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

Department of Mathematics / College of Science / Mustansiriyah University
2024-2025

Academic Program and Course Description Guide
(Bolongna Curriculum)

2025

Description of The Academic Program

University Name: Mustansiriyah University
College/Institute: College of Science
Scientific Department: Department of Mathematics
Name of Academic or Professional Program: University Performance
Name of Final Degree: Bachelor of Mathematics
Study System: Semester and Bolongna Curriculum
Description Preparation Date: 16/2/2025
File Filling Date: 16/2/2025

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Assist. Prof. Dr. Bassam Jabbar Jasim
Date: 20/2/2025

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Approval of the Dean: Prof. Dr. Methaq Talib Gaata
Date: 20/2/2025

Introduction

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

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

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

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

Concepts and terminology

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

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

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

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

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

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

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

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

Academic Program Description Form

1. **Program Vision**
The department of Mathematics at the College of Science - Mustansiriyah University seeks to prepare and develop scientific staff specialized in mathematical sciences, so that the department becomes a pioneering and distinguished academic system for preparing students for the labor market and developing their abilities to interact and communicate with others by highlighting the importance and beauty of mathematics.

2. **Program Mission**
The main objective of the department of Mathematics' mission is to continually work for achieving the department's goals by achieving the following primary tasks: 1. Providing an excellent learning environment for students, educating them with knowledge, preparing them for responsibilities in society, searching for and encouraging the distinguished energies of students. 2. Activating scientific research by involving faculty staff and students in preparing scientific discussions, conferences, mathematics research, and disseminating knowledge. 3. Effective contribution with other sciences in developing the local community by using mathematical applications to address the problems facing this community.

Active participation in international, regional and local conferences and development courses inside and outside Iraq for raise the efficiency of staff and keep pace with development.

3. Program Objectives

1. Develop the student's ability to think abstractly based on scientific foundations (analysis and inference) and expand his horizons and encourage to think objectively to solve any problem facing in scientific and social life, as mathematics is always interested in discussing all possible possibilities to solve various problems.
2. Stimulating the student's interest in the importance of mathematics and its applications in various fields of scientific life by highlighting its creative aspects and its close relationship with other sciences.

Providing the student with a sober scientific base of information that enables to continue his postgraduate studies and keep pace with modern trends in mathematics.

4. Program Accreditation

Does the program have program accreditation? No

5. Other external influences

1- Training courses, workshops, continuing education seminars and women empowerment.
2- Scientific visits.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	9	40		Core course
College Requirements	9	40		
Department Requirements	9	40		
Summer Training	Summer training required			
Other	/			

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

7. Program Description				
Year/Level	**Course Code**	**Course Name**	**Credit Units**	
			Theoretical	**Practical**
First Level (First Semester) 2024-2025	MU010101101	Calculus I	8	
	MU010101102	Foundation of Mathematics I	8	
	MU010101103	Finite Mathematics I	7	
	MU02	Human Rights and Democracy	2	
	MU04	Computer I	2	1
	MU06	Arabic	2	
First Level (Second Semester) 2024-2025	MU010101204	Calculus II	8	
	MU010101205	Foundation of Mathematics II	8	
	MU010101207	Finite Mathematics II	7	
	MU010101206	Programming	2	2
	MU010101208	General Physics	5	
	MU01	English Language I	2	
Second Level (First Semester) 2024-2025	MU010102108	Advanced Calculus	7	
	MU010102109	Linear Algebra	7	
	MU010102110	Probability Basics	6	
	MU11	English Language II	2	
	MU14	Computer II	2	1
	-	Mathematical Physics	3	
Second Level (Second Semester) 2024-2025	MU010102210	Applied Linear algebra	7	
	MU010102211	Probability theory	6	
	MU010102212	Methods of Solving Ordinary Differential Equations	7	
	MU010102213	Programming languages	3	2
	MU03	The Crimes of the Baath Regime in Iraq	2	
	MU16	Arabic Language II	2	

8. Expected learning outcomes of the program

Knowledge

1- Comprehending and understanding the material with regard to the required and programmed vocabulary.
2- Using the board, dry pen and smart board.
3- Preparing appropriate questions as weekly discussions that contribute to clarifying the study material more.

Skills

1- The ability to comprehend mathematics and apply it practically.
2- The student acquires quantitative and scientific thinking skills that can be applied mathematically
3- Using many scientific and applied examples.
4- Solving exercises from the prescribed book and from auxiliary sources.

Ethics

1- Developing students' abilities to share scientific ideas.
2- Developing students' abilities to understand the basic principles of mathematics.
3- Developing students' abilities to participate in dialogue, present ideas, and accept the opinions of others.
4- Developing students' abilities in scientific thinking.

9. Teaching and Learning Strategies

1- Explain the scientific material to the students in detail.
2- Involve students in solving mathematical problems.
3- Discuss and dialogue about vocabulary related to the topic.
4- Develop a plan for raising and setting questions and quick exams.
5- Assign the student some group activities and duties.

10. Evaluation methods

1- Adopting classroom discussions and active participation in the classroom is evidence of the student's commitment and responsibility.
2- Raising the problem and assigning students to find solutions.
3- Solving the questions asked.
4- Answering quick exams to evaluate the students' level.
5- Commitment to the specified date for submitting daily exercises, assignments and research.
6- Daily, weekly and monthly exams and the end of the semester exam.
7- Activating the visiting colleague's visit, periodic visits to all academic stages, filling out a form and submitting it to the relevant committee in the department.
8- Discussing students' graduation projects.

11. Faculty

Faculty Members					
Academic Rank	**Specialization**		**Special Requirements/Skills (if applicable)**	**Number of the teaching staff**	
	General	**Special**		**Staff**	**Lecturer**
Bassam Jabbar Jasim	Mathematics	Differential and Difference equations	Head of Department	Staff	
Nadia Hashim Al-Noor	Statistics	Mathematical statistics		Staff	
Jamil A.Ali Al-Hawsy	Mathematics	Optimal Control Theory and Numerical		Staff	

Haider Jebur Ali	Mathematics	Topology		Staff	
Saad Abdulkadhim Alsaadi	Mathematics	Algebra - Module Theory		Staff	
Arkan Jasim Mohammed	Mathematics	Fractional Geometry		Staff	
Hanan A. Chachan	Mathematics	Operation Research		Staff	
Haytham Razooki Hassan	Mathematics	Homological Algebra		Staff	
Radhi Ali Zaboon	Mathematics	Dynamic system and optimal control theory		Staff	
Najm abdulzahra Makhrib	Mathematics	Number theory and algebraic geometry		Staff	
Emad Bakr Abdulkareem	Mathematics	Number Theory - Algebraic Geometry		Staff	
Nabaa N. Hasan	Mathematics	Approximation Theory		Staff	
Sabiha I. Mahmood	Mathematics	Topology		Staff	
Faez Hassan Ali	Mathematics	Operation Research and Cryptology		Staff	
Shatha sami sejad	Mathematics	Complex Analysis		Staff	
Sudad Khalil Abraheem	Mathematics	Mathematical statistics		Staff	
Faria Ali Chechan	Mathematics	Fuzzy Functional Theory		Staff	
Huda Abdullah Rasheed	Statistics	Mathematical statistics		Staff	
Rabeaa Gatea Abtan	Mathematics	Algebraic topology - Arrangement theory		Staff	
Arwa Nazar Mustafa	Mathematics	Functional Analysis		Staff	
Abdul khaleq Owaid Mazeel	Mathematics	Numerical Analysis		Staff	
Anmar Hashim Jasim	Mathematics	Deferential Equation		Staff	
Kasim Abbas Hussain	Mathematics	Applied Mathematics		Staff	
Zainab Esa Abdulnaby	Mathematics	Functional and Complex Analysis		Staff	
Zainab Shehab Hamed	Mathematics	Number Theory		Staff	
Zainab Mohammed Alwan	Mathematics	Differential Equations		Staff	
Wafaa Sayyid Hasanain	Statistics	Mathematical Statistics		Staff	
Zainab Shehab Hamed	Mathematics	Number Theory		Staff	
Ahmed Bakheet Saeed	Mathematics	Biomathematics		Staff	
Akbal Jabber Sultan	Mathematics	Mathematical statistics		Staff	
Lamyaa Hussein Ali	Mathematics	Numerical Analysis		Staff	
Jawad Kadhim Khalaf	Mathematics	Functional Analysis		Staff	
Khalid Hammood mohammedali	Mathematics	Applied Mathematics Delay Differential equations with Control Systems		Staff	
Ghazwa faisal abd	Mathematics	Descriptor Systems		Staff	
Shurooq Ahmed Kareem	Mathematics	Mathematical statistics		Staff	
Ali H. Al-Saedi	Mathematics	Number Theory		Staff	
Mohammed Abdulhadi Sarhan	Mathematics	Optimal control for Numerical Solution		Staff	
Ahmed Shawki Jaber	Mathematics	Integral Equations		Staff	
Sahar Ahmed Mohammed	Mathematics	Mathematical statistics		Staff	
Nadia Jaffa Fezaa	Mathematics	Mathematical statistics		Staff	
Zainab john kallaf	Mathematics	Partial Differential Equations		Staff	

Saad Owaid Bedewi	Mathematics	Algebra and Computer Applications		Staff	
Umilkeram Qasim Obaid	Mathematics	Fuzzy Functional Analysis		Staff	
Suhear Saady Alwan	Mathematics	Algebraic Topology		Staff	
Niran Abbas Ali	Mathematics	Graph theory		Staff	
Laheeb Muhsen Noman	Mathematics	Differential Geometry		Staff	
Ahmed Hanun Abud	Mathematics	Applied Mathematics		Staff	
Manal Hashim Ibrahim	Mathematics	Operation Research		Staff	
Amer Ismael Mustafa	Mathematics	Topological Groups		Staff	
Shaymaa Noori Abdulridha	Mathematics	Modules		Staff	
Murtadha Jaber Shanwa	Mathematics	Algebraic Topology		Staff	
Mahdi Jasim Hasan	Mathematics	Applied Algebra		Staff	
Manal Ghassan Ahmed	Mathematics	Operation Research		Staff	
Hiba Ghassan Fareed	Mathematics	Mathematics		Staff	
Akeel Nasir Kadhim	Mathematics	Modules and Rings Theory		Staff	
Ali Abdulrasool Abdulhussein	Mathematics	Differential Equations		Staff	
Hateem Kareem Khdair	Mathematics	Computational and Applied Mathematics		Staff	
Ayad Wali Ali	Mathematics	Differential Equations		Staff	
Amenah Hassan Ibraheem	Mathematics	Optimization Theory		Staff	
Hasan Wasi Maktoof	Mathematics	Pure Mathematics		Staff	
Zainab Sadiq Jafar	Mathematics	Numerical Analysis		Staff	
Ahmed Najm abdulla	Mathematics	Mathematics		Staff	
Rasha Abdulmahdi M.Saleh	Mathematics	Functional Analysis		Staff	
Aliaa Adnan Kadhim	Mathematics	Mathematics		Staff	
Shimaa Mohammed Dawood	Mathematics	Dynamic system and control		Staff	
Alaa Malek Soady	Mathematics	Functional Analysis		Staff	
Israa Mohammed Hassoon	Mathematics	Image Processing & Pattern Recognition		Staff	
Faten Hashim Mohammed	Mathematics	Module Theory		Staff	
Doha Adel Abbas	Mathematics	Operation Research		Staff	

Professional Development
Mentoring new faculty members
1- Continuous and accurate follow-up of the program. 2- Proposing new scientific ideas and participating in developing the academic program.
Professional development of faculty members
1- Participation in scientific courses, seminars and discussion groups. 2- Following up on the latest scientific research within the specialization. 3- Conducting scientific visits to relevant government institutions and the private sector.

12.**Acceptance Criterion**

1. Adopting the conditions for accepting students according to the regulations of the Ministry of Higher Education and Scientific Research (central admission criteria).
2. Successfully pass a special test or personal interview set by the college or university council.
3. Be medically fit for the specialization applied for.
The capacity of the scientific department.

13.**The most important sources of information about the program**
1- Curriculum books approved by the scientific committee in the department. 2- Auxiliary books. 3- International books and sources (sources in English). 4- Additional sources from the Internet.

14.Program Development Plan
1- Using new concepts in the field of mathematics and using electronic devices to display information and related issues. 2- Updating curricula by searching the latest approved global sources. 3- Developing laboratories by updating scientific experiments and using the latest laboratory equipment. 4- Diversifying lecture delivery methods by using modern teaching methods.

Program Skills Outline

Year/Level	Course Code	Course Name	Core or Basic	Required program Learning outcomes											
				Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Level (First Semester) 2024-2025	MU010101101	Calculus I	Core	√		√		√	√	√		√	√	√	√
	MU010101102	Foundation of Mathematics I	Core	√		√		√	√	√		√	√	√	√
	MU010101103	Finite Mathematics I	Core	√		√		√	√	√		√	√	√	√
	MU02	Human Rights and Democracy	Basic	√		√									
	MU04	Computer I	Basic	√		√		√	√	√		√	√	√	√
	MU06	Arabic	Basic	√		√									
First Level (Second Semester) 2024-2025	MU010101204	Calculus II	Core	√		√		√	√	√		√	√	√	√
	MU010101205	Foundation of Mathematics II	Core	√		√		√	√	√		√	√	√	√
	MU010101207	Finite Mathematics II	Core	√		√		√	√	√		√	√	√	√
	MU010101206	Programming	Basic	√		√		√	√	√		√	√	√	√
	MU010101208	General Physics	Basic		√			√	√						
	MU01	English Language I	Basic	√		√									
	MU010102108	Advanced Calculus	Core	√		√		√	√	√		√	√	√	√

Second Level (First Semester) 2024-2025	MU010102109	Linear Algebra	Core	√		√		√	√	√		√	√	√	√
	MU010102110	Probability Basics	Core	√		√		√	√	√		√	√	√	√
	MU11	English Language II	Basic	√		√									
	MU14	Computer II	Basic	√		√		√	√	√		√	√	√	√
	-	Mathematical Physics	Basic		√			√	√						
Second Level (Second Semester) 2024-2025	MU010102210	Applied Linear algebra	Core	√		√		√	√	√		√	√	√	√
	MU010102211	Probability theory	Core	√		√		√	√	√		√	√	√	√
	MU010102212	Methods of Solving Ordinary Differential Equations	Core	√		√		√	√	√		√	√	√	√
	MU010102213	Programming languages	Basic	√		√		√	√	√		√	√	√	√
	MU03	The Crimes of the Baath Regime in Iraq	Basic	√		√									
	MU16	Arabic Language II	Basic	√		√									

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

Module Description Form

Module Information					
Module Title	**Calculus I**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010101101**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	UGx11 UG1		**Semester of Delivery**	1	
Administering Department	Math		**College**	science	
Module Leader	1. Sabiha Ibrahim Mahmood 2. Shaymaa Noori Abd-Alridah		**e-mail**	1. ssabihaa@uomustansiriyah.edu.iq 2.sh_8079@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	1.Professor 2.Lecturer		**Module Leader's Qualification**	1.Dr. Sc 2. Dr.Sc	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	/06/2024		**Version Number**		

Relation with other Modules			
Prerequisite module	None	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	The aim of this course is to learn the students the Basic concepts in advanced Calculus, Differential geometry, Functional Analysis, Mathematical Analysis and Complex Analysis.
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1-How to solve inequalities 2- How to find the equation of a straight line 3- How to find and sketch the equation of conic sections (ellipse, parabola, hyperbola) 4- How to find the domain and range of a function 5- How to sketch a function 6- How to find the limit of a function 7- When is the function continuous? 8- How to find the derivative of a function 9- How to find the critical points and inflection points of a function.

	10- How to find the open intervals in which the function is increasing, decreasing, concave up, and concave down. 11- How to sketch trigonometric functions 12- How to find the derivative of trigonometric functions 13- How to find the limit of trigonometric functions
Indicative Contents	Indicative content includes the following. Part A. Sets Sets, Real values, Intervals, inequalities, Absolute values [5hrs.] Part B. Cartesian Plane Cartesian Plane, Lines and Circles, Conic Sections [9hrs.] Part C. Functions Functions, Operations on Functions, Graph of functions. [6hrs.] Part D. Limits and Continuity Limits, Infinite limits, limits at infinity, Continuity [12hrs.] Part E. Differentiation The derivative, Derivatives of higher order, the chain Rule, Implicit Differentiation, Increasing and decreasing functions, Concavity and points of inflection, Mean Value Theorem [18hrs.] Part F. Trigonometric Functions Trigonometric Functions, Graph of Trigonometric Functions, Limit, Continuity and Derivatives of Trigonometric Functions [10hrs.]

Learning and Teaching Strategies	
Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	37	**Unstructured SWL (h/w)**	7
Total SWL (h/sem)	100		

Module Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Sets, Real values, Intervals, inequalities, Absolute values
Week 2	Cartesian Plane, Lines and Circles
Week 3	Conic Sections
Week 4	Functions, Operations on Functions, Graph of functions
Week 5	First Exam
Week 6	Limits, Infinite limits, limits at infinity
Week 7	Continuity
Week 8	Differentiation, the derivative
Week 9	Derivatives of higher order, The chain Rule
Week 10	Implicit Differentiation
Week 11	Increasing and decreasing functions, Concavity and points of inflection
Week 12	Mean Value Theorem
Week 13	Trigonometric Functions, Graph of Trigonometric Functions
Week 14	Limit , Continuity and Derivatives of Trigonometric Functions
Week 15	Second Exam
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	1. Anton. H, Bivens .I & Davis. S. ,"Calculus ",7th ,2002. 2. Craw. I. "Advanced Calculus and analysis MA 1002",2000. 3. Dovermann. K.H., "Applied Calculus" math215,1999 4. Durfee. W.HB. ,"Calculus and Analytic Geomatry",1971.	Yes

	5. Thomas. G. B. & Finney. R. L ,"Calculus and Analytic Geomatry",6th ,1984. 6. Thomas. G. B. ," Calculus and Analytic Geomatry",4th ,1968.	
Websites		

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.

Code	Course/Module Title	ECTS	Semester
Math 102	Calculus I	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	Tutor 1	63	37
Description			
This model provides the student with learning to solve inequalities, finding the equation of a straight line, circle, and conic sections and drawing them in the plane, finding the domain and range of the function and drawing the function in the plane, as well as finding the limit, continuity and derivative of the function, the implicit derivation, and the chain rule. Also, studying the increasing, decreasing, and concave functions, finding critical points and inflection points, and studying the mean value theorem. Finally, studying the trigonometric functions, their properties, drawing them, and finding their limits and derivatives			

Module Description Form

Module Information		
Module Title	**Foundation of Mathematics** I	**Module Delivery**
Module Type	**Core**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**MU010101102**	
ECTS Credits	**8**	
SWL (hr/sem)	**200**	

Module Level		UGx11 UG1	**Semester of Delivery**		1
Administering Department		Math	**College**	EN	
Module Leader	Emad Baker Abdul-kareem		**e-mail**	e.b.abdulkareem@uomustansiriyah.edu.iq	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		B.Sc
Module Tutor	Dr. Bassam Jabbar Jasim		**e-mail**	bassam77jj@uomustansiriyah.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		/06/2024	**Version Number**		1

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	This course introduces students to techniques for evaluating deductive and probabilistic arguments. Our study of deductive reasoning will consist in the development of three different logical systems: categorical logic, propositional logic, and predicate logic. *Syllogistic* logic, which formed the basis of logic for over two thousand years, is the study of arguments whose constituent sentences express certain relations between *classes* of things. Propositional logic (*Boolean* logic) is the study of arguments that depend on the number of important sentence-connecting expressions in ordinary language like ***and***, ***or***, and ***not*** expressions whose logic also lies at the foundation of modern computer systems. Predicate logic (*first-order* logic) extends propositional logic to arguments that depend on the linguistic phenomena of predication (e.g., "Ali *is a* philosopher") and quantification (e.g., "*All* prime numbers except 2 are odd").
Module Learning Outcomes	**At the end of the course, students are expected to learn:** □ How to solve use Truth table to prove logical statements? □ How to find the negation of logical statements? □ How to choose the right method to prove logical statements? □ understanding the types of relations on the set.
Indicative Contents	Indicative content includes the following. The truth table and related topics. [42hrs.] Quantifiers and Mathematical Proof. [12hrs.] Algebra of sets. [48hrs.] Relations and related topics. [56hrs.]

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity

	2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them 8-Providing some sports games that encourage students to think and solve in a civilized and intelligent manner 9-Show some videos through (power point), which contain mathematical exercises, and direct questions to the students so that they activate the mind, and search for an answer.

Student Workload (SWL)

Structured SWL (h/sem)	138	**Structured SWL (h/w)**	9
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	
Total SWL (h/sem)	100		

Module Evaluation

As.		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	7, 11	LO # 1-3, #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Logic and Truth Table
Week 2	Tautology /Contradiction / Contingency
Week 3	Rules of Proof
Week 4	Logical Implication and Logical Reasoning
Week 5	Quantifiers
Week 6	Mathematical Proof

Week 7	Review and test
Week 8	Sets
Week 9	Equality of Sets
Week 10	Algebra of sets
Week 11	Review and Test
Week 12	Cartesian Product
Week 13	Relations Reflexive, Symmetric and Transitive Relations
Week 14	Countable sets, Similar Sets,
Week 15	Composition of relations
Week 16	Introduction to group theory

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	[1]**:** Fundamental Concepts of Modern Mathematics. Max D. Larsen. 1970.	Yes
Recommended Texts	1.Birkhoff .G and Mac Lane . Saunders." A Survey of Modern Algebra ", New York,1965. 2.Burton D. M." Introduction To Modern Abstract Algebra", London, 1967. 3. David M. Burton" Abstract Algebra", WM.C. Brown Publishers, 1988. 4. Frank Ayres, JR " Modern Algebra" Schaum's outline series, New York, 1965. 5. Lipschutz. S.," Theory and Problems of Set theory and Related Topics ", 6. Wildel., R. " Introduction to the Foundation of Mathematic ", New York, 1965. 7. Seymour Lipschutz, " Finite Mathematics " Schaum's Outline Series,1966. 8. Seymour Lipschutz, " Set Theory band Related Topics " Schaum's Outline Series,1964.	Yes
Websites		

Grading Scheme

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

Code	**Course/Module Title**	**ECTS**	**Semester**

MU010101102	Foundation of Mathematics I	8	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	1/0/0/1	93	107
Description			
This course introduces students to techniques for evaluating deductive and probabilistic arguments, and an understanding of the foundations of math. Our study of deductive reasoning will consist in the development of three different logical systems: categorical logic, propositional logic, and predicate logic. *Syllogistic* logic, which formed the basis of logic for over two thousand years, is the study of arguments whose constituent sentences express certain relations between *classes* of things. Propositional logic (*Boolean* logic) is the study of arguments that depend on the number of important sentence-connecting expressions in ordinary language like ***and***, ***or***, and ***not*** expressions whose logic also lies at the foundation of modern computer systems. Predicate logic (*first-order* logic) extends propositional logic to arguments that depend on the linguistic phenomena of predication (e.g., "Ali *is a* philosopher") and quantification (e.g., "*All* prime numbers except 2 are odd"). Also, this course is to give the students an introduction to set theory and relations on sets, relations types, and solving multiple step problems.			

Module Description Form

Module Information

Module Title	**Finite Mathematics I**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010101103**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		
Module Level	UGx11 UG1	**Semester of Delivery**	1
Administering Department	ENEE	**College**	Science
Module Leader	Dr. Zainab Shehab Hameed	**e-mail**	zainabshehab@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**	B.Sc
Module Tutor	Jawad K. Khalaf	**e-mail**	jawadaldelfi@uomustansiriuah.edu.iq
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	17 /10/2024	**Version Number**	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	A major objective of this course is the development of a library of elementary matrices and functions, including their important properties and uses. Employing this library as a basic working tool, students will be able to proceed through this course with greater confidence and understanding.
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1- How can transfer a linear system to an equation with matrix term and then solve it. 2- Cover most of tools that they need it about matrices like, inverse of matrix and adjoin of matrix. 3- How to find the roots of polynomials theoretically.
Indicative Contents	Indicative content includes the following. **Part A. Linear System** Summation notation, linear equations, system of linear equations, elimination methods, substitution methods. [30hrs.] **Part B. Matrices and determinants** Learn about the types of matrices and their operations, find the inverse of the matrix, calculate the determinants, and then solve a system of linear equations using matrices. Matrix definition, learn about the types of matrices and their operations (Addition and multiplication of matrices) and theorems on it, (reduce) row echelon form. [36hrs.] **Part C. Solved Linear Systems** Gauss-Jordan reduction, Gauss elimination, Cramer's Rule, matrix inverse. [24hrs.] **Part E. Determinants** Determinants of Matrices, Properties of Determinants. Cofactor Expansion Method. The Relation Between the Inverse of a Matrix and Determinant. Cramer's Rule.

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)

Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)	97	**Unstructured SWL (h/w)**	6
Total SWL (h/sem)	175		

Module Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	11, 15	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Linear Systems
Week 2	Types of Linear Systems
Week 3	Linear Equations and Graphs
Week 4	Solved Examples
Week 5	Matrices
Week 6	Types of Matrices. Operations on Matrices
Week 7	Theories of Matrices
Week 8	Reduced (Row) Echelon form on Matrices and Gauss Jordan Reduction Method
Week 9	Inverse of Matrices and Homogenous Systems
Week 10	Methods of Finding the inverse of a Matrix
Week 11	Linear Systems and inverses
Week 12	Determinants of Matrices, Properties of Determinants
Week 13	Solved Examples
Week 14	Cofactor Expansion Method. The Relation Between the Inverse of a Matrix and Determinant
Week 15	Cramer's Rule
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	[1] Finite mathematics an applied approach by Michael Sullivan, 11th Edition (2010). [2] Precalculus by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen and Dave Sobecki, 7th Edition (2008).	Yes
Recommended Texts	[3] Elementary Linear Algebra with Application 9th Edition by Bernard Kolman and David R. Hill (2008). [4] Theory and Problem of Finite Mathematics by Seymour Lipschutz. 1966. [5] College Algebra by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen and Dave Sobecki, 9th Edition (2010).	Yes

Websites	

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester
MU010101103	Finite Mathematics	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	1/0/0/1	78	97
Description			
A course for students with a good foundation in mathematics who are interested in mathematical models for the life, management. Topics include linear system, matrix algebra, determinant properties, polynomials, roots of polynomials, Inverse of Matrices and its Finding methods(Reduce (Row) Echelon form on Matrices)			

Module Description Form

Module Information

Module Title	**Democracy and Human Rights**			**Module Delivery**
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**MU02**			
ECTS Credits	**2**			
SWL (hr/sem)	**50**			
Module Level	UGx11 1	**Semester of Delivery**	1	
Administering Department	Mathematics	**College**	Science	
Module Leader	Ghassan Kareem mijthab	**e-mail**	drghassankareem@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	B.Sc	
Module Tutor	Amjad Z. Taama	**e-mail**	amjadztatmsc@uomustansiriyah.edu.iq	

Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	2024	**Version Number**	1.0

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Introducing the student to what is meant by the term democracy, the democratic system, human rights and basic freedoms, as well as increasing the student's knowledge of the theoretical conceptual aspect and the historical development of democracy and human rights. 2- Enabling the student to exercise his rights effectively through the comprehensive development of his personality and sense of dignity and respect for the rights and basic freedoms of others in accordance with the values of a democratic society. 3- Developing the student's skills and knowledge regarding the awareness of human rights and democracy and their effects on society. 4- Understanding and deducing the most important global experiences related to democracy or those that have tried to promote human rights, and trying to deduce what can be applied in our local communities. 5- - Defining the constitution, elections and the most prominent electoral experiences, and motivating students on the importance of active participation in political life.
Module Learning Outcomes	1- Defining human rights 2- Identifying the most prominent features, advantages and characteristics of human rights 3- Reviewing the roots and history of human rights 4- Analyzing the development of the idea of protecting human rights in the modern era 5- Identifying what is included in the International Bill of Human Rights 6- Shedding light on international organizations and bodies concerned with defending human rights 7- Defining democracy 8- Identifying the forms and images of democracy 9- Reviewing the roots and history of democracy 10- Shedding light on the constitution and democracy 11- Knowing what genocide crimes mean 12- Identifying the guarantees that ensure the democratic system
Indicative Contents	Education and training in the field of democracy and human rights is a lifelong process that develops knowledge and skills and enhances character and behavior in an effort to achieve sustainable protection of human rights and freedoms. Moreover, education in human rights contributes to preserving human dignity in an effort to establish societies that respect and value human rights, and thus work to establish a solid democratic system.

Learning and Teaching Strategies	
Strategies	The main strategy that will be adopted in presenting this subject will be based on encouraging students to accept topics related to democracy and human rights, and trying

	to improve some of the skills related to them. This will be achieved through interactive educational programs or by following some modern teaching methods.

Student Workload (SWL)			
Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
Week	**Material Covered**
Week 1	The general concept of human rights
Week 2	Definition of man, right and human rights
Week 3	Characteristics, characteristics and types of human rights
Week 4	Roots of human rights and their development in human history
Week 5	Development of the idea of protecting human rights in the modern era
Week 6	Human rights in ancient civilizations and heavenly laws
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	The concept and meaning of democracy
Week 9	Forms and images of democracy
Week 10	Historical background of democracy
Week 11	Characteristics and advantages of the democratic system
Week 12	Main components of democracy
Week 13	Constitution and democracy
Week 14	Permanent constitution of the Republic of Iraq 2005
Week 15	Elections
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources		
	Text	**Available in the Library?**

Required Texts	Lectures on Democracy and Human Rights	yes
Recommended Texts	Democracy and Human Rights: Their Development, Contents and Protection	yes
Websites		

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

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Description
Human Rights and Democracy focuses on teaching and educating students in the field of human rights and democracy, by understanding and deriving the most prominent global experiences that tried to advance human rights, and then identifying the main contents of human rights in the world, keeping abreast of developments that occur between societies and trying to benefit from experiences and devise what can be applied in our societies The course also aims to spread the culture and spirit of human rights among university students, and try to benefit from it in their practical lives The curriculum also focuses on studying the basic principles of the emergence of the democratic system and devising the most prominent international experiences that attempted to implement the democratic system, and then identifying the most prominent obstacles facing modern democratic systems, and trying to benefit from the experiences and devise what can be applied in our societies In addition to spreading the culture and spirit of democracy among university students, and trying to benefit from it in their practical lives.

Module Description Form

Module Information		
Module Title	**Computer I**	**Module Delivery**
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial**
Module Code	**MU04**	
ECTS Credits	**3**	

SWL (hr/sem)	**75**		☐ **Practical** ☐ **Seminar**	
Module Level	UG1	**Semester of Delivery**		1
Administering Department	Mathematics	**College**	Science	
Module Leader	Ayad Ali W.	**e-mail**	ayad.w.a@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**		B.Sc
Module Tutor	**Ahmed Bakheet**	**e-mail**	ahmedbakheet @uomustansiriyah.edu.iq	
Peer Reviewer Name		**e-mail**		
Scientific Committee Approval Date	2024	**Version Number**		

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	The aim of this model is Preparing for a career in information technology: learning a calculator is one of the surefire ways to prepare for a career in information technology, as it provides you with strong skills and fundamentals to work in an industry that relies heavily on technology. Personal development and general skills: learning the calculator contributes to the learning about computing can help you understand the ethical and social issues associated with technology and computing, and this allows you to make appropriate and responsible decisions when using technology. The benefits of learning a calculator can be many and varied, and depend on your personal and professional goals and how committed you are to achieving them.
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** ▪ How to deal with his academic profile ▪ How to deal with the WordPress program ▪ Learning how to write mathematical equations with the word program ▪ How to manage Excel program files Learn some important functions used in the EXCEL program
Indicative Contents	Indicative content includes the following. **Part A**. To deal with his academic profile [5hrs.] **Part B.** To deal with the WordPress program, learning how to write mathematical equations with the word program [5hrs.] **Part C. Roots approximation** How to manage Excel program files, [10 hrs] **Part D. Write codes in script and function files** Learn some important functions used in the EXCEL program, [10hrs.]

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example:

	1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	27	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	75		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	General Introduction, getting started with computer
Week 2	Academic profile , and its branches and Operators.
Week 3	Word program: Learn Basic Formatting: Start with the basics of formatting text, such as changing font styles, sizes, colors, and applying bold, italic, and underline. Experiment with text alignment, line spacing, and paragraph indentation..
Week 4	Practice Typing and Editing: The best way to get comfortable with Word is to practice typing and editing text. Create simple documents and make changes to them to get a feel for how the software works

Week 5	Work with Templates: Word offers a variety of templates for different types of documents (e.g., resumes, letters, and reports). Utilize these templates to create professional-looking documents quickly.
Week 6	Master Page Layout: Learn how to set margins, adjust page orientation (portrait or landscape), and add page numbers, headers, and footers. Exercise.
Week 7	Insert Images and Objects: Practice inserting images, shapes, and other objects into your documents. Learn how to resize, move, and align them properly.
Week 8	Work with Tables and Columns: Learn how to create and format tables for organizing data, and how to use columns to format text in multiple columns.
Week 9	Excel program: Explore Formulas and Functions: Excel's power lies in its ability to perform calculations. Learn about basic formulas (e.g., SUM, AVERAGE, MAX, and MIN) and functions. Understand how to use cell references in formulas to make them dynamic.
Week 10	Work with Formatting: Learn how to format cells, including changing font styles, colors, alignment, and adding borders. Utilize conditional formatting to highlight data based on specific criteria.
Week 11	Create Charts: Practice creating different types of charts (e.g., bar charts, pie charts, line charts) to visualize data effectively.
Week 12	Use Filters and Sorting: Learn how to filter and sort data to quickly analyze and find specific information within large datasets.
Week 13	Review and test
Week 14	Practice Data Analysis: Work with sample datasets and practice using Excel's various tools for data analysis, such as Goal Seek, Scenario Manager, and Solver
Week 15	Utilize Excel Functions: Excel offers a wide range of functions for various purposes

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	Numerical analysis Using MATLAB and Excel 3rd edition 2007	Yes
Recommended Texts	Microsoft Office Word 2019 Step by Step" Joan Lambert , Joyce Cox.	Yes
Websites		

Grading Scheme

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

Code	**Course/Module Title**	**ECTS**	**Semester**

MU04	Computer I	3	1
Class (hr/w)	**Lect/Lab./Prac./Tut**	**SSWL (hr/sem)**	**USWL (hr/w)**
1	0/1/0/0/	48	27
Description			
This model provides students with a variety of C++ learning techniques and tools. The model starts with listing instructor's contact information. By that it is meant instructor's official email address which is considered as the priority number one when a certain instructor should be contacted for some reason. Not only that, the course information is written at the beginning of the model, for example, credit hours, and room number at which the class takes place. Next, the main goal of the course should be clarified and clearly stated so students can imagine what are they really supposed to do to pass this course. Furthermore, the outcomes section which gives a basic idea about what students should be able to master at the end of the academic term. The section indicative contents present the main topics that are going to be introduced during the course. Learning and Teaching Strategies are employed here to give students an idea about how instructors will be delivering the knowledge to learners. A complete distribution of the materials of the course is mentioned and divided on 16 weeks throughout the course			

MODULE DESCRIPTION FORM

Module Information

Module Title	**Arabic Language I**	**Module Delivery**
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**MU06**	
ECTS Credits	**2**	
SWL (hr/sem)	**50**	

Module Level	UGx11 1	**Semester of Delivery**	1
Administering Department	Mathematics	**College**	Science
Module Leader	Dr. Entiha Abbas Aliwi	**e-mail**	Enteaaabbas@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	B.Sc
Module Tutor	No available	**e-mail**	E-mail
Peer Reviewer Name		**e-mail**	E-mail
Scientific Committee Approval Date	01/11/2024	**Version Number**	1.0

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1- Helping the student to love the Arabic language, the language of the Holy Quran. 2- Identifying the beauty of the Arabic language and its literature. 3- That the student acquires the ability to study the branches of the Arabic language. 4- Introducing the student to the correct Arabic words, structures and correct styles in an interesting and attractive way. 5- Developing the student's correct language skills in formal correspondence
Module Learning Outcomes	1- Learning the characteristics of the language and its advantages over other languages 2- Achieving linguistic and grammatical competencies in students' performance of the Arabic language in each of composition, grammar and dictation 3- Identifying the syntactic aspects in the Arabic language subject 4- Knowing the movements (fatha, damma and kasra) and other sounds such as the hamzat al-fasl and al-wasl. 5- Reading words and sentences, understanding their meanings and linking them together 6- The student acquires the ability to express himself correctly in communication, speaking and writing. 7- Learn the basics of writing numbers 8- Understands the original and secondary signs of Arabic sentences 9- Raise the student's level of correct reading, correct pronunciation, and understanding of idea. 10- Teach the student to memorize a sufficient amount of literary texts, enjoy them, and appreciate the beauty in them
Indicative Contents	The counseling session provides the client with the opportunity to express what is inside him and behave freely. The counselor must listen well, observe carefully, and focus attention on every word or action so that the counselor understands the different aspects of the problem, maintains the classical language, avoids colloquial language, and addresses common mistakes**.**

Learning and Teaching Strategies	
Strategies	Education is the transition of students from a focus on skills in elementary grades to a focus on adoption. Students face many demands in order to read information through textbooks, and they also take notes during lectures, and they work independently, in addition to expression.

Student Workload (SWL)			
Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation				
As	**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**

Formative assessment	**Quizzes**	2	10% (10)	4 and 14	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	5 and 9	LO #2, #3 and #7, #8
	Projects / Lab.	1	10% (10)	12	LO #5, #6 and #9
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	A brief about the importance of language
Week 2	A lecture on the sections of the Arabic language
Week 3	A lecture on the sections of the Arabic sentence in our language
Week 4	A lecture on the sections of the nominal and verbal sentence in the language
Week 5	A lecture on writing the number
Week 6	A lecture on distinctive sentences
Week 7	A lecture on how to put punctuation marks
Week 8	**Midterm Exam**
Week 9	Lecture on Arabic Literature
Week 10	Lecture on the Sections of Arabic Literature
Week 11	Lecture on the Sections of Arabic Poetry with a Sample of Its Poems
Week 12	Lecture on the Sections of Prose with a Sample of Its Prose
Week 13	Lecture that includes practical applications for all language subjects
Week 14	Lecture (practical tests for all literature subjects)
Week 15	Knowing the medial and extreme hamza
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Lectures in General Arabic	yes
Recommended Texts	Arabic for Non-Majors	yes
Websites		

Grading Scheme

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

	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.			

Description
Arabic is one of the most widely spoken languages in the world; it is among the six most famous languages in the world, according to the United Nations classification. The Arabic language is also widely known in writing and speaking. The Arabic language has been preserved in several places, including the League of Arab States through computerizing the Arabic language material, in addition to publishing Arabic programs that keep pace with the modern era, in terms of absorbing language skills that include writing, reading, speaking, and listening, which allows the student to participate in discussions, activities, seminars, direct observation, and self-learning. Also, the benefit of learning the Arabic language is that the student acquires the basic rules of the branches of the Arabic language, and benefits from them, as understanding the Arabic language improves the student's ability to express what is in his mind, and what the situations require, whether this expression is verbal, or written in straight language.

Module Description Form

Module Information

Module Title	**Calculus** II	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010101204**		
ECTS Credits	**8**		
SWL (hr/sem)	**100**		
Module Level	UGx11 UG1	**Semester of Delivery**	2
Administering Department	Math	**College**	science
Module Leader	1.Sabeha Mahmood Ibrahim 2.Shaymaa Noori Abd-Alridah	**e-mail**	1.ssabihaa@uomustansiriyah.edu.iq 2. sh_8079@uomustansiriyah.edu.iq
Module Leader's Acad. Title	1.Professor 2.Lecturer	**Module Leader's Qualification**	1.Dr.Sc 2. Dr.Sc
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	/06/2024	**Version Number**	

Relation with other Modules			
Prerequisite module	None	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	This course prepares students in the first year to learn various Inverse Trigonometric Functions, The General Logarithmic functions, improper integration, calculating the limits using L'Hopital rule, Hyperbolic Functions, Graph of Hyperbolic and their Inverse The Indefinite Integral ,methods of integration ,Integration by Parts, Trigonometric Integrals and Trigonometric Substitutions, Integration by Partial Fractions, and finally the Definite Integral, Applications of the Definite Integral (Area and Volumes).
Module Learning Outcomes	**At the end of the course, students are expected to learn:** □ How to solve single integrals using different methods such as trigonometric substitutions, the method of completing the square, integration by parts, the method of partial fractions, integrals containing fractional powers, integrals of powers of trigonometric functions, □ How to find improper integrals, □ How to, find Inverse Trigonometric Functions, Derivative of the inverse Trigonometric Functions □ How to find limits using L'Hopital rule? □ How to apply, The General Logarithmic functions and The Natural Logarithmic functions □ How to sketch the Graph of Inverse Trigonometric Functions and Graph of Hyperbolic Functions and their Inverse? □ How to use The Definite Integral, Applications of the Definite Integral (Area and Volumes)
Indicative Contents	Indicative content includes the following. **Part A. Method of integration** Trigonometric substitutions, the method of completing the square, integration by parts, the method of partial fractions, integrals containing fractional powers, integrals of powers of trigonometric functions, [15hrs.] **Part B. Inverse** **Trigonometric Functions, Hyperbolic Functions, Graph of Inverse Trigonometric Functions and Hyperbolic Functions, Derivative of the inverse Trigonometric Functions and Hyperbolic Functions** [6hrs.] **Part C. Improper integral** To determine whether the improper integral is converging or diverge. [6hrs.] **Part D. L'Hopital rule** To find the limits of the types ($\frac{0}{0}, \frac{\infty}{\infty}, \infty - \infty, 0.\infty, 0^0, \infty^0, 1^\infty$) [10hrs.] **Part E. The General Logarithmic** The General Logarithmic functions and The Natural Logarithmic functions, The General Exponential functions and the Natural Exponential functions . [10hrs.] **Part F. The Definite Integral** Applications of the Definite Integral (Area and Volumes) [10hrs.]

	Part G. Improper Integrals [3hrs.]

Learning and Teaching Strategies	
Strategies	1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	37	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	100		

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3, #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
Week	**Material Covered**
Week 1	Inverse Trigonometric Functions, Graph of Inverse Trigonometric Functions, Derivative of the inverse Trigonometric Functions
Week 2	The General Logarithmic functions and The Natural Logarithmic functions

Week 3	The General Exponential functions and the Natural Exponential functions
Week 4	Hyperbolic Functions, Graph of Hyperbolic Functions, Derivatives of hyperbolic Functions
Week 5	Inverse Hyperbolic Functions and Derivatives of inverse Hyperbolic Functions.
Week 6	L'Hopital's Rule
Week 7	First Exam
Week 8	The Integration: The Indefinite Integral
Week 9	Methods of integrations: Integration by Parts
Week 10	Trigonometric Integrals
Week 11	Trigonometric Substitutions, Integration by Partial Fractions
Week 12	Integration of functions that contain roots, Integration of Rational Functions
Week 13	Second Exam
Week 14	The Definite Integral, Applications of the Definite Integral (Area and Volumes)
Week 15	Improper Integrals
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts	1. Anton. H, Bivens .I & Davis. S.,"Calculus ", 7th, 2002. 2. Craw. I. "Advanced Calculus and analysis MA 1002",2000. 3. Dovermann. K.H., "Applied Calculus" math215,1999 4. Durfee. W.HB. ,"Calculus and Analytic Geomatry",1971. 5. Thomas. G. B. & Finney. R. L ,"Calculus and Analytic Geomatry",6th ,1984. 6. Thomas. G. B. ," Calculus and Analytic Geomatry",4th ,1968.	Yes
Websites		

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester
MU010101204	Calculus II	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	Tutor 1	63	37
Description			
This model provides the student with learning different methods of integration such as the method of trigonometric substitutions, the method of completing the square, integration by parts, the method of partial fractions, integrals containing fractional powers, integrals of powers of trigonometric functions, , improper integration, L'Hoptal's rule for finding the limits, Inverse Trigonometric Functions, Graph of Inverse Trigonometric Functions, Derivative of the inverse Trigonometric Functions, The General Logarithmic functions and The Natural Logarithmic functions The Definite Integral and their applications in finding the area between two curves and the length of the curve, and finally Hyperbolic Functions, Graph of Hyperbolic Functions, Derivatives of Hyperbolic Functions ,Inverse Hyperbolic Functions and Derivatives of inverse Hyperbolic Functions.			

Module Description Form

Module Information

Module Title	**Foundation of Mathematics II**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010101205**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		
Module Level	UGx11 UG1	**Semester of Delivery**	2
Administering Department	Math	**College**	Science
Module Leader	Emad Baker Abdul-kareem	**e-mail**	e.b.abdulkareem@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	B.Sc
Module Tutor	Dr. Bassam J. Jasim	**e-mail**	bassam77jj@uomustansiriyah.edu.iq
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	/06/2024	**Version Number**	

Relation with other Modules

Prerequisite module		**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	This course prepares students in the first year to learn the basic topics **foundation of mathematics** related to axioms of construction of Natural numbers, Integer Numbers, Rational Numbers and Real Numbers. Also, will get a good idea about group, ring and field.
Module Learning Outcomes	At the end of the course, students are expected to learn: • Understanding the methods of construction of Natural numbers by Piano's Theorem. • Understanding the methods of construction of integer numbers from natural numbers. • Understanding the methods of construction of rational numbers from integer numbers.
Indicative Contents	Indicative content includes the following. 1- System of Natural numbers. [18hrs.] 2- System of Integer numbers. [18hrs.] 3- System of Rational numbers. [18hrs.] 5- System of Real numbers. [18hrs.] 6-Mathematics System, Semi-Group. [6hrs.] 7- Congruence in the Integers. [6 hrs.] 8- Group, ring and field. [18 hrs.]

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them.

Student Workload (SWL)

Structured SWL (h/sem)	138	**Structured SWL (h/w)**	9
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	
Total SWL (h/sem)	100		

Module Evaluation

As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	6, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	

	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Function and Peano's axiom, Natural numbers
Week 2	Properties of Natural numbers
Week 3	Order on the Natural numbers
Week 4	Construction of Integer Numbers
Week 5	Properties of Integer Numbers
Week 6	Order on the Integer numbers, test
Week 7	Construction of Rational Numbers
Week 8	Properties of Rational Numbers
Week 9	Order on the Rational numbers
Week 10	Introduction, Construction of Real Numbers, test
Week 11	Arithmetic of the Real Numbers, Order on the Set on Real Numbers, Properties of Real Numbers.
Week 12	Mathematics System, Semi-Group
Week 13	Group, subgroup
Week 14	Congruence in the Integers
Week 15	Introduction to the ring and field
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	[1] Fundamental Concepts of Modern Mathematics. Max D. Larsen. 1970.	Yes
Recommended Texts	[1] Introduction to Mathematical Logic, 4th edition. Elliott Mendelson.1997. [2] A Mathematical Introduction to Logic, 2nd edition. Herbert B. Enderton. 2001. [3] Calvin Jongsma. Introduction to Discrete Mathematics via Logic and Proof. Springer Nature Switzerland AG, 2019.	No
Websites		

Grading Scheme

Group	Grade	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors

	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.

Code	Course/Module Title	ECTS	Semester
MU010101205	Foundation of Mathematics II	8	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	1/0/0/1	93	107
Description			
The invention of the axiomatic method goes back to the Greeks: Euclid tried to build his geometry on just five postulates, which the Greeks viewed as 'self-evident' truths. It was realized only in the 19th century that these truths were not self-evident at all, but rather a collection of axioms describing Euclidean geometry and distinguishing it from other geometries satisfying other axioms. In working with Galois. Finding the right axioms of abstract groups was a problem occupying numerous mathematicians from Kronecker to Weber. This model will develop ability of student to understanding the basic properties of the natural numbers using the Piano's axioms; the construction of negative and positive integers will then be built upon the set of natural numbers, then construct the rational numbers and real numbers. Also, we will introduce the idea of group, ring and field.			

Module Description Form

Module Information

Module Title	**Finite Mathematics II**			**Module Delivery**
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**MU010101207**			
ECTS Credits	**7**			
SWL (hr/sem)	**175**			
Module Level	UGx11 UG1	**Semester of Delivery**	2	
Administering Department	Mathematics	**College**	Science	
Module Leader	Dr. Zainab Shehab Hameed	**e-mail**	zainabshehab@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**	B.Sc	
Module Tutor	Jawad K. Khalaf	**e-mail**	jawadaldelfi@uomustansiriuah.edu.iq	
Peer Reviewer Name		**e-mail**		

Scientific Committee Approval Date	/2/2025	Version Number	

Relation with other Modules			
Prerequisite module	None	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	A major objective of this course is the development of a library of elementary matrices and functions, including their important properties and uses. Employing this library as a basic working tool, students will be able to proceed through this course with greater confidence and understanding.
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1- What is the principle of mathematical induction. 2- How to solve different examples in mathematical induction. 3- What is the principle of complex number and its algebraic properties. 4- How to solve different examples in complex number. 5- What are the Cartesian and polar coordinates and the triangular inequality. 5- What is the polynomial in different degrees. 6- How to find the roots of polynomials theoretically.
Indicative Contents	Indicative content includes the following. **Part A. Mathematical induction** Introduction to mathematical induction, Examples solutions in mathematical induction. **Part B. Complex number** Learn what is the complex number and its algebraic properties, solve different examples, discuss some theories and proofs. **Part C. Cartesian and polar coordinates** Discuss Argand diagrams, and given examples. **Part D. properties of complex conjugate** Euler formula, products, quotients, powers, Demoiver's theorem, roots, examples, the triangular inequality **Part E. Polynomials** Polynomial Function, operation on polynomials, Zeros or Roots Upper and Lower Bound Theorem, relationships Between the Roots and Coefficients.

Student Workload (SWL)			
Structured SWL (h/sem)	78	**Structured SWL (h/w)**	5
Unstructured SWL (h/sem)	97	**Unstructured SWL (h/w)**	6
Total SWL (h/sem)	175		

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	11, 15	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
Week	**Material Covered**
Week 1	Mathematical induction
Week 2	Examples solutions in mathematical induction

Learning and Teaching Strategies	
Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Week 3	Introduction to complex number
Week 4	Algebraic properties of complex number
Week 5	Theory and examples in complex number
Week 6	Cartesian and polar coordinates, Argand diagram, properties of complex conjugate
Week 7	Euler's formula, products and quotients
Week 8	Examples solutions
Week 9	Power's and De Moiver's theorem, roots
Week 10	Examples solutions
Week 11	The triangular inequality and examples
Week 12	Polynomials
Week 13	Roots of Polynomials
Week 14	Relation between Roots and Degree of Polynomials
Week 15	Examples on polynomials, Test
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	**Available in the Library?**
Required Texts	[1] Finite mathematics an applied approach by Michael Sullivan, 11th Edition (2010). [2] Precalculus by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen and Dave Sobecki, 7th Edition (2008).	Yes
Recommended Texts	[3] Elementary Linear Algebra with Application 9th Edition by Bernard Kolman and David R. Hill (2008). [4] Theory and Problem of Finite Mathematics by Seymour Lipschutz. 1966. [5] College Algebra by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen and Dave Sobecki, 9th Edition (2010).	Yes
Websites		

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester
MU010101207	Finite Mathematics II	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	1/0/0/1	78	97
Description			
This course is for the mathematical students in year one who are interested in mathematical models for the life management. Topics include mathematical induction, examples and solutions, the concept of complex number, examples solutions in complex number, algebraic properties of complex number, theories and proofs, the triangular inequality, polynomials, roots of polynomials, relation between roots and degree of polynomials, examples in polynomials, Test.			

Module Description Form

Module Information

Module Title	**Programming I**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010101206**			
ECTS Credits	**4**			
SWL (hr/sem)	**200**			
Module Level	UGx11 UG1	**Semester of Delivery**		2
Administering Department	Math.	**College**		Science
Module Leader	Dr. Ahmed Shawki Jaber	**e-mail**		a.s.jaber20@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assist. Prof.	**Module Leader's Qualification**		B.Sc
Module Tutor		**e-mail**		
Peer Reviewer Name	Dr. Ahmed Bakheet	**e-mail**		Ahmedbakheet74@uomustansiriyah.edu.iq
Scientific Committee Approval Date	2025	**Version Number**		1

Relation with other Modules

Prerequisite module	Computer	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	The aim of this course is to learn the second year students the Basic concepts in Numerical analysis by using MATLAB.

Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1-How to use MATLAB environment. 2- How to solve polynomials using MATLAB 3- How to plot mathematic equations by using MATLAB 4- How to represent numbers in MATLAB 5- How to calculate floating point numbers with MATLAB 6- How to find root approximation of equations 7- How to find roots of quadratic equations in MATLAB 8- How to find the Newton's Method for root approximation with MATLAB 9- How to find the Bisection method for root approximation with MATLAB. 10- How to solve problems of single Non-linear equations with MATLAB.
Indicative Contents	Indicative content includes the following. Part A. Programming General into to programming, Computer want be helpful to us, Programmers anticipate needs, Users vs programmers, why be a programmer, what is a code, programs for Humans [7hrs.] Part B. Introduction to MATLAB Getting started with MATLAB, MATLAB as a calculator, logical expressions and operators [9hrs.] Part C. Roots of Polynomials Constricting polynomials from known roots, evaluating a polynomial at specific values, Rational polynomials, Using MATLAB to make plots, script files and function files [12hrs.] Part D. Representation of Numbers General intro to number representations, Base-N and binary, floating point numbers, examples [14hrs.] Part E. Root approximation Root of quadratic equations, some practical examples, Newton's method for root approximation, some MATLAB functions, some examples, the bisection method for root approximation, some examples [18hrs.]

Learning and Teaching Strategies	
Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems by using programming tool (MATLAB). 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement

	6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them.

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	37	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	100		

Module Evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	2	15% (10)	7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	2	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Introduction to Programming, Algorithm and Flowchart.
Week 2	C++ Programming Language, Introduction to Programming, Arithmetic Operators.
Week 3	Control Statements, if Selection Statement, if…else Double-Selection Statement.
Week 4	While Repetition Statement, do…while Repetition Statement, for Repetition Statement.
Week 5	Switch Multiple-Selection Statement, break and continue Statements.
Week 6	Functions, Math Library Functions, Function Definition with Multiple Parameters, Random Number Generation.
Week 7	Arrays, Introduction, Declaring Arrays.
Week 8	Using Arrays to Summarize Survey Results.
Week 9	Passing Arrays to Functions, Sorting Arrays with Bubble Sort.
Week 10	Searching Arrays with Linear Search.
Week 11	Multidimensional Arrays.
Week 12	File Processing, Introduction.
Week 13	Creating a Sequential File.
Week 14	Reading Data from a Sequential File.
Week 15	curriculum review
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	1. Karris, S. T. (2007). *Numerical analysis using MATLAB and Excel*. Orchard Publications. 2. Siauw, T., & Bayen, A. (2014). *An introduction to MATLAB® programming and numerical methods for engineers*. Academic Press. 3. Richard, L. Burden, J. Douglas, Faires, Annette M. Burden, (2016), Numerical analysis (Tenth edition).	Yes
Websites		

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.			

Code	Course/Module Title	ECTS	Semester
MU010101206	Programming I	8	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	Tutor 1	93	107
Description			
This model provides the student with learning MATLAB and to solve difficult mathematical problems, writing programs and functions, plotting mathematical functions, understanding and running programs for some mathematical methods.			

Module Description Form

Module Information		
Module Title	**General Physics**	**Module Delivery**
Module Type	**Supportive**	☒ **Theory** ☐ **Lecture** ☒ **Lab**
Module Code	**MU010101208**	

ECTS Credits	4	☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
SWL (hr/sem)	**100**		
Module Level	UG1	**Semester of Delivery**	2
Administering Department	Math	**College**	Science
Module Leader	Miami	**e-mail**	@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Assistant professor	**Module Leader's Qualification**	B.Sc
Module Tutor		**e-mail**	
Peer Reviewer Name	**Dr. Ali AbdulRasool**	**e-mail**	aaabdulhussein@uomustansiriyah.edu.iq
Scientific Committee Approval Date	2024	**Version Number**	1

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	This course is designed to serve as an effective tool which can supply freshmen mathematicians with an elementary - intermediate level of knowledge in general physics. Freshmen mathematicians should be aware that there is a strong relationship between what they are being taught in Calculus and general physics. To be more accurate, students should study the applications of the first and second derivatives respectively in Physics, by that it is meant the relation between the three concepts, position, velocity, and acceleration of a specific particle at some time t. Students will be taught how to employ the first and second derivative of a function to calculate the velocity and acceleration. Furthermore, students should be able to convert a certain velocity (acceleration) to their corresponding position at some time t by utilizing the definite integral. The main goal of this course is to build an appropriate physical background for freshmen mathematicians. Not only that, students will acquire more knowledge regarding analyzing physical problems and know how to solve those problems by the aid of the main mathematical concepts that are being introduced in calculus.
Module Learning Outcomes	**At the end of the course, students are expected to learn:** □ **At the end of the course, students are expected to learn:** □ How to solve physical problems by utilizing calculus. □ Employ the first derivative of a certain position to calculate the velocity at time t. □ Employ the second derivative of a certain position to calculate the acceleration at time t. □ How to convert the velocity of a specific particle into position? □ How to convert the acceleration of a specific particle into position? □ How to analyzing and understanding general physics problems.
Indicative Contents	Indicative content includes the following. **Part A**. Motion in One Dimension This includes but not limited to Displacement, Speed and Velocity Motion With Constant Velocity, Acceleration, Motion Where the Acceleration is Constant, Free-Fall. Particles being at rest., [15hrs.]

	Part B. Motion in Two Dimensions This includes Coordinates and Displacement. Velocity and Acceleration, Motion When the Acceleration Is Constant. [4hrs.] **Part C.** Forces I Introduction, Newton's 1stLaw, Newton's 2ndLaw, Units and Stuff, Newton's 3rd Law, The Force of Gravity, Other Forces Which Appear in Our Problems. [6hrs.] **Part D.** Forces II Introduction, Friction Forces, An Important Example: Block Sliding Down Rough Inclined Plane. Uniform Circular Motion. Circular Motion and Force. [10hrs.] **Part E.** Energy Introduction, Kinetic Energy, Work, The Work, Energy Theorem, Potential Energy, The Spring Force, The Principle of Energy Conservation. [10hrs.] **Part F.** Momentum Momentum; Systems of Particles Relation to Force; Impulse, The Principle of Momentum, Conservation. [10hrs.] **Part G.** Oscillatory Motion Oscillatory Motion, Introduction, Harmonic, Motion, Displacement, Velocity and Acceleration, The Reference Circle, A Real Mass/Spring System, Energy and the Harmonic Oscillator. [5hrs.]

Learning and Teaching Strategies	
Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)			
Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	37	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	100		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Electric Forces & Electric Fields; Properties of Electric Charge, Insulators and Conductors, Coulomb's Law, The Electric Field, Electric Field Lines, Conductors in Electrostatic Equilibrium, The Electric Flux and Gauss's Law
Week 2	Electrical Energy & Capacitance; Potential Difference & Electric Potential, Electric Potential of Point Charges, Potentials & Charged Conductors, Capacitors, Combination of Capacitors, Energy Stored in Charged Capacitors, Capacitors with Dielectrics
Week 3	Current & Resistance; Electric Current, Resistance, and Ohm's Law, Resistivity, Temperature Variation of Resistance, Superconductors, Electrical Energy, and Power.
Week 4	Direct Current Circuits; Sources of emf, Resistors in Series, Resistors in Parallel, Kirchhoff's Rules and Complex DC Circuits, RC Circuits.
Week 5	Magnetism; Magnets, Magnetic Field of the Earth, Magnetic Fields, Magnetic Force on a Current-Carrying Conductor, Torque on a Current Loop: Galvanometers and Electric Motors, Motion of a Charged Particle in a Beta-Field, Ampere's Law, Solenoids, Magnetic Domains
Week 6	Induced Voltages and Inductance; Magnetic Flux, Faraday's Law of Induction, Motional emf, Generators and Motors, Self-Inductance, RL Circuits, and Energy Stored in a Magnetic Field.
Week 7	Vibrations and Waves; Hooke's Law, Energy and Motion of a Simple Harmonic Oscillator (SHO), Pendulum Motion, Types of Waves, The Interference and Reflection of Waves.
Week 8	Midterm One
Week 9	Sound; Characteristics of Sound Waves, Energy and Intensity of Sound Waves, Spherical and Plane Waves, The Doppler Effect, The Interference of Sound Waves, Standing Waves, Forced Vibrations and Resonance, Standing Waves in Air Columns.
Week 10	Electromagnetic Radiation (Photons); Properties of Electromagnetic (E/M) Radiation, The Electromagnetic Spectrum, The Formation of Spectra and the Doppler Effect of Light, Blackbody Radiation, Spectroscopy: The Study of Spectra.
Week 11	Reflection and Refraction of Light; Huygens' Principle, Reflection of Light, Refraction of Light, Dispersion and Prisms.
Week 12	Energy, Introduction, Kinetic Energy, Work, The Work, Energy Theorem, Potential Energy, The Spring Force, The Principle of Energy Conservation.
Week 13	Solving Problems With Energy Conservation, Power, Worked Examples, Kinetic Energy, The Spring Force, Solving Problems With Energy Conservation.
Week 14	Momentum, The Important Stuff, Momentum; Systems of Particles Relation to Force; Impulse, The Principle of Momentum, Conservation.
Week 15	Oscillatory Motion, The Important Stuff, Introduction, Harmonic, Motion, Displacement, Velocity and Acceleration, The Reference Circle, A Real Mass/Spring System, Energy and the Harmonic Oscillator.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	1.Lecture notes for Physics 10154: General Physics I by Hana Dobrovolny 2.Introductory Physics I Elementary Mechanics by Robert G. Brown	Yes
Websites		

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.

Code	Course/Module Title	ECTS	Semester
MU010101208	General Physics	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor/Semn.**	**SSWL (hr/sem)**	**USWL (hr/sem)**
4	0/1/0/0/1	63	37
Description			
This model provides the student with learning different methods of Electric Forces & Electric Fields; Properties of Electric Charge, Insulators and Conductors, Coulomb's Law, The Electric Field, Electric Field Lines, Conductors in Electrostatic Equilibrium, The Electric Flux and Gauss's Law			

Module Description Form

Module Information		
Module Title	**English Language I**	**Module Delivery**
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial**
Module Code	**MU01**	
ECTS Credits	**2**	

SWL (hr/sem)	**50**		☐ **Practical** ☐ **Seminar**	
Module Level	UG1	**Semester of Delivery**		2
Administering Department	Math	**College**	Science	
Module Leader	Dr.Murtadha Jaber Sarray	**e-mail**	murtadhasarray@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**		B.Sc
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Scientific Committee Approval Date	2025	**Version Number**		

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	Urging students to acquire and revise their previous knowledge of the basics of English language in general. Urging students to learn and master the use of English grammar for the first seven units of the curriculum approved by the Iraqi Ministry of Higher Education. Enabling students to acquire, improve and practice the various skills of English language (listening, speaking, reading and writing) for the first seven units of the curriculum approved by the Iraqi Ministry of Higher Education. Enabling students to use English language in their academic study of science instead of the Arabic language to achieve scientific progress. Enabling students to communicate in English with others in their daily life inside/outside the campus.
Module Learning Outcomes	1- Students will be able to speak English as fluently as possible. 2- Students will be able to listen and understand English conversations, talks or lectures in English better than before. 3- Students will be able to read and comprehend written works such as scientific books, lectures, reports and papers in English easier than before. 4- Students will be able to write in English better than before, such as lab reports, explanations, and definitions. 5- Students will be able to use English grammar correctly more than before. 6- Students will be able to use their improved English language skills in their academic career more than ever before .
Indicative Contents	**Unite 1 . Hello (4 hr.)** Grammar. to be , This is... Vocabulary: Greetings, Numbers, Introduction. Everyday English: Greetings & conversation **Unite 2 . Your world (4 hr.)** Grammar: Subject pronouns, V. to be in questions Vocabulary: Countries, Nouns, Adjectives Everyday English: Numbers, Countries. **Unite 3 . All about you (4 hr.)** Grammar: V. to be in questions, Negative, & Short Answers Vocabulary: Jobs & personal Information& interviews. Everyday English: Social Expressions

	Unite 4 . Family and friends (4 hr.) Grammar : Possessive adjectives, Possessive 's , has/have& Adjective + noun Vocabulary: The family & Describing a friend Everyday English: The alphabet , On the phone, & Saying email addresses **Unite 5 . The way I live (4 hr.)** Grammar : Present Simple, a and an & Adjective + noun. Vocabulary: Sports/ Food/ Drinks, Adjectives & Languages and nationalities. Everyday English: How much is it?, Numbers1-100 & prices. **Unite 6 . Every day (4 hr.)** Grammar: Present Simple, Questions and negatives & Adverbs of frequency. Vocabulary: The time, Verbs and nouns & Words that go together. Everyday English: Days of the week & Prepositions of time **Unite 7. My favorites (4 hr.)** Grammar: Question words, Pronouns (Subject/Object/Possessive) & this and that Vocabulary: Adjectives, Opposite adjectives, & Places Everyday English: Can (questions)

Learning and Teaching Strategies

Strategies

During the 14- 15 weeks of the first semester, the following learning and Teaching Strategies will be used:

1- Beginner students need more careful staged approach with plenty of drillings, repetition, and revisions. So, a step by step technique will be effective.
2- Use question technique to stimulate discussion, emphasize the value of students' answers, and encourage active participation.
3- Emphasizing and improving previously acquired English language skills and abilities.
4- Encouraging learners to work together in chat groups to improve their speaking skills. Ask them to do a written homework to improve their writing skills as well.
5- Make use of *tools* or *New Headway Plus Beginner Digital Edition*, videos and audio tracks using the smart board to motivate learners to hear and acquire better English pronunciation specially to improve listening and speaking skills.
6- Using social media, YouTube channels and reliable applications to facilitate the independent learning process and make it more fun.
7- Encourage learners to participate in language activities, online courses and international language tests such as TOEFL and IELTS as an optional extracurricular activity.
8- Linking different English language skills with learners' other scientific curriculums by presenting short scientific lectures in English on smart boards and asking them to answer questions, write reports, prepare oral presentations as homework, or participate in a group discussion inside the class

Student Workload (SWL)

Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	50		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	1	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	1	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introductory lecture: "English Language: Importance, Concepts, & Methods of Teaching".
Week 2	Unit -1- Workbook: Hello! INTRODUCTIONS p. 4 Nice to meet you P.5 Vocabulary: p.6-7 EVERYDAY ENGLISH: Good morning! p.8 Do not forget! p.9 Writing : p.10-11
Week 3	Unit -2- Student's book : Your world SHE'S FROM JAPAN p.12 QUESTIONS p.13 PRACTICE : Cities and countries p.14-15READING AND SPEAKING : Where are they from? p.16EVERYDAY ENGLISH : Numbers 11-30 p.17
Week 4	Unit -2- Workbook: Your world Countries p.12 Am/are/ is p.13 Listening: At a wedding p. 14 Questions p. 14Adjectives p. 14b Reading : Where are they p.15 Listening p. 16 Everyday English : Numbers 11-30 p. 16 Do not Forget! p.17 Writing : p.18-19
Week 5	Unit -3- Student's book : All about you Jobs p. 18 Negatives and questions p.18 Personal information p.19 STUDENTS WALK FOR CHARITY p.20 Practice p. 21 READING AND LISTENING : The charity walk p.22 EVERYDAY ENGLISH : Social expressions (1 p.23
Week 6	Unit -3- Workbook: All about you Jobs p.20 Questions and negatives : is/isn't p.21 Negatives and questions : I'm not/they aren't p.22Listening p.23 Vocabulary p.23 Everyday English : Social expressions (1) p. 24 Do not forget p.25 Writing p.26-27
Week 7	Midterm Exam
Week 8	Unit -4- Student's book : Family and Friends MY FAMILY : Possessive' S p.24-25 Practice p. 26 Annie's brother p.27 Practice p. 28 READING AND WRITING : My best friend p28-29 EVERYDAY ENGLISH : The alphabet p.30 On the phone p.31
Week 9	Unit -4-Workbook: Family and friends Possessives p.28-29 Vocabulary p.29 Alfie and his family p.30 Reading : Who's happy? p.31 Vocabulary p.32 Everyday English :The alphabet p.32 Do not forget p.33 Writing: p.34-35
Week 10	Unit -5- Student's book : The Way I Live Sports/Food/Drinks p. 32 Present Simple -I/you/we/they p.32 -33 Reading and speaking : COLIN BRODIE FROM DUNDEE p.34-35 VOCABULARY AND PRONUNCIATION : Languages and nationalities p.36-37 LISTENING AND SPEAKING : At a dinner Party p.38 Everyday English p.39
Week 11	Unit -5- Workbook: The Way I Live Sports, food, drink p.36 Things I like p.37 Present Simple : The swimmer Michael Phelps p.38 LISTENING p.39 Everyday English : How much is it? p.40 Do not forget p.41 Writing: p. 42-43

Week 12	Unit -6- Student's book : Every day The time p.40 WHAT TIME DO YOU GET UP? p.41 Elliot's DAY p.42-43 PRACTICE : Lois's day p. 44-45 VOCABULARY AND SPEAKING : Words that go together p.46 EVERYDAY ENGLISH : Days of the week p.47
Week 13	Unit -6- Workbook: Every day The time p.44 Present Simple p.45-46 Pronunciation p.47 Prepositions p.47 Vocabulary p.47 Reading: Barack Obama, America's first black President p.48 EVERYDAY ENGLISH : Days of the week p.49Writing: p. 50-51
Week 14	Unit -7- Student's book : My favorites Question words p.48-49 THIS IS MY FAVOURITE ... p.50 PRACTICE : I like them! p.51 VOCABULARY : Adjectives p. 52 READING AND WRITTING : A postcard from San Francisco p.53 EVERYDAY ENGLISH p.54-55
Week 15	Unit -7- Workbook: My favorites Questions p.52-53 Pronouns and possessives p.54 this/ that p.54-55 Vocabulary : Adjectives : happy/miserable p.55EVERYDAY ENGLISH p.56 Don't forget! p.57 Writing: p. 58-59

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	1. Betty S. Azar, Stacy S, Hagen, Understanding and Using English Grammar, Pearson Longman, 4th 2018. 2. Raymond Murphy, English Grammar in Use. Cambridge 2018. 3. Kathleen E. Sullivan, Paragraph Practice, 4th ,2008. 4. Focus on Advanced English, Pearson Longman, 1999. 5. Michael Swan, Catherine Walter, Oxford English course, 2015. 6- Gabi Duigu, Essay Writing for English Test, Academic English Press, 2003.	Yes
Websites		

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester

MU01	English Language 1	2	2
Class (hr/w)	**Lect/Lab./Prac./Tut/Semn**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0/0/0/0/0	33	17
Description			
English language at the first level typically focus on building a strong foundation in the language for beginners or those with limited proficiency. These courses aim to develop basic communication skills in English, including listening, speaking, reading, and writing. The content of first-level English language courses may vary depending on the specific program or institution, but they generally cover the following topics: Basic vocabulary, Fundamental grammar, Basic pronunciation			

Module Description Form

Module Information

Module Title	**Advanced calculus**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐**Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010102108**			
ECTS Credits	**7**			
SWL (hr/sem)	**175**			
Module Level	UG1	**Semester of Delivery**	1	
Administering Department	Math	**College**	Science	
Module Leader	Kasim Abbas Hussain	**e-mail**	kasimabbas@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Assistant Professor	**Module Leader's Qualification**		
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Scientific Committee Approval Date	2024	**Version Number**	01	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	We shall study the Vectors, Lines, Planes, Areas and Volumes in the three dimensional spaces, Limits, Continuity, Derivatives, Partial Derivatives, Directional Derivatives, Gradients, Directional Derivatives

Module Learning Outcomes	At the end of the Course, students are expected to be able to understand mathematical analysis and complex analysis properly.
Indicative Contents	the Vectors, Lines, Planes, Areas and Volumes in the three dimensional spaces, Limits, Continuity, Derivatives, Partial Derivatives, Directional Derivatives, Gradients, Directional Derivatives

Learning and Teaching Strategies

Strategies	The purpose of this research is to determine how teaching calculus utilizing neural branching methodologies affects students' self-regulated learning abilities and their assessment of mathematical values at the College of Education. Two groups—an experimental group and a control group—were chosen in order to accomplish this goal. The 16 students in the experimental group were taught a unit in the Calculus Course Book called "The Limits" utilizing Neural Branching Strategies, while the 18 students in the control group were taught the same unit using the standard methodology. Divergent thinking skills guided the construction of a curriculum for teaching the chosen unit. Both student activities and a teacher's manual were created. An examination to gauge one's capacity for self-regulation and a

Student Workload (SWL)

Structured SWL (h/sem)	93	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	82	**Unstructured SWL (h/w)**	6
Total SWL (h/sem)	175		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-102and #11-15.
	Assignments	1	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	1	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Vectors : definitions, rules and examples
Week 2	Vectors: theorems, examples
Week 3	Line's equation and Plane's equation in the 3-dimensional space, examples
Week 4	Vector-Valued Functions, Definition, Limits, Continuity, examples
Week 5	Vector-Valued Functions, Definition, Limits, Continuity, examples
Week 6	Vector-Valued Functions, Derivatives by definition and by theorems, examples
Week 7	Partial Derivatives, theorems and chain's rule, examples
Week 8	Tangent Planes and Normal Vectors, examples
Week 9	Directional Derivatives and Gradients
Week 10	Maxima and Minima of Functions of Two Variables and Their Applications, examples
Week 11	Maxima and Minima of Functions of Two Variables and Their Applications, examples
Week 12	Line Integrals, Double Integrals on rectangular regions
Week 13	Double Integrals on nonrectangular regions
Week 14	Areas and Volumes
Week 15	Areas and Volumes

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	**[1] Calculus by Howard.** **[2] Thomas' Calculus by Pearson Education Inc., Publishing as Pearson Addison –Waselly.**	Yes
Recommended Texts	**[3] Wider Advanced Calculus, 2nd Eddition**	Yes

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.

Code	Course/Module Title	ECTS	Semester
MU010102108	**Advanced calculus**	175	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
5	0/0/0/0	93	82

Description

This course covers key topics in vector calculus and multivariable functions. It begins with the fundamentals of vectors, including definitions, operations, and theorems. Students learn to formulate equations of lines and planes in 3D space. The course explores vector-valued functions, their limits, continuity, and derivatives. Partial derivatives, chain rules, tangent planes, gradients, and directional derivatives are introduced. Optimization techniques, including unconstrained and constrained extrema, are applied. Integral concepts include line and double integrals over various regions. Finally, the course addresses applications such as calculating areas and volumes, providing a comprehensive foundation for advanced mathematics, physics, and engineering contexts.

Module Description Form

Module Information

Module Title	**Linear algebra**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**MU010102109**			
ECTS Credits	**7**			
SWL (hr/sem)	**175**			
Module Level	UG2	**Semester of Delivery**		1
Administering Department	Math	**College**	Science	
Module Leader	Dr. Jawad Kadhim Khalaf	**e-mail**	jawadaldelfi@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Asst. Prof.	**Module Leader's Qualification**		
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Scientific Committee Approval Date	/06/2024	**Version Number**		1

Relation with other Modules

Prerequisite module	Linear algebra II	**Semester**	
Co-requisites module		**Semester**	II

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	Linear algebra is one of the important branches of mathematics. The aim of this course is to learn the students the Basic concepts in Applications of linear algebra, vector space and subspace, Linear companions, linear independence and Linear combination, Basis, dimension and Orthonormal bases and the matrix of a linear transformation
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1-How to know vector space and subspace 2- How to check Linear independence and linear independence 3- How to linear combinsion. 4- How to find the Basis and dimension 5- How to The rank of a matrix and applications 6- How to solve Orthonormal bases in R^n 7- How to find The kernel and range of a linear transformation 8- How to find The matrix of a linear transformation
Indicative Contents	Indicative content includes the following. Part A. vector space and subspace. [5hrs.] Part B. Linear independence and linear independence [9hrs.] Part C. Linear combination of vector and linear span of a set with Some theorems on linear independence and Linear combination [16hrs.] Part D. Basis, dimensionwith The rank of a matrix and applications and Orthonormal bases[15hrs.] Part E. a linear transformation and The matrix of a linear transformation[15hrs.]

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)

Structured SWL (h/sem)	93	**Structured SWL (h/w)**	6

Unstructured SWL (h/sem)	107	**Unstructured SWL (h/w)**	7
Total SWL (h/sem)	200		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Vector spaces
Week 2	Vector in the plan
Week 3	Subspaces
Week 4	Algebra of subspaces
Week 5	Linear independence and linear independence
Week 6	Linear combination of vector and linear span of a set
Week 7	Some theorems on linear independence and Linear combination
Week 8	First Exam
Week 9	Basis
Week 10	dimension
Week 11	The rank of a matrix and applications
Week 12	Orthonormal bases in R^n
Week 13	The kernel and range of a linear transformation
Week 14	The matrix of a linear transformation
Week 15	Second Exam
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	1. Bernard Kolman and David Hill, '' Elementary Linear Algebra with Applications'', Ninth Edition,2014.	Yes
Recommended Texts	2. Linear Algebra,George daaf, 1988 3. Gilbert Strang, " Linear Algebra and Its Applications", 4th Edition,2006.	Yes
Websites		

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.

Code	Course/Module Title	ECTS	Semester
MU010102109	Linear algebra	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
5	Tutor 1	93	107
Description			
Linear algebra is one of the important branches of mathematics. Linear algebra is basically the study of solving Characteristic equation, finding the eigenvalues, eigenvectors, it is a key concept for almost all areas of mathematics, vector space and subspace: definition, examples and properties, as well as Linear independence and linear independence. Some theorems on linear independence and Linear combination, Basis and dimension, The rank of a matrix and applications, Orthonormal bases in R^n The kernel and range of a linear transformation and The matrix of a linear transformation.			

Module Description Form

Module Information				
Module Title	**Probability Basics**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010102110**			
ECTS Credits	**6**			
SWL (hr/sem)	**150**			
Module Level	UG1	**Semester of Delivery**		1
Administering Department	Math	**College**	Science	

Module Leader	Dr. Shurooq Ahmed Kareem	**e-mail**	Shuroq80@uomustansiriyah.edu.iq
Module Leader's Acad. Title	lecturer	**Module Leader's Qualification**	B.Sc
Module Tutor		**e-mail**	
Peer Reviewer Name	Dr.Eqbal Jabbar Sultan	**e-mail**	Akbal75@umu@uomustansiriyah.edu.iq
Scientific Committee Approval Date	2024	**Version Number**	1

Relation with other Modules

Prerequisite module		**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	The aim of this course is to learn the students the concept Probability, Conditional Probability , Bayes theorem , Random Variables and how to find Probability mass function , Probability density function , Cumulative Distribution Function, Mathematical Expectation , Variance , Moments , Moment generating function
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** Permutation, Combination, Even, Probability, Independent events, Conditional Probability , Bayes theorem , Random Variables , Probability mass function , Probability density function , Cumulative Distribution Function , Mathematical Expectation , Variance , Moments , Moment generating function
Indicative Contents	Indicative content includes the following. Part A. Probability Some Basic Concepts of Probability, Properties of the Probability. [5hrs.] Part B. events Independent events, Independent of three events [9hrs.] Part C. Conditional Probability Conditional Probability, Total Probability theorem; Bayes theorem [6hrs.] Part D. Random Variables Random Variables; Probability mass function; Probability density function Cumulative Distribution Function [12hrs.] Part E. Mathematical Expectation Mathematical Expectation, The Variance [18hrs.] Part F. Moments Moments, Moment generating function [10hrs.]

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them

	5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)

Structured SWL (h/sem)	108	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	42	**Unstructured SWL (h/w)**	3
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	A review of Permutation and Combination
Week 2	Some Basic Concepts of Probability
Week 3	Properties of the Probability
Week 4	Independent events, Independent of three events
Week 5	Conditional Probability
Week 6	Total Probability theorem; Bayes theorem
Week 7	The first exam
Week 8	Random Variables; Probability mass function;
Week 9	Probability density function
Week 10	Cumulative Distribution Function
Week 11	Mathematical Expectation
Week 12	The Variance
Week 13	Moments
Week 14	Moment generating function

Week 15	The second exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	[1]: Probability and Statistics: A Course for Physicists and Engineers, by Arak M. Mathai, Hans J. Haubold, 2017 [2]: Introduction to Probability, by Charles M. Grinstead, James L. Snell, 2012 [3]: "Probability", University of Baghdad, 1987 [4]: Dhunun: Basil Younis, "Probability and Random Variables", University of Mosul, 1991	Yes
Websites		

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester
MU010102110	Probability Basics	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
5	Tutor 1	108	42
Description			
This subject presents the Permutation, Combination, Even, Probability, Independent events, Conditional Probability, Bayes theorem, Random Variables, Probability mass function, Probability density function, Cumulative Distribution Function, Mathematical Expectation, Variance, Moments, Moment generating function.			

Module Description Form

Module Information					
Module Title	**English Language II**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU11**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UG1	**Semester of Delivery**	2		
Administering Department	Math	**College**	Science		
Module Leader	Dr.Murtadha Jaber Sarray	**e-mail**	murtadhasarray@uomustansiriyah.edu.iq		
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	B.Sc		
Module Tutor		**e-mail**			
Peer Reviewer Name		**e-mail**			
Scientific Committee Approval Date	2024	**Version Number**			

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	Develop Vocabulary and Writing Skills
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** To write an academic writing such team paper and essays.
Indicative Contents	Indicative content includes the following. Part A. Subjects-Verb Agreement Countable, uncountable nouns Specific Forms for Subject- verb Agreement. [6hrs.] Part B. Passive Passive Forms. Non-Progressive Passive. Passive with *Get* form. Ed/ *Ing* Adjectives. [8hrs.] Part C. Adjective Clauses. 1-Adjective Clause Pronouns Used as the Subject 2- Adjective Clause Pronouns Used as the Object of a Verb 3 -Adjective Clause Pronouns Used as the Object of a Preposition 4 -Using ***Whose.*** 5 -Using ***Where*** in Adjective Clauses 6- Using ***When*** in Adjective Clauses 7- Using Adjective Clauses to Modify Pronouns 8- Punctuating Adjective Clauses 9- Using Expressions of Quantity in Adjective Clauses 10- Using *Which* to Modify a Whole Sentence 11- Reducing Adjective Clauses to Adjective Phrases [10hrs.] Part D. Essay Writing

	Basic concepts of Essays Body of Essay Types of Essays Writing a simple Essay [6hrs]

Learning and Teaching Strategies	
Strategies	Teachers must use actual activities like everyday statements that students do. Also, to make class more active, he should involve all students in exercises by pairing them into such groups. Pictures and Videos and other materials should be used to make a subject more understandable.

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module		**Semester**	

Student Workload (SWL)			
Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	50		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	1	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	1	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Countable and uncountable nouns
Week 2	Subject-Verb Agreement form
Week 3	Continue with S-V Agreement
Week 4	Passive forms
Week 5	First Exam
Week 6	Non-Progressive Passive
Week 7	Passive with Get and ed/Ing adjective

Week 8	Adjective Clauses Warm up
Week 9	Who, That, Whom, Which, Whose, When, Where.
Week 10	Second Exam
Week 11	Punctuations adjective clauses
Week 12	Reducing adjective Clauses
Week 13	Writing Essays definition
Week 14	Body of Essays and Types of essays
Week 15	Writing a simple Essay (as Third exam)
Week 16	Study Guides before final exam.

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	1. Betty S. Azar, Stacy S, Hagen, Understanding and Using English Grammar, Pearson Longman, 4th 2018. 2. Raymond Murphy, English Grammar in Use. Cambridge 2018. 3. Kathleen E. Sullivan, Paragraph Practice, 4th ,2008. 4. Focus on Advanced English, Pearson Longman, 1999. 5. Michael Swan, Catherine Walter, Oxford English course, 2015. 6- Gabi Duigu, Essay Writing for English Test, Academic English Press, 2003.	Yes
Websites		

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester

MU11	English Language II	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0/0/0/0	33	17
Description			
English language courses at the second level typically build upon the foundation established in the first level and aim to further develop students' language skills and proficiency. These courses are designed for learners who have a basic understanding of English and want to improve their communication abilities. Here is a description of what you can typically expect in English language courses at the second level: Vocabulary expansion, Grammar refinement, Speaking and conversation practice, Reading comprehension			

Module Description Form

Module Information

Module Title	**Computer II**	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU14**		
ECTS Credits	**3**		
SWL (hr/sem)	**75**		
Module Level	UG1	**Semester of Delivery**	2
Administering Department	Math	**College**	Science
Module Leader	Dr. Ahmed Shawki Jaber	**e-mail**	a.s.jaber20@uomustansiriyah.edu.iq
Module Leader's Acad. Title	lecturer	**Module Leader's Qualification**	B.Sc
Module Tutor		**e-mail**	
Peer Reviewer Name	Dr. Ahmed Bakheet	**e-mail**	Ahmedbakheet74@uomustansiriyah.edu.iq
Scientific Committee Approval Date	2024	**Version Number**	1

Relation with other Modules

Prerequisite module	Calculus, Linear Algebra	**Semester**	1
Co-requisites module	Numerical analysis	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	The aim of this course is to learn the second year students the Basic concepts in Numerical analysis by using MATLAB.

Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1-How to use MATLAB environment. 2- How to solve polynomials using MATLAB 3- How to plot mathematic equations by using MATLAB 4- How to represent numbers in MATLAB 5- How to calculate floating point numbers with MATLAB 6- How to find root approximation of equations 7- How to find roots of quadratic equations in MATLAB 8- How to find the Newton's Method for root approximation with MATLAB 9- How to find the Bisection method for root approximation with MATLAB. 10- How to solve problems of single Non-linear equations with MATLAB.
Indicative Contents	Indicative content includes the following. Part A. Programming General into to programming, Computer want be helpful to us, Programmers anticipate needs, Users vs programmers, why be a programmer, what is a code, programs for Humans [7hrs.] Part B. Introduction to MATLAB Getting started with MATLAB, MATLAB as a calculator, logical expressions and operators [9hrs.] Part C. Roots of Polynomials Constricting polynomials from known roots, evaluating a polynomial at specific values, Rational polynomials, Using MATLAB to make plots, script files and function files [12hrs.] Part D. Representation of Numbers General intro to number representations, base-N and binary, floating point numbers, examples [14hrs.] Part E. Root approximation Root of quadratic equations, some practical examples, Newton's method for root approximation, some MATLAB functions, some examples, the bisection method for root approximation, some examples [18hrs.]

Learning and Teaching Strategies	
Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems by using programming tool (MATLAB). 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them.

Student Workload (SWL)			
Structured SWL (h/sem)	48	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	27	**Unstructured SWL (h/w)**	2
Total SWL (h/sem)	75		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	2	15% (10)	7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	2	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
Week	**Material Covered**
Week 1	General into to programming, Computer want be helpful to us, Programmers anticipate needs, Users vs programmers, why be a programmer, what is a code, programs for Humans
Week 2	Getting started with MATLAB, MATLAB as a calculator, logical expressions and operators.
Week 3	Roots of Polynomials, Constricting polynomials from known roots, evaluating a polynomial at specific values, Rational polynomials
Week 4	Using MATLAB to make plots, script files and function files
Week 5	First Exam
Week 6	Representation of Numbers, General intro to number representations, base-N and binary
Week 7	floating point numbers, examples
Week 8	Root approximation, Root of quadratic equations, some practical examples
Week 9	Newton's method for root approximation
Week 10	some MATLAB functions, some examples.
Week 11	the bisection method for root approximation
Week 12	some examples
Week 13	Report 1
Week 14	Report 2
Week 15	Second Exam
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts	1. Karris, S. T. (2007). *Numerical analysis using MATLAB and Excel*. Orchard Publications. 2. Siauw, T., & Bayen, A. (2014). *An introduction to MATLAB® programming and numerical methods for engineers*. Academic Press. 3. Richard, L. Burden, J. Douglas, Faires, Annette M. Burden, (2016), Numerical analysis (Tenth edition).	Yes
Websites		

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(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.

Code	**Course/Module Title**	**ECTS**	**Semester**
MU14	Computer II	3	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	Tutor 1	48	27
Description			
This model provides the student with learning MATLAB and to solve difficult mathematical problems, writing programs and functions, plotting mathematical functions, understanding and running programs for some mathematical methods.			

Module Description Form

Module Information		
Module Title	**Mathematical Physics**	**Module Delivery**
Module Type	**Basic**	☒ **Theory**

Module Code	-		☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**		
ECTS Credits	3				
SWL (hr/sem)	**75**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Ahmed Shukur Hameed		**e-mail**	ahmed.al-haddad@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Assist. Prof.		**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	2024		**Version Number**	1.0	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives

1. Understanding Fundamental Principles: Mathematical physics provides the tools to describe and understand the fundamental laws of nature. It helps us formulate physical theories in precise mathematical terms.
2. Predictive Power: By using mathematical models, we can predict the behavior of physical systems under various conditions. This predictive capability is crucial for scientific and technological advancements.
3. Problem-Solving Skills: The rigorous training in mathematical physics enhances problem-solving skills. It teaches you to approach complex problems systematically and find solutions using logical reasoning.
4. Interdisciplinary Applications: Mathematical physics is not confined to physics alone. Its methods and concepts are widely used in engineering, computer science, economics, and other fields. For example, techniques from quantum mechanics are applied in cryptography and materials science.
5. Innovation and Technology: Many modern technologies, such as semiconductors, lasers, and MRI machines, are based on principles of mathematical physics. Understanding these principles is key to developing new technologies.
6. Intellectual Challenge: For many, the study of mathematical physics is intellectually stimulating and rewarding. It offers a deep sense of satisfaction from solving challenging problems and understanding the universe at a fundamental level.

Module Learning Outcomes

The learning outcomes of a course in mathematical physics aim to equip students with a deep understanding of the mathematical methods used to solve physical problems. Here are some key learning outcomes:

1. Mathematical Proficiency: Students should be able to apply advanced mathematical techniques to formulate and solve problems in physics. This includes proficiency in calculus, linear algebra, differential equations, and complex analysis.
2. Physical Insight: Students should develop an intuitive understanding of physical phenomena and the ability to translate physical problems into mathematical language. This includes understanding the principles of classical mechanics, electromagnetism, quantum mechanics, and statistical mechanics.

	3. Problem-Solving Skills: Students should be able to approach complex physical problems systematically, using mathematical methods to find solutions. This includes both analytical and numerical techniques. 4. Theoretical Understanding: Students should gain a deep understanding of the theoretical foundations of physics, including the ability to derive and interpret key equations and concepts. 5. Computational Skills: Students should be proficient in using computational tools and software to model and solve physical problems. This includes programming skills and the use of mathematical software packages. 6. Research Skills: Students should be able to conduct independent research, including the ability to formulate research questions, develop hypotheses, and use mathematical methods to test these hypotheses. 7. Communication Skills: Students should be able to clearly communicate complex mathematical and physical concepts, both in writing and orally. This includes the ability to write scientific reports and present findings effectively. 8. Interdisciplinary Applications: Students should understand the applications of mathematical physics in other fields, such as engineering, materials science, and computer science. This includes the ability to apply mathematical methods to solve problems in these areas. 9. Critical Thinking: Students should develop critical thinking skills, including the ability to evaluate the validity of different approaches and solutions to physical problems.
Indicative Contents	Indicative content includes the following. **Part A – Vector Algebra** History of vector algebra, Vector, Scalar, Vector Algebra, Laws of Vector Algebra, Unit Vector, Dot & Cross Products, and Vector Differentiation. [20 hrs]. Revision problem classes [5 hrs] **Part B - Force and Motion** The average velocity, the average speed, the instant velocity and speed, Acceleration and Particles under constant Acceleration, Free Falling Objects and Projectile Motion, Newton Laws and the gravitational force and weight. [15 hrs] Revision problem classes [5 hrs]

Learning and Teaching Strategies

Strategies	During the 1-5 weeks of the course, the students will learn how to differentiate between the scaler and vector, with deep understanding the students will be able to deal with complicated physical problems. Between 6-10 weeks the students will learn how to differentiate the vector components to react with motion and force problems in the next 11-15 weeks.

Student Workload (SWL)

Structured SWL (h/sem)	45	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)		**Unstructured SWL (h/w)**	
Total SWL (h/sem)	**45**		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #6, #7

Formative assessment	**Assignments**	2	10% (10)	6 and 13	LO #3, #4 and #6, #7, #8
	Projects	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #1- #12
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	**Introduction** Introduction of mathematical physics including the history, the famous scientists, and the most used symbols and abbreviations.
Week 2	**Review of Vector Algebra** The vector algebra: Vector, Scalar, Vector Algebra, Laws of Vector Algebra, and Unit Vector.
Week 3	**The components of the Vector** Vector Field and Vector Scalar.
Week 4	**Laws of Dot Product** 5 examples to solve the main problems.
Week 5	**Laws of Cross Product (Vector Product)** 8 examples to solve the main problems.
Week 6	**Triple Product of Vector** 6 examples to solve the main problems (some of solution include matrix). **Reciprocal Sets of Vector** 5 examples to solve the main problems.
Week 7	**Vector Differentiation** including 8 examples
Week 8	**Vector Differentiation** including 9 examples
Week 9	**The average velocity, the average speed, the instant velocity and speed** with 3 examples for each topic
Week 10	**Acceleration and Particles under constant Acceleration** with 4 examples for each topic
Week 11	**Free Falling Objects and Projectile Motion** Many examples will be presented in this lecture precisely about falling bodies, horizontal range, maximum hieght
Week 12	**Force and Motion** The laws of motion (Newton Laws and the gravitational force and weight)
Week 13	**Applications of First Newton Law** including 6 examples
Week 14	**Applications of Second Newton Law** including 8 examples
Week 15	**Applications of Third Newton Law** including 4 examples
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

	Text	**Available in the Library?**

Required Texts	Mathematics for Physicists: Introductory Concepts and Methods, A. Altland, J. Delft, CUP, 2019.	No
Recommended Texts	Mathematics for Physicists, Brian R. Martin and Graham P. Shaw, Wiley, 2015	No
Websites		

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

Module Information

Module Title	**Applied Linear algebra**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**MU010102210**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		

Module Level	UG2	**Semester of Delivery**	2
Administering Department	Math	**College**	Science
Module Leader	Dr. Jawad Kadhim Khalaf	**e-mail**	jawadaldelfi@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Asst. Prof.	**Module Leader's Qualification**	B.Sc
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	2025	**Version Number**	1

Relation with other Modules

Prerequisite module	Linear algebra I	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	Linear algebra is one of the important branches of mathematics. The aim of this course is to learn the students the Basic concepts in Applications of linear algebra, Eigenvalues and eigenvectors, Linear programming problem, solving LLP in Geometrical method and Simplex method, Concept of Duality, Quadratic forms, Graph theory.
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1-How to solve linear programming problems 2- How to find the eigenvalue and eigenvectors of different kind of matrices 3- How to find and check diagonalization of (symmetric, nonsymmetrical) 4- How to find the mathematical formulation of real life problems 5- How to sketch a linear programming problem and find its solutions 6- How to use Duality concept to solve the linear programming problems 7- When is the matrix diagonalizable? 8- How to find the solution of quadratic forms 9- How to find graphs and how to solve problem using graphs. 11- How to sketch graphs of the problems
Indicative Contents	Indicative content includes the following. Part A. Eigenvalue and eigenvectors Characteristic equation, eigenvalues and their multiplicity, eigenvectors, properties of eigenvalues and eigenvectors. [5hrs.] Part B. Diagonalization. Similar matrices: definition, examples and properties, diagonalization and symmetric matrices [9hrs.] Part C. Linear programming problem Mathematical formulation, solution of LPP Graphically and Simplex method, duality [21hrs.] Part D. Quadratic Forms Quadratic forms, and matrix of Quadratic forms, congruent matrices, Equivalent Quadratic forms [10hrs.] Part E. Graph Theory Graphs, vertices and edges, matrix representing of graphs, adjacency matrix. Digraphs, dominance digraphs, Clique in digraphs. Path, strongly connected digraph. [15hrs.]

Learning and Teaching Strategies	
Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity

	2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)

Structured SWL (h/sem)	93	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	82	**Unstructured SWL (h/w)**	5
Total SWL (h/sem)	175		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Characteristic equation, eigenvalues, eigenvectors, properties of eigenvalues and eigenvectors.
Week 2	Similar matrices : definition, examples and properties.
Week 3	Digonalization.
Week 4	Symmetric matrices and eigenvalues
Week 5	Linear programming problem: mathematical formulation
Week 6	First Exam
Week 7	Solution of LPP: Graphical method and Simplex method
Week 8	Maximum (minimum) standard form , dual problem.
Week 9	Quadratic forms, and matrix of Quadratic forms, congruent matrices
Week 10	Equivalent Quadratic forms

Week 11	Graph theory, graphs, vertices and edges, (definitions and examples),matrix representing of graphs, adjacency matrix.
Week 12	Digraphs , dominance digraphs.
Week 13	Clique in digraphs.
Week 14	Path, strongly connected digraph.
Week 15	Second Exam
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	- Bernard Kolman and David Hill, '' Elementary Linear Algebra with Applications'', Ninth Edition,2014.	Yes
Recommended Texts	- Dr. George Daif Al-Sabti, Linear Algebra, 1988 - Gilbert Strang, " Linear Algebra and Its Applications", 4th Edition,2006.	Yes
Websites		

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester
MU010102210	Applied Linear algebra	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
5	Tutor 1	93	82
Description			
Linear algebra is one of the important branches of mathematics. Linear algebra is basically the study of solving Characteristic equation, finding the eigenvalues, eigenvectors, it is a key concept for almost all areas of mathematics, finding the Similar matrices: definition, examples and properties, as well as			

finding the Quadratic forms. It is mostly used in Physics and Engineering as it helps to define the basic objects such as planes, lines and rotations of the object.
Also, studying the LPP, solving LLP in Geometrical method, and studying the Concept of Duality. It allows us to model many natural phenomena, and also it has a computing efficiency. Finally, studying the Graphs, their vertices and edges, drawing them, and finding their representing and adjacency matrix.

Module Description Form

Module Information

Module Title	**Probability theory**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU010102211**			
ECTS Credits	**6**			
SWL (hr/sem)	**150**			
Module Level	UG1	**Semester of Delivery**	2	
Administering Department	Math	**College**	Science	
Module Leader	Dr. Shurooq Ahmed Kareem	**e-mail**	Shuroq80@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	lecturer	**Module Leader's Qualification**	B.Sc	
Module Tutor		**e-mail**		
Peer Reviewer Name	Dr.Eqbal Jabbar Sultan	**e-mail**	Akbal75@umu@uomustansiriyah.edu.iq	
Scientific Committee Approval Date	2025	**Version Number**	1	

Relation with other Modules

Prerequisite module		**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	The aim of this course is to learn the students Discrete Probability Distributions and Some Special Continuous distribution, Joint Probability function, Marginal Probability Function, Conditional Distribution, Conditional Expectation and Conditional Variance.
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** Discrete uniform distribution, Binomial distribution, Poisson distribution, Normal distribution, Continuous Uniform Distribution , Gamma Distribution , Chi-square distribution, Exponential distribution, Joint Probability function , Marginal Probability Mass Function, Independent of Random Variables , Conditional Distribution , Conditional Expectation , Conditional Variance .
Indicative Contents	Indicative content includes the following. Part A. Discrete Probability Distributions

	Discrete uniform distribution, Binomial distribution, Poisson distribution, [15hrs.] Part B. Some Special Continuous distribution Normal distribution, Continuous Uniform Distribution, Gamma Distribution, Chi-square distribution, Exponential distribution [11hrs.] Part C. Joint Probability function Joint Probability function, Marginal Probability Mass Function [16hrs.] Part D. Conditional Distribution Conditional Distribution, Conditional Expectation and Conditional Variance. [18hrs.]

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve in order to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)

Structured SWL (h/sem)	93	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	57	**Unstructured SWL (h/w)**	4
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-10 and #11-15.
	Assignments	3	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	4	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Probability Distributions: Discrete Probability Distributions
Week 2	Discrete uniform distribution
Week 3	Binomial distribution
Week 4	Poisson distribution
Week 5	Some Special Continuous distributions: Normal distribution
Week 6	Continuous Uniform Distribution
Week 7	The first exam
Week 8	Gamma Distribution
Week 9	Chi-square distribution; Exponential distribution
Week 10	Joint Probability function
Week 11	Marginal Probability Mass Function
Week 12	Independent of Random Variables
Week 13	Conditional Distribution
Week 14	Conditional Expectation; Conditional Variance
Week 15	The second exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	[1]: Probability and Statistics: A Course for Physicists and Engineers, by Arak M. Mathai, Hans J. Haubold, 2017 [2]: Introduction to Probability, by Charles M. Grinstead, James L. Snell, 2012 [3]: "Probability", University of Baghdad, 1987 [4]: Dhunun: Basil Younis, "Probability and Random Variables", University of Mosul, 1991	Yes
Websites		

Grading Scheme

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

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Code	Course/Module Title	ECTS	Semester
MU010101101	Probability theory	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	Tutor 1	93	57
Description			
This subject presents Discrete uniform distribution , Binomial distribution , Poisson distribution , Normal distribution , Continuous Uniform Distribution , Gamma Distribution , Chi-square distribution, Exponential distribution, Joint Probability function , Marginal Probability Mass Function, Independent of Random Variables , Conditional Distribution , Conditional Expectation , Conditional Variance			

Module Description Form

Module Information

Module Title	Methods of Solving Ordinary Differential Equations		**Module Delivery**
Module Type	Core		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐**Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	MU010102212		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGx11 UG2	**Semester of Delivery**	2
Administering Department	Math	**College**	Science
Module Leader	Dr. Suhear Saady Alwan	**e-mail**	s.alwan@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	B.Sc
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	2025	**Version Number**	01

Relation with other Modules

Prerequisite module	Calculus1 /Grade1 & Calculus 2/Grade1	**Semester**	1st & 2nd
Co-requisites module	Advanced Calculus /Grade2	**Semester**	1st

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	We shall study the Ordinary Differential Equations, definition, degree and order, Differential Equations' Solution Methods, Differential Equations with Linear Coefficients, Linear Differential, Laplace's Transformation, Inverse Laplace's Transformation, Solve Linear Differential Equations Which have Constant Coefficients by Laplace.
Module Learning Outcomes	At the end of the Course, students are expected to be able to understand mathematical analysis and Differential Equations properly.
Indicative Contents	Ordinary Differential Equations, definition, degree and order, Differential Equations' Solution Methods, Differential Equations with Linear Coefficients, Linear Differential, Laplace's Transformation, Inverse Laplace's Transformation, Solve Linear Differential Equations Which have Constant Coefficients by Laplace.

Learning and Teaching Strategies	
Strategies	

Student Workload (SWL)			
Structured SWL (h/sem)	93	**Structured SWL (h/w)**	6
Unstructured SWL (h/sem)	82	**Unstructured SWL (h/w)**	5
Total SWL (h/sem)			

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (10)	3, 5, 8 ,10	LO #1-3, #4-6, #7-102and #11-15.
	Assignments	1	15% (10)	2, 7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	1	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Ordinary Differential Equations, definition, degree and order
Week 2	Solutions of Differential Equations
Week 3	Differential Equations' Solution Methods
Week 4	Differential Equations with Separable variables
Week 5	Homogeneous Differential Equations
Week 6	Differential Equations with Linear Coefficients
Week 7	Exact Differential Equations
Week 8	Integration Factors
Week 9	Linear Differential Equations
Week 10	Bernoulli Differential Equations
Week 11	Linear Differential Equations with Constant Coefficients
Week 12	D Operator, Solve Linear Differential Equations by Reducing its order
Week 13	Laplace's Transformation
Week 14	Inverse Laplace's Transformation
Week 15	Solve Linear Differential Equations Which have Constant Coefficients by Laplace
Week 16	Preparatory week before the midterm Exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	**[1] Calculus by Howard.**	Yes
Recommended Texts	**[2] Thomas' Calculus by Pearson Education Inc., Publishing as Pearson Addison –Wisely.**	Yes
Recommended Texts	**[3] Ordinary Differential Equations.**	No. It is available online

Grading Scheme

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

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Code	Course/Module Title	ECTS	Semester
MU010102212	Methods of Solving Ordinary Differential Equations	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
5	1/0/0/0	93	82
Description			
We shall study the Ordinary Differential Equations, definition, degree and order, Solutions of Differential Equations, Methods of Solving Differential Equations, The Method of Differential Equations with Separable variables, The Method of Homogeneous Differential Equations, The Method of Differential Equations with Linear Coefficients that can be transformed into Homogeneous Differential Equations, The Method of Exact Differential Equations, The Method of Integration Factors, Solving the Linear Differential Equations, Bernoulli Differential Equations, Linear Differential Equations with Constant Coefficients, D Operator Method for Solving Homogeneous Linear Differential Equations and Non-homogeneous Linear Differential Equations Solving Linear Differential Equations Which have Constant Coefficients by Laplace Method.			

Module Description Form

Module Information

Module Title	**Programming languages**	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**MU010102213**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	UG2	**Semester of Delivery**	2
Administering Department	Math	**College**	Science
Module Leader	Dr. Ahmed Shawki Jaber	**e-mail**	a.s.jaber20@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	B.Sc
Module Tutor		**e-mail**	
Peer Reviewer Name	Ahmed Bakheet	**e-mail**	@uomustansiriyah.edu.iq
Scientific Committee Approval Date	2025	**Version Number**	

Relation with other Modules

Prerequisite module	Calculs, Linear Algebra	**Semester**	1

Co-requisites module	Numerical analysis	Semester	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	The aim of this course is to learn the second year students the Basic concepts in Numerical analysis by using MATLAB.
Module Learning Outcomes	***At the end of the course, students are expected to learn:*** 1- How to deal with Matrices and Determinants using MATLAB. 2- How to do matrix operations by using MATLAB. 3- How to deal with special forms of matrices in MATLAB. 4- How to find Determinants in MATLAB. 5- How to find Minors and cofactors. 6- How to find Cramer's rule in MATLAB. 7- How to find Gaussian Elimination method. 8- How to find the adjoint of a matrix in MATLAB. 9- How to find the inverse of a matrix in MATLAB. 10- How to solve simultaneous equations with matrices. 11- How to understand the Least square regression problem. 12- How to understand the least square regression derivation in Linear Algebra. 13- How to understand the least square regression derivation in Calculus. 14- How to solve the least square regression problem in MATLAB. 15- How to understand Differential equations. 16- How to understand the classification of differential equations. 17- How to find the solution of Ordinary Differential Equations (ODE). 18- How to find the solution of Homogeneous (ODE). 19- How to find the method of undetermined coefficients for the forced response. 20- How to solve some (ODE) examples using MATLAB.
Indicative Contents	Indicative content includes the following. **Part A. Matrices and Determinants** Matrices and Determinants using MATLAB, matrix operations by using MATLAB, special forms of matrices in MATLAB, Determinants in MATLAB, Minors and cofactors, Cramer's rule in MATLAB, Gaussian Elimination method [15hrs.] **Part B.The Matrix Inverse** the adjoint of a matrix in MATLAB**,** the inverse of a matrix in MATLAB**,** the solution of simultaneous equations with matrices, the least square regression problem in MATLAB [10hrs.] **Part C. Least Square Regression Method** the Least square regression problem, the least square regression derivation in Linear Algebra, the least square regression derivation in Calculus, [8hrs.] **Part D. Differential rquations** Differential equations, Some practical examples of Differential equations, classification of differential equations, [12hrs.] **Part E. Ordinary Differential Equations (ODE)** the solution of Ordinary Differential Equations (ODE), the solution of Homogeneous (ODE), the method of undetermined coefficients for the forced response, some (ODE) examples using MATLAB [15hrs.]

Learning and Teaching Strategies

Strategies	Teachers know their students' learning styles and what they need to choose new and useful strategies for example: 1- Supporting the idea of collective participation of students and their learning at the end of the activity 2- Encouraging students to participate in the discussion of solving mathematical problems 3- Using the best modern methods of learning, such as making a presentation for each group of students on a specific topic 4- Identifying the strengths and weaknesses of the students and trying to address them 5- Increasing students' skills through encouragement, expanding their perceptions, and supporting them to achieve progress and achievement 6- Enriching the theoretical material with many examples to reduce its difficulty, assigning students and encouraging them to solve to increase thinking 7- Achieve the principle of equality and justice among students to achieve the principle of parity and obtain competition among them

Student Workload (SWL)

Structured SWL (h/sem)	63	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	87	**Unstructured SWL (h/w)**	5
Total SWL (h/sem)	150		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	20% (10)	3, 5, 8,10	LO #1-3, #4-6, #7-10, and #11-15.
	Assignments	2	15% (10)	7, 10	LO # 1-3 , #4-6 and #7-10.
	Projects / Lab.			Continuous	
	Report	2	5% (10)		LO # 1-4 and #6-10.
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

Week	Material Covered
Week 1	Matrices and Determinants using MATLAB, matrix operations by using MATLAB
Week 2	special forms of matrices in MATLAB.
Week 3	Determinants in MATLAB
Week 4	Minors and cofactors, Cramer’s rule in MATLAB, Gaussian Elimination method
Week 5	adjoint of a matrix in MATLAB
Week 6	the inverse of a matrix in MATLAB, the solution of simultaneous equations with matrices
Week 7	**First Exam**
Week 8	Least square regression problem, the least square regression derivation in Linear Algebra
Week 9	the least square regression derivation in Calculus, the least square regression problem in MATLAB
Week 10	Differential equations, the classification of differential equations

Week 11	Trigonometric Substitutions, Integration by Partial Fractions
Week 12	the solution of Ordinary Differential Equations (ODE), the solution of Homogeneous (ODE)
Week 13	**Second Exam**
Week 14	the method of undetermined coefficients for the forced response, some (ODE) examples using MATLAB
Week 15	Report 1
Week 16	Report 2

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts	1. Karris, S. T. (2007). *Numerical analysis using MATLAB and Excel*. Orchard Publications. 2. Siauw, T., & Bayen, A. (2014). *An introduction to MATLAB® programming and numerical methods for engineers*. Academic Press. 3. Richard, L. Burden, J. Douglas, Faires, Annette M. Burden, (2016), Numerical analysis (Tenth edition).	Yes
Websites		

Grading Scheme

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

Code	Course/Module Title	ECTS	Semester
MU010102213	Programming languages	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
3	1/0/0/0	63	87
Description			
This model provides the student with learning MATLAB and to solve difficult mathematical			

problems, writing programs and functions, plotting mathematical functions, understanding and running programs for some mathematical methods.

Module Description Form

Module Information					
Module Title	**The Crimes of the Baath Regime in Iraq**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU03**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	05		**College**	01	
Module Leader	Ahmed Akeel Abd		**e-mail**	ahmed.aqeel@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	No available		**e-mail**	E-mail	
Peer Reviewer Name	Dr. Ghassan Kareem Mijthab		**e-mail**	drghassankareem@uomustansiriyah.edu.iq	
Scientific Committee Approval Date	2025		**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	Enlightening these generations through an intellectual documentary approach that exposes the crimes of this Ba'athist regime against the Iraqi people. This curriculum includes cognitive keys that empower university students to confront the promoters of Ba'athist lies and false media.
Module Learning Outcomes	1. Inform university students of the crimes committed by the oppressive regime in Iraq in particular and their impact on the wider region and the world. 2. Exploring the brutality of this regime through documents, photos, and dates, this generation can verify all these crimes against all who followed the path of righteousness, patriotism, and rejection of the criminal Ba'athist approach.
Indicative Contents	Teaching university students how to confront false media based on the historical facts of Iraq's dictatorial rule, thus countering any attempt to incite Ba'athist ideology or glorify it among youth.

Learning and Teaching Strategies	
Strategies	The main strategy that will be adopted in presenting this course will be based on: discussion, questioning, lecture, worksheets, and allowing students to ask questions.

Student Workload (SWL)			
Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	The Concept of Crimes and Their Classifications
Week 2	Types of Crimes
Week 3	Court Decisions
Week 4	Psychological Crimes
Week 5	Mechanisms of Psychological Crimes
Week 6	Effects of Psychological Crimes
Week 7	Militarization of Society
Week 8	Midterm Exam
Week 9	The Ba'ath regime's stance on religion
Week 10	Images of human rights violations
Week 11	Prison and detention facilities of the Ba'ath regime
Week 12	Destruction of cities and villages: the scorched earth policy
Week 13	Genocide graves committed by the regime
Week 14	Mass grave crimes
Week 15	Genocide graves dating back to the aforementioned events

Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	The Ba'ath Party's Crimes in Iraq / Ministry of Higher Education	yes
Recommended Texts	References and Websites	yes
Websites		

Grading Scheme			
Group	**Grade**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C - Good	70 - 79	Sound work with notable errors
	D - Satisfactory	60 - 69	Fair but with major shortcomings
	E - Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)	More work required but credit awarded
	F – Fail	(0-44)	Considerable amount of work required
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Code	**Course/Module Title**	**ECTS**	**Semester**
MU03	The Crimes of the Baath Regime in Iraq	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0	33	17
Description			
This course focuses on the criminal and humanitarian aspects of human rights violations, particularly under repressive regimes such as the Ba'ath regime. It covers the basic concepts of crime and its classifications, including psychological crimes, their mechanisms and effects, and related judicial decisions. Political crimes such as the militarization of society, the destruction of cities, the scorched-earth policy, and the regime's stance on religion are also analyzed. Various forms of human rights violations, including mass graves and genocide, are also examined, along with the locations of prisons and detention centers. The course concludes with a comprehensive applied and analytical study of these issues within the framework of the midterm exam.			

Module Description Form

Module Information

Module Title	**Arabic Language II**		**Module Delivery**	
Module Type	**Basic**		☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MU16**			
ECTS Credits	**2**			
SWL (hr/sem)	**50**			
Module Leve	2	**Semester of Delivery**	2	
Administering Department	Mathematics	**College**	Science	
Module Leader	Dr. Entiha Abbas Aliwi	**e-mail**	Enteaaabbas@uomustansiriyah.edu.iq	
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	B.Sc	
Module Tutor	No available	**e-mail**	E-mail	
Peer Reviewer Name	Dr. Monim H. Al-Jiboori	**e-mail**	monim.atmsc@uomustansiriyah.edu.iq	
Scientific Committee Approval Date	3/6/2024	**Version Number**	1.0	

Relation with other Modules

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

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	1- Listening skills in Arabic language lessons: a scientific study. 2- Speaking skills through classroom discussion. 3- Scientific writing skills in Arabic. 4- The ability to distinguish between Arabic sentences. 5- The ability to read scientific research in Arabic.
Module Learning Outcomes	1- The ability to write a scientific article. 2- Achieving linguistic and grammatical competencies in students' Arabic language performance in writing, grammar, and dictation. 3- Identifying the grammatical aspects of Arabic language. 4- Knowing the vowel signs (fatha, damma, and kasra) and other sounds such as hamzat al-fasl and hamzat al-wasl. 5- Reading words and sentences, understanding their meanings, and making connections between them. 6- Acquiring the ability to express oneself correctly in conversation, speaking, and writing. 7- Learning the basics of writing numbers. 8- Clarifying the primary and secondary signs of Arabic sentences. 9- Raising the student's level of correct reading, correct pronunciation, and understanding ideas. 10- Teaching the student to memorize a sufficient amount of literary texts, enjoy them, and appreciate their beauty.

Indicative Contents	It allows students to be introduced to the important rules of the Arabic language and the necessary rules to refine their Arabic within a sound framework that suits the requirements of their work in civil professions, allowing them to express themselves freely. The guide must listen carefully, observe carefully, and pay attention to every word or action so that the guide can understand the different aspects of the problem, maintain the classical Arabic language, avoid colloquial language, and address common mistakes.

Learning and Teaching Strategies

Strategies	The strategies of this course are to enable the learner to use the Arabic language correctly to understand and comprehend, construct sentences in the correct linguistic form, and identify the correct classical language.

Student Workload (SWL)

Structured SWL (h/sem)	33	**Structured SWL (h/w)**	2
Unstructured SWL (h/sem)	17	**Unstructured SWL (h/w)**	1
Total SWL (h/sem)	**50**		

Module Evaluation

		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	Continuous	LO #1, #2 and #8, #9
	Assignments	2	10% (10)	Continuous	LO #2, #3 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	LO #5, #6 and #9
	Report	1	10% (10)	12	LO #5 and #8
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Declinable Nouns
Week 2	Poetic Texts of the Abbasid Era by Abu Tammam
Week 3	Grammatical Tools
Week 4	Sound and Defective Verbs
Week 5	Verb-Like Letters
Week 6	Part Ijara of the Five Verbs
Week 7	Fatah and Kasrah of the Hamza of An
Week 8	Midterm Exam
Week 9	Contemporary Arabic Poetry: Badr Shakir al-Sayyab
Week 10	Ḍād and Ḍād with Examples
Week 11	The Soft Alif in All Its Types
Week 12	Prose Arts: The Story of Hayy ibn Yaqzān

Week 13	A lecture including practical applications for all language subjects
Week 14	A lecture (practical tests for all literature subjects)
Week 15	A review to prepare for the exam

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	General Arabic for Non-Majors: Dr. Abdul Qadir Hassan Amin, Ministry of Higher Education and Scientific Research, Al-Mustansiriya University, 1890 AD	yes
Recommended Texts	Arabic for Non-Majors: Dr. Saad Ali Zayer - Dr. Biman Jalal Ahmed	yes
Websites	University Arabic for Non-Specialists, Dr. Abdo Al-Rajhi, Dar Al-Nahda Al-Arabiya, Lebanon, 2007	

Grading Scheme

Group	Grade	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	90 - 100	Outstanding Performance
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Code	Course/Module Title	ECTS	Semester
MU16	Arabic Language II	2	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	0/0/0/0	33	17

Description

This vocabulary covers the basic topics in the study of the Arabic language and literature, including grammar, morphology, and classical and contemporary literature. In grammar, emphasis is placed on consonant and defective verbs, the five verbs, verb-like letters, the opening and closing of the hamza on "an," as well as declined nouns and the soft alif. In literature, poetic texts from the Abbasid era are studied through the poetry of Abu Tammam, contemporary Arabic poetry is analyzed, represented by Badr Shakir al-Sayyab, and prose is studied through the story "Hayy ibn Yaqzan." The curriculum also includes practical applications and comprehensive review tests for all skills in preparation for the midterm exam.