO # 4, 5 and 8	
Summative	Midterm Exam	2	10% (10)	6,12	LO # 1-7	
assessment	Final Exam	3hr	50% (50)	16	All	
Total assessment			100% (100 Marks)			

Delivery Plan (Weekly Syllabus)					
المنهاج الاسبوعي النظري					
	Material Covered				
Week 1	Real Vector Spaces				
Week 2	Subspaces				
Week 3	Span				
Week 4	Linear Independence				
Week 5	Basis and Dimension				
Week 6	Homogeneous Systems				
Week 7	Relationship between Nonhomogeneous Linear Systems and Homogeneous Systems				
Week 8	Coordinates and Isomorphism's				
Week 9	Isomorphism's				
Week 10	Rank of a Matrix				
Week 11	Inner Product Spaces				
Week 12	Length and Direction in R^2 and R^3				
Week 13	Gram-Schmidt Process				

Week	Linear Transformations and Matrices
14	
Week	
15	Eigenvalues and Eigenvectors and Similarity
Week	
16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	Introduction to Linear Algebra and Application by Bernard Kolman	Yes		
Recommended Texts	Introduction to Linear Algebra by Franz hohn	No		
Websites	Any website that specializes in the study of linear algebra	·		

Grading Scheme مخطط الدر جات						
Group	Grade التقدير		Marks (%)	Definition		
	A - Excellent	امتياز	90 - 100	Outstanding Performance		
Success Group (50 - 100)	B - Very Good	جيد جدا	80 - 89	Above average with some errors		
	C - Good	ختر	70 - 79	Sound work with notable errors		
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings		
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria		
Fail Group (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.