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

Academic Program and Course Description Guide

2025

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

University Name: Misan University

Faculty/Institute: College of Education

Scientific Department: Mathematics

Academic or Professional Program Name: Bachelor of Mathematics Education

Final Certificate Name: Bachelor of Mathematics

Academic System: Annual

Description Preparation Date: 2024–2025

File Completion Date: 2025

Signature:

Head of Department Name: Ahmed Kareem mutashar

Date:

Signature:

Scientific Associate Name: Rana Sabeeh Abbood

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature: م.د. سامي حطاب جاسم

Approval of the Dean

الأستاذ الدكتور
براق طالب التويتي
عميد كلية التربية

Buraq Talib Al-Tuwaiti

1. Program Vision

Achieving distinguished outcomes in the educational and research fields to keep pace with scientific development and enrich society cognitively.

2. Program Mission

Preparing educational scientific cadres capable of competing in the labor market and possessing research and scientific skills in the field of mathematical sciences.

3. Program Objectives

1) Preparing educational scientific cadres who possess educational skills to teach mathematics.
2) Meeting the labor market's need for teachers in mathematics.
3) Keeping up with scientific progress in the field of mathematics and its applications.
4) Providing students with the necessary skills to deal with any scientific problem in a logical manner and solve it in a scientific manner.

4. Program Accreditation

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

5. Other external influences

Is there a sponsor for the program?

Ministry of Higher Education and Scientific Research/University of Misan.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	٩	١٥	%٩.٢	Basic
College Requirements	٩	٣٦	%٢٢.٠٨	Basic
Department Requirements	١٩	١١٢	%٦٨.٧١	Basic
Summer Training	Nothing			
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
first stage		**Calculus**	٣	٢
first stage		**Foundations of Mathematics**	٢	٢
first stage		**linear Algebra**	٢	٢
first stage		**Computer**	–	٢
first stage		**Physics**	٢	–
first stage		**Developmental and Educational Psychology**	٢	–
first stage		**English Language**	١	–
first stage		**Arabic Language**	١	–
first stage		**Human Rights and Democracy**	١	–
first stage		**Foundations of Education**	١	–
second stage		**Advanced Calculus**	٣	٢
second stage		**Ordinary Differential Equations**	٢	٢
second stage		**Systems Axioms and Geometry**	٣	–
second stage		**Computer**	–	٢
second stage		**Group Theory**	٣	–
second stage		**Foundations of Scientific Research**	٢	–
second stage		**Developmental Psychology**	٢	–
second stage		**Educational Administration and Secondary Education**	٢	–
second stage		**English Language**	١	–
second stage		**Baath Party Crimes**	–	–
third stage		**Mathematical Analysis**	٢	٢
third stage		**Probability and Statistics**	٢	٢
third stage		**Ring Theory**	٢	٢
third stage		**Numerical Analysis**	٢	٢
third stage		**Partial Differential Equations**	٢	٢
third stage		**Curricula and Teaching Methods**	٢	١
third stage		**Psychological Counseling and Psychological Health**	٢	–
third stage		**English Language**	١	–

Fourth stage		**General Topology**	٢	٢
Fourth stage		**Complex Analysis**	٢	٢
Fourth stage		**Mathematical Statistics**	٢	٢
Fourth stage		**Optionally (1)/ Applied Mathematics**	٢	٢
Fourth stage		**Optionally (2)/Functional Analysis**	–	٢
Fourth stage		**Research Project**	١	٢
Fourth stage		**Practical Education**	٢	–
Fourth stage		**Measurement and Evaluation**	١	–
Fourth stage		**English Language**	٢	٢

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	Learning Outcomes Statement 1
Skills	
Learning Outcomes 2	Learning Outcomes Statement 2
Learning Outcomes 3	Learning Outcomes Statement 3
Ethics	
Learning Outcomes 4	Learning Outcomes Statement 4
Learning Outcomes 5	Learning Outcomes Statement 5

9. Teaching and Learning Strategies

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

10. Evaluation methods

Implemented at all stages of the program in general.

11. Faculty

Faculty Members

Academic Rank	Specialization	Special Requirements/Skills	Number of the teaching staff

			(if applicable)			
	General	Special			Staff	Lecturer

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

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

State briefly the sources of information about the program.

14. Program Development Plan

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4

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

Study Materials for The 1st Stage

Course Description Form Calculus

1. Course Name:	Calculus
2. Semester / Year:	Annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	*150 hours, (5 hours per week *30 per week)
6. Course administrator's name (mention all, if more than one name)	Name: Assis. Prof. D. Adnan Khalf
7. Course Objectives	
Course Objectives	* Students' understanding of the three conic sections (equivalent, plus, and minus), how to draw them, identify everything they contain (vertices, foci, and axes), and show all changes to them in the event of changing the center, dragging, or rotating each of them. * An expanded and complementary study of the first stage regarding vectors and parametric equations. * Expanding students' understanding regarding the subject of the function with one variable, its purpose and continuity, finding the derivative using the geometric method, and studying the applications of the derivative. * Study and understand integrals, methods of solving them, and applications of integration. * Introducing students to the concept of some functions, such as trigonometric functions and their inverses, as well as exponential and logarithmic functions.
8. Teaching and Learning Strategies	
Strategy	* In-person lectures in classrooms. * Discussion method, surprise exams, and methods of refining skills. * Asking intellectual questions or holding a competition between students, stimulating creative thinking and answering clearly and quickly to the problems presented.

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
5 weeks	25 hours	The student will be able to understand the given material,	conic sections (their equations/drawing)	In person lectures	Semester and daily in-person exams.
6 weeks	20 hours	The student will be able to understand the given material	understand the subject of the function its purpose, and continuity	In person lectures	Semester and daily in-person exams.
8 weeks	30 hours	The student will be able to understand the given material	Derivatives, their applications, and the use of Rolle's theorem and the mean value	In person lectures	Semester and daily in-person exams.

10. Course Evaluation

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

11. Learning and Teaching Resources

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

12. Course Name:	**fundamental of mathematics**
13. Semester / Year:	Annual
14. Description Preparation Date:	2024-2025
15. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
16. Number of Credit Hours (Total) / Number of Units (Total)	*120 hours, (4 hours per week *30 per week) **٦ units**
17. Course administrator's name (mention all, if more than one name)	Name: lecture مرتضى علي شبيب Email: : murtadha.alallaq@gmail.com
18.Course Objectives	
Course Objectives	**The student acquires the concept of expressions, mathematical logic, and ways to deal with them algebraically.** **Explaining the concept of sets, relationships, functions, the links between them, and the theories related to them.**
19. Teaching and Learning Strategies	
Strategy	* In-person lectures in classrooms. * Discussion method, surprise exams, and methods of refining skills. * Asking intellectual questions or holding a competition between students, stimulating creative thinking and answering clearly and quickly to the problems presented.

20. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	16 hours	The set of natural, integer, rational, irrational, real, and complex numbers. divisibility. Belonging, subgset, sets equality.	Sets of numbers	In person lectures	Semester and daily in-person exams.
٧-٥	١٦hours	Statements, types of statements, logical	Mathematical logic	In person lectures	Semester and daily in-person exams.

		connectives, logical laws and properties of logical connectives. Absolutely correct statements, contradiction. Open sentences, quantifies (partial quantifies + full quantifies(			
١١-٨	١٦hours	Logical Conclusion, mathematical proof, proof methods: direct proof, indirect proof (positive opposite + contradiction.(	Mathematical proof	In person lectures	Semester and daily in-person exams.
١٥-١٢	١٦hours	Operations on sets (union, intersection, difference, symmetric difference),	Set theory	In person lectures	Semester and daily in-person exams.
٢٠-١٦	٢٠hours	Family of sets, family of indexed sets, operations on family of sets. Power set, partition, cover set, finite cover set	Family of groups	In person lectures	Semester and daily in-person exams.
٢٥-٢١	٢٠hours	Ordered pairs, examples of equality of ordered pairs, Cartesian product between two sets, operations on Cartesian product, generalization of Cartesian product.	Cartesian product	In person lectures	Semester and daily in-person exams.
٣٠-٢٦	٢٠hours	The concept of relation, examples, operations on the relation, types of relation	Relation	In person lectures	Semester and daily in-person exams.
		Equivalence classes, quotient set, parity classes in Z, set of integers from the	division set	In person lectures	Semester and daily in-person exams.

		norm n.			
		Partial ordering relation, comparability, total ordering relation, partially ordered sets, totally ordered sets .	Ordered sets	In person lectures	Semester and daily in-person exams.
		Function, examples of important functions, types of functions, composes of functions, inverse of the function.	function	In person lectures	Semester and daily in-person exams.
		The concept of group, examples of groups, some characteristics of groups, subgroups.	group	In person lectures	Semester and daily in-person exams.

21. Course Evaluation

* Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students.
* Close follow-up to solve chapter questions and pay attention to the process of writing simple reports about any valuable information or an outstanding mathematician.

22. Learning and Teaching Resources

Required textbooks (curricular books, if any)	توماس كالكولس المقرر/ ٢٠١١
Main references (sources)	توماس كالكولس الاصدار ٢٠١٤
Recommended books and references (scientific journals, reports...)	١- Linear A;gebra , Kenneth Hoffman Ray Kanze. ٢- 2- Linear Algebra, Syymour Lipschutz and Marc Lipson. Topics in Algebra, Wileg, I.N.Hersten.
Electronic References, Websites	الفيزياء.كوم https://www.pinterest.com/pin/640918590 مكتبة الفريد في الرياضياتs /9696481

Course Description Form Linear algebra

23. Course Name:	Linear algebra
24. Semester / Year:	Annual
25. Description Preparation Date:	2024-2025
26. Available Attendance Forms:	Lectures are delivered to students in

	person according to the schedule announced in the department
27. Number of Credit Hours (Total) / Number of Units (Total)	*120 hours, (4 hours per week *30 per week) ٦ **units**
28. Course administrator's name (mention all, if more than one name)	Name: lecture مرتضى علي شبيب Email: : murtadha.alallaq@gmail.com
29.Course Objectives	
Course Objectives	* **Acquire mathematical knowledge of the prescribed subjects and understand sufficient meanings behind each concept** * **Developing understanding to enable the student to recognize the concepts of linear algebra and how to apply them in solving mathematical problems**
30. Teaching and Learning Strategies	
Strategy	* In-person lectures in classrooms. * Discussion method, surprise exams, and methods of refining skills. * Asking intellectual questions or holding a competition between students, stimulating creative thinking and answering clearly and quickly to the problems presented.

31. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	16 hours	Types of matrices and operations on	matrices	In person lectures	Semester and daily in-person exams.
٧-٥	١٦hours	**Find the determinants of matrices and some of their properties**	**Matrix determinants**	In person lectures	Semester and daily in-person exams.
١١-٨	١٦hours	Finding the inverse of matrices and some of their properties	Inverse of matrices	In person lectures	Semester and daily in-person exams.
١٥-١٢	١٦hours	Methods for solving systems of linear equations.	Systems of linear equations	In person lectures	Semester and daily in-person exams.
٢٠-١٦	٢٠hours	Vectors and some operations on them - vector space and subspaces - linear combination - linear independence	vector space	In person lectures	Semester and daily in-person exams.
٢٥-٢١	٢٠hours	Linear transformations with some examples and properties - The kernel and form of the linear transformation	Linear transformations	In person lectures	Semester and daily in-person exams.
٣٠-٢٦	٢٠hours	Eigenvalues and eigenvectors - Eigenvalues and eigenvectors of a linear operator - Internal product of vector space	Eigenvalues and eigenvectors	In person lectures	Semester and daily in-person exams.

32. Course Evaluation
* Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students. * Close follow-up to solve chapter questions and pay attention to the process of writing simple reports about any valuable information or an outstanding mathematician.

33. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	توماس كالكولس المقرر/ ٢٠١١
Main references (sources)	توماس كالكولس الاصدار ٢٠١٤
Recommended books and references (scientific journals, reports...)	٣- Linear A;gebra , Kenneth Hoffman Ray Kanze. ٤- 2- Linear Algebra, Syymour Lipschutz and Marc Lipson. Topics in Algebra, Wileg, I.N.Hersten.
Electronic References, Websites	الفيزياء.كوم https://www.pinterest.com/pin/640918590 مكتبة الفريد في الرياضياتs /9696481

Course Description Form the computer

34. Course Name:	the computer
35. Semester / Year:	Annual
36. Description Preparation Date:	2024-2025
37. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
38. Number of Credit Hours (Total) / Number of Units (Total)	*٦0 hours, (٢ hours per week *30 per week)
39. Course administrator's name (mention all, if more than one name)	Name: lecturer Saif Talib e-mail :
40.Course Objectives	
Course Objectives	**A- Training students on Windows ١٠** **B - To qualify and train students on the Word program to write research and scientific papers in the future.** **T - Students can arrange PowerPoint slides and present their research or reports in them in the future.** **C- Learn to create electronic spreadsheets through Excel.** **D- Study the types of networks and how to use the Internet in the future**

41. Teaching and Learning Strategies	
Strategy	A- Cognitive objectives 1) Knowing the concept of electronic computer, its types and classifications 2) The student's knowledge of the Windows 10 operating system

3) The student's knowledge and application of the Word program

4) The student's knowledge and application of the PowerPoint program.

5) The student's knowledge and application of the Excel program.

6) Introducing the student to networks, their types and benefits.

B - The skills objectives of the course

1) Teaching students how to use a computer.

2) Teach students how to use the Windows 10 operating system.

3) Providing students with how to use Microsoft Office programs.

4) Students acquire the skill of activating and using email.

.10 Teaching and learning methods

- In-person lectures
- Discussion style.
- Supportive and explanatory videos for in-person lectures.

11 Evaluation methods

- Daily Quiz and monthly attendance tests
- Assigning the student to academic tasks for which he will be rewarded
- Assigning the student to prepare reports on computer application topics
- The method of discussion and dialogue between the student and the teacher
- Observation method

- 12 General objectives:

1) The student should show interest in the explanation the teacher provides of the subject.

2) The student must have sufficient conviction about the importance of the material he is receiving.

3) That the student will be able to use and organize the data he received after explaining the material in the future

4) The student should be able to discuss and suggest some other possible solutions to the problem.

- 12 General objectives:

1) The student should show interest in the explanation the teacher provides of the subject.

2) The student must have sufficient conviction about the importance of the material he is receiving.

3) That the student will be able to use and organize the data he received after explaining the material in the future

4) The student should be able to discuss and suggest some other possible solutions to the problem.

42. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4	8 hours	The student learns about Topics described in the	**Learn the operating**	In person lectures	Semester and daily in-person exams.

		unit name	**system** **Windows ١٠**		
10	**10** hours	the student gets to know	Learning Word	In person lectures	Semester and daily in-person exams.
7	**14** hours	**the student gets to know** **Topics described in the unit name**	**Learning PowerPoint,**	In person lectures	Semester and daily in-person exams.
7	**14** hours	**the student gets to know** **Topics described in the unit name**	**Learning Excel,**	In person lectures	Semester and daily in-person exams.
2	٤hours	The student gets to know	Online learning	In person lectures	Semester and daily in-person exams.

43. Course Evaluation

* Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students.

44. Learning and Teaching Resources

Required textbooks (curricular books, if any)	nothing
Main references (sources)	١- دروس في مبادئ الحاسب الآلي تأليف د. أحمد عبد السلام البراوي 2010. ٢- تعلّم مايكروسفت وورد وبوربوينت واكسل 2013 أعداد الدكتور خالد فرهود 2314. ٣- كتاب ويندوز لرئيس المهندسين : محمد مالك محمد ٤- كتاب اكسل لرئيس المهندسين : محمد مالك محمد كتاب وورد لرئيس المهندسين : محمد مالك محمد
Recommended books and references (scientific journals, reports...)	رين المصري كتاب 2013كتاب مايكرو سوفت وورد لشيرين المصري2313مايكرو سوفت اكسل
Electronic References, Websites	https://books-library.net/free-167753289-download

12. Course development plan

:We suggest adding the following topics

-١A brief overview of Windows ١١

Study Materials for the 2nd Stage

Course Description Form Calculus

45. Course Name:	Calculus
46. Semester / Year:	Annual
47. Description Preparation Date:	2024-2025
48. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
49. Number of Credit Hours (Total) / Number of Units (Total)	*150 hours, (5 hours per week *30 per week)
50. Course administrator's name (mention all, if more than one name)	Name: Assis. prof. Aqeel Abul Wahd
51.Course Objectives	
Course Objectives	* Students' understanding of the three conic sections (equivalent, plus, and minus), how to draw them, identify everything they contain (vertices, foci, and axes), and show all changes to them in the event of changing the center, dragging, or rotating each of them. * An expanded and complementary study of the first stage regarding vectors and parametric equations. * Expanding students' understanding regarding the subject of the function with one variable, its purpose and continuity, finding the derivative using the geometric method, and studying the applications of the derivative. * Study and understand integrals, methods of solving them, and applications of integration. * Introducing students to the concept of some functions, such as trigonometric functions and their inverses, as well as exponential and logarithmic functions.
52. Teaching and Learning Strategies	
Strategy	* In-person lectures in classrooms. * Discussion method, surprise exams, and methods of refining skills. * Asking intellectual questions or holding a competition between students, stimulating creative thinking and answering clearly and quickly to the problems presented.

53. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
5 weeks	25 hours	The student will be able to understand the given material,	conic sections (their equations/drawing)	In person lectures	Semester and daily in-person exams.
6 weeks	20 hours	The student will be able to understand the given material	understand the subject of the function its purpose, and continuity	In person lectures	Semester and daily in-person exams.
8 weeks	30 hours	The student will be able to understand the given material	Derivatives, their applications, and the use of Rolle's theorem and the mean value	In person lectures	Semester and daily in-person exams.

54. Course Evaluation

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

55. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	

Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form Ordinary Differential Equations ODE

1. Course Name:	Ordinary Differential Equations
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	*120 hours, (4 hours per week *30 per week) * 180 units, (6 units per week * 30 weeks)
6. Course administrator's name (mention all, if more than one name)	Name: Mohammed Jabbar Hawas Allami Email: drmjh53@uomisan.edu.iq
7. **Course Objectives**	
Course Objectives	• Defining the concept of differential equations, knowing the order of a differential equation and the degree of a differential equation, how to find a differential equation from the general solution and distinguish between the general, special and individual solution. The existence and unity of the solution for first-order linear differential equations. Initial and boundary value problems. Systems of differential equations • Solving types of first-order and first-order differential equations, equations separated by variables, homogeneous equations, differential equations with linear coefficients, complete equations, integration factor, non-exact equations, Bernoulli's equation, solving differential equations using an appropriate transformation • Applications of differential equations in engineering, physics and biology such as population growth and decay and cooling and heating problems. • Solving first-order and higher-order differential equations, equations solved in the derivative variable, equations solved in the dependent variable, the Clairaut equation and the Lagrange's equation, as well as equations solved in the independent variable • Solving higher-order differential equations, the Wronskian determinant, defining the differential operator D, how to write a differential equation in terms of the operator D, finding its general and specific solution for higher-order equations, and finding the general solution for higher-order differential equations. Analyze homogeneous differential equations with constant and higher order coefficients. Solving inhomogeneous and higher-order differential equations using undetermined method • s and and inverse D operator. • Introducing the student to the Laplace transform and the Laplace transform of functions and derivatives, defining the inverse of the transformation, and how to solve differential equations using it. • Solve the differential equation using power series
8. Teaching and Learning Strategies	
Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

9. Course Structure

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 weeks	Defining the concept of differential equations, knowing the order of a differential equation and the degree of a differential equation, how to find a differential equation from the general solution and distinguish between the general, special and individual solution. The existence and unity of the solution for first-order linear differential equations Solving types of first-order and first-order differential equations, equations separated by variables, homogeneous equations, differential equations with linear coefficients, complete equations, integration factor, incomplete equations, Bernoulli's equation, solving differential equations using an appropriate transformation	The first chapter: Basic concepts in ordinary differential equations. It includes definitions and examples of ordinary and partial differential equations. Degree and rank of the differential equation. Linear and nonlinear differential equations. Homogeneous differential equations. Initial and boundary value problems. Systems of differential equations. Solutions of differential equations: general, specific and individual solutions. Formation of differential equations from the general solution	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
8 weeks	Solving types of first-order and first-order differential equations, equations separated by variables, homogeneous equations, differential equations with linear coefficients, complete equations, integration factor, incomplete equations, Bernoulli's equation, solving differential equations using an appropriate transformation	The existence and unity of the solution for first-order linear differential equations Solutions of differential equations.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Learn to solve first-order and higher-order differential equations, equations solved in the derivative variable, equations solved in the dependent variable, the Clairaut equation and the lagrangeange equation, as well as equations solved in the independent variable..	The second Chapter: Solving types of first-order and first-order differential equations, equations separated by variables, homogeneous equations, differential equations with linear coefficients, complete equations, integration factor, incomplete equations, Bernoulli's equation, solving differential equations using an appropriate transformation	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Learn to solve higher-order differential equations, the Runeskin determinant, the definition of the differential operator D, how to write a differential equation in terms of the operator D, and find its general and specific solution for higher-order equations and find the general solution for higher-order differential equations. Analyze homogeneous differential equations with constant and higher order coefficients. Solving inhomogeneous and higher-order differential equations using the method of non-specific coefficients and the method of changing the mean	The third chapter. Applications of differential equations in engineering, physics and biology such as population growth and decay and cooling problems	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
7 weeks	general solution for higher-order differential equations. Analyze homogeneous differential equations with constant and higher order coefficients. Solving inhomogeneous and higher-order differential equations using the method of non-specific coefficients and the method of changing the mean	The fourth chapter. Solving first-order and higher-order differential equations, equations solved in the derivative variable, equations solved in the dependent variable, the Clairaut equation and the lagrange e equation, as well as equations solved in the	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

		independent variable		
3 weeks	Introducing the student to the Laplace transform and the Laplace transform of functions and derivatives, defining the inverse of the transformation, and how to solve differential equations using it. Learn to use power series to solve differential equations	The fifth chapter. Solving higher-order differential equations, the Wronskian determinant, defining the differential operator D, how to write a differential equation in terms of the operator D, finding its general and specific solution for higher-order equations, and finding the general solution for higher-order differential equations. Analyze	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Solve the differential equation using power series	The sith chapter homogeneous differential equations with constant and higher order coefficients. Solution of inhomogeneous and higher order differential equations using the method of unassigned coefficients The sixth chapter Introducing the student to the Laplace transform and the Laplace transform of functions and derivatives, defining the inverse of the transformation, and how to solve differential equations using it.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

10. Course Evaluation

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

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Methods for solving ordinary differential equations, written by Dr. Khaled Al-Samarrai and Dr. Yahya Saeed
Main references (sources)	Earl Rainville and Phillip E. Bedient Bedient, Elementary Differential Equations , Macmillan Canada
Recommended books and references (scientific journals, reports...)	Differential equations written by Dr. Hassan Mustafa Al-Awadi Dr. Abdel Wahab Abbas Dr. Sanaa Ali Zaraa
Electronic References, Websites	

Course Description Form Axiomatic Systems and Geometry

1. Course Name:	Axiomatic Systems and geometry
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	90 hours, 3 hours per week *30 weeks 6 units
6. Course administrator's name (mention all, if more than one name)	Name: Ayat Muhammad Jabr

7. Course Objectives

Course Objectives	• **Explaining to the student the basics of geometry, geometrical systems and axioms.** • **Enabling the student to prove theorems in a logical and sound manner, starting from the data and what is required to be proven, the drawing, and then the proof.** • • **The student learns direct and indirect methods of proof.**

8. Teaching and Learning Strategies

Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

9. Course Structure

Week	Unit or subject name	Required Learning Outcomes	Learning method	Evaluation method
4 weeks	Axiomatic systems, properties of the axiomatic system	Enables the student to understand the basics of the axiomatic system	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
7 weeks	Evaluation of Euclidean geometry	The student was able to understand Hilbert's system	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	Equivalence and comparison	The student was able to create a straight line and compare the	Lecture and discussions	Discuss daily exam, and

		straight lines, as well as create an angle and compare the angles		attendance exams Monthly
4 weeks	Preliminary geometry	In this chapter, Euclid's theorems are re-proven	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	Non-Euclidean geometry (Hyperbdic Geometry and elliptical geometry)	In this topic, non-Euclidean geometry and its types are explained to the student	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Projective Geometry	The student is able to understand the meaning of perspective and projectivity	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
1 weeks	Transformation geometry	The student is able to understand reflection on a line, axial symmetry, and rotation	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

10. Course Evaluation

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

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	هندسة التحويلات والهندسة التآلفية تأليف : ماكس جيجز ترجمة : د.مُحَمَّد عادل سودان، د.مُحَمَّد سعيد اليرني، د.موفق دعبول
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form Computer Science

12. Course Name:	Advanced computer science
13. Semester / Year:	annual
14. Description Preparation Date:	2024-2025
15. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
16. Number of Credit Hours (Total) / Number of Units (Total)	60 hours, 2 hours per week * 30 weeks One unit
17. Course administrator's name (mention all, if more than one name)	Name: Saif Talib Email:

18. **Course Objectives**

Course Objectives	• **The student learns how to use the Matlab program in order to be able to solve equations and mathematical problems in a way that qualifies him for a higher level in the future.** • **The student learns how to represent a matrix in Matlab** • **The student learns how to draw a function in Matlab** • **The student will learn some programming basics in Matlab**

19. Teaching and Learning Strategies

Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

20. **Course Structure**

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
7 weeks	The student learns operations on matrices	Matrices and operations	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	The student learned MATLAB instructions	Instructions and variables in MATLAB	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	The student learned how to open a window in the computer	Entrance in the M.file window	Lecture and discussions	Discuss daily exam, and attendance exams

				Monthly

10 weeks	The student learned how to graph a function	Drawing functions and adding properties to the drawings	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	The student learned some computer instructions	If & For & While & Else & Switch	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

21. Course Evaluation

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

22. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Essential Matlab for Scientists and Engineers
Main references (sources)	كتاب تعليم البرمجة بلغة ماتلاب بالامثلة العملية الشاملة تأليف م. احمد محمد الفلاح
Recommended books and references (scientific journals, reports...)	Essential Matlab for Scientists and Engineers By Brain D. Hahn
Electronic References, Websites	

Course Description Form Group Theory

23. Course Name:	Group Theory
24. Semester / Year:	annual
25. Description Preparation Date:	2024-2025
26. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
27. Number of Credit Hours (Total) / Number of Units (Total)	90 hours, (3 hours per week *30 per week) 6 units
28. Course administrator's name (mention all, if more than one name)	Name: Murtda Ali Email:

29. **Course Objectives**

Course Objectives	• **Developing abstract thinking at the level of knowledge, understanding, comparison and evaluation among students.** • **Connecting the concepts of set theory with higher mathematics and the concepts of modern abstract algebra.** • **Preparing the student's thought to deal with the complex structure of algebraic systems, which the student studies in ring theory.** • **Knowing and consolidating the philosophical reasons for the laws and relationships that the student studied in the secondary stages.** • **Developing students' skills in mathematical proof through important theorems in group theory.** • **Presenting some necessary concepts in number theory that the student needs in group theory.**

30. Teaching and Learning Strategies

Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

31. **Course Structure**

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
5 weeks	A review of set theory, binary operations, mathematical system, semigroup, neutral semigroup, commutative semigroup, group,	group	Lecture and discussions	Discuss daily exam, and attendance

	commutative group, examples of commutative and non-commutative numerical groups, examples of matrix groups, theorems about group properties.			exams Monthly
3 weeks	order of group, finite and infinite groups, order of element, idempotent element, nilpotent element, Boolean group, cyclic group.	order of group	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Division algorithm, division relation by Z, equivalence of integers, congruent class module n, set of integers module, group of integers module n. One-to-one correspondence functions, permutations, symmetry groups, square symmetry groups.	Important Groups	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	One-to-one correspondence functions, permutations, symmetry groups, square symmetry groups. Subgroup, cyclic subgroup, direct product of subgroups, cosets, order and index of subgroups, Lagrange's theorem, simple group, normal subgroup, Quotient set, Quotient group, subgroup of the quotient group.	Subgroup & Quotient group	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	Groups Homomorphism, the kernel of Homomorphism, types of Homomorphism, basic theorems of Homomorphism.	Groups Homomorphism	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Chains, some types of Chains, Maximal normal subgroups, Jordan-Holder theorem.	Chains	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Prime groups, Sylow's theorems, examples and theorems.	Prime groups	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
	Finite nilpotent groups, solvable groups.	solvable groups		Discuss daily exam, and attendance exams Monthly

32. Course Evaluation

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

33. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to Modern Abstract Algebra ، By David M. Burton, 1967
Main references (sources)	Abstract and linear Algebra ، By David M. Burton, 1972
Recommended books and references (scientific journals, reports...)	Abstract Algebra, Schaum's Outline 2nd edition. by Lloyd Jaisingh & Frank Ayres
Electronic References, Websites	

Course Description Form Foundations of scientific research

34. Course Name:	Foundations of scientific research
35. Semester / Year:	annual
36. Description Preparation Date:	2024-2025
37. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
38. Number of Credit Hours (Total) / Number of Units (Total)	60 hours, 2 hours per week * 30 weeks 4 units
39. Course administrator's name (mention all, if more than one name)	Name: Pro. Dr. Rana Sabeeh Email:

40. **Course Objectives**

Course Objectives	• **The mathematics student acquires knowledge of the prescribed subjects and understands and studies the meaning of scientific research.** • **Scientific knowledge of the prescribed curriculum subjects and the basics of descriptive statistics.** • **Practical application by conducting research to apply the statistical measures studied by the student and statistical analysis** • **Course outcomes and teaching, learning and evaluation methods**

41. Teaching and Learning Strategies

Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

42. **Course Structure**

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
2 weeks	The student learns the concept of science Its goals, scientific thinking, and the ethics of scientific research	Science, scientific thinking, and the ethics of scientific research	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	The concept of scientific research, qualities of research and a good researcher	The problem of scientific research	Lecture and discussions	Discuss daily exam, and attendance exams

				Monthly
2 weeks	Statistics and method Statistics in data collection	Collection and classification of data	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Data collection methods and research design method	Samples, reasons for selecting them, and conditions	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	The student learns the method Research formulation	Writing scientific research And research parts	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	The student learned how to tabulate data and process it statistically	Frequency distributions and methods of displaying data	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
6 weeks	The student learned how to tabulate data and process it statistically	Measures of central tendency	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	The student learned how to tabulate data and process it statistically	Measures of dispersion	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	The student learned how to tabulate data and process it statistically	Types of samples and principles of probability	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

43. Course Evaluation

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

44. Learning and Teaching Resources

Required textbooks (curricular books, if any)	الاحصاء، تأليف : د.محمود حسن المشهداني واامير حنا هرمز 1989 اساليب البحث العلمي، تاليف :د.جودت عزت عطوى 2119
Main references (sources)	• الاحصاء، تأليف : د.محمود حسن المشهداني واامير حنا هرمز ١٨٢٨ • كتاب الانحدار الخطي المتعدد، تاليف : د.عبد الرزاق محمد صلاح شريجي ١٨٢١ • اساليب البحث العلمي، تاليف :د.جودت عزت عطوى • 2338 • مقدمة في منهج البحث العلمي، تاليف: د. رحيم يونس كرو ٠١١٨
Recommended books and references (scientific journals, reports...)	مناهج البحث العلمي، عبد الرحمن بدوي، 1977
Electronic References, Websites	

Course Description Form Growth psychology

45. Course Name:	Growth psychology
46. Semester / Year:	annual
47. Description Preparation Date:	2024-2025
48. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
49. Number of Credit Hours (Total) / Number of Units (Total)	60 hours, 2 hours per week * 30 weeks 4 units
50. Course administrator's name (mention all, if more than one name)	Name: Leturer Fadia Email:
51. **Course Objectives**	
Course Objectives	**The course aims to make the mathematics student able to:** **1- Knows the psychology of growth and its relationship with other sciences and learns about the laws of growth in daily and future life** **2- Identify the genetic and environmental factors affecting growth and some diseases** **3- He gets to know the methods and types of scientific research and applies what he knows in research and studies** **4- Recognizes the importance of childhood and adolescence and their stages in the physical, mental, emotional, social and moral fields.** **5- It shows the role of social institutions in the socialization of the child, and the relationship between the adolescent and community institutions** **6- It shows the importance of work, choosing it, and acquiring inclinations and trends** **7- It identifies some of the problems of adolescence and methods of treating them, and proposes new methods to address problems**
52. Teaching and Learning Strategies	
Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

53. Course Structure

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 weeks	Enables the student to learn about Growth psychology	Developmental psychology and the factors affecting it	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Enables the student to understand scientific research methods	Scientific research methods in developmental psychology	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Understanding the stages of childhood	Childhood and its fields	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Identify existing social institutions	Social institutions	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Understanding adolescence	Adolescence	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Enables the student to understand the adolescent's relationship with society	Adolescent and society	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Enables the student to understand the professions to which the teenager is inclined	Adolescent and career	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Identifying the thinking and tendencies of teenage students	Adolescents' attitudes and tendencies		
3 weeks	Student understanding of adolescent problems	Some teenage problems		

54. Course Evaluation

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

55. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Developmental psychology book, human psychology book, introduction to psychology book, childhood and adolescence book, language psychology book, socialization book
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form English

56. Course Name:	
57. Semester / Year:	annual
58. Description Preparation Date:	2024-2025
59. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
60. Number of Credit Hours (Total) / Number of Units (Total)	60 hours, 2 hours per week * 30 weeks 2 units
61. Course administrator's name (mention all, if more than one name)	Name: Noor Abul Raheem Email:

62. **Course Objectives**

Course Objectives	•
63. Teaching and Learning Strategies	
Strategy	• The course aims to teach and train students to learn educational vocabulary in the English language, conversation, listening, pronunciation of phonemes, and the rules of the English language. • Graduating a student who is able to use the basics of the English language in presenting mathematics topics

64. **Course Structure**

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
3 weeks	Past and future tense and question formulation	Acquaintance	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Present simple and continuous	The way we live	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Past simple and continuous	Everything went wrong	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Expressing quantities	Let's go shopping	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Action patterns	what do you want to do	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Degrees of comparison	Tell me what you would like	Lecture and	Discuss daily

			discussions	exam, and attendance exams Monthly
2 weeks	present perfect	the fame	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Introduction to auxiliary verbs	Do and don't		
2 weeks	Time conditions	Visit places		
2 weeks	Infinitive	Scared to death		
2 weeks	Passive voice	Things that changed the world		
2 weeks	Formulation of the if conditional	Dreams and reality		
2 weeks	Present perfect continuous	Make a living		
2 weeks	Past Perfect	Family relations		
2 weeks		Review		

65. Course Evaluation

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

66. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• New Headway Plus / Pre-Intermediate Student's Book • New Headway Plus / Pre-Intermediate Workbook With Key
Main references (sources)	• **New Headway Plus / Pre-Intermediate Workbook With Key**
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form Educational administration and secondary education

1. Course Name:	Educational administration and secondary education
2. Semester / Year:	annual
3. Description Preparation Date:	2023-2024
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	60 hours, 2 hours per week * 30 weeks 4 units
6. Course administrator's name (mention all, if more than one name)	Name: Email:

7. Course Objectives

Course Objectives	•

8. Teaching and Learning Strategies

Strategy	1- Preparing a future teacher capable of teaching and communicating with students in person and electronically 2- Preparing a teacher who has the ability to deal with classroom problems and find solutions to them 3- Emphasis on studying administrative concepts that are related to administrative and educational work. 4- Introducing the student to the importance of administration in the field of education.

9. Course Structure

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 weeks	Management - its concept - its origins - its historical development	Management	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
8 weeks	Levels of administration in education	Levels of administration in education	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Centralized and decentralized administration - their types	Centralized and decentralized administration	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Administration - educational - educational - school	Administration - educational - educational - school	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
7 weeks	Classroom management - its concept and everything related to the subject	Classroom management - its concept	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

3 weeks	Functions, methods and patterns in management	Functions, methods and patterns in management	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	Explanatory chapter on	Explanatory chapter on	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

10. Course Evaluation

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

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	University-prescribed vocabulary Book of Administration, Supervision, and Secondary Education - Alaa Hakim Al-Nasser 2312 Administration and Secondary Education Book - Sami Abdel Fattah Raouf (2323) School applications Online research and resources
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Study Materials for The 3rd Stage

Course Description Form Partial differential equations

1. Course Name:	Partial differential equations
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person ccording to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	120 Hours (4 Hours*30 weeks) 6 Units
6. Course administrator's name (mention all, if more than one name)	Name: Abdul-Karim Ali Hussein Email : abdulkareem.ali@uomisan.edu.iq
7. Course Objectives	
Course Objectives	* Learn the basic concepts of partial differential equations and methods for solving homogeneous and inhomogeneous partial differential equations. * Learn to solve some life problems, such as heat, wave, and other problems, which are expressed as partial differential equations. * Study and understand Laplace equations and Laplace transformations.
8. Teaching and Learning Strategies	
Strategy	* In-person lectures in classrooms. * Discussion method, surprise exams, and methods of refining skills. * Asking intellectual questions or holding a competition between students, stimulating creative thinking, and answering clearly and quickly to the problems presented

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-7	28 Hours	Learn how to solve homogeneous equations	Solving homogeneous differential equations	Lecture and Discussion	Quarterly and daily attendance exams
8-10 Weeks	12 Hours	Learn how to solve non-homogeneous equations	Solving non-homogeneous differential equations	Lecture and Discussion	Quarterly and daily attendance exams
11-15 Weeks	20 Hours	Learn how to solve Fourier series	The Fourier series	Lecture and Discussion	Quarterly and daily attendance exams
16-18 Weeks	12 Hours	Solve the heat equation	The heat conduction equation in one dimension	Lecture and Discussion	Quarterly and daily attendance exams
19-22 Weeks	16 Hours	Solve the wave equation	The wave equation in one dimension	Lecture and Discussion	Quarterly and daily attendance exams
23-27 Weeks	20 Hours	Solve the Laplace equation	Solve Laplace's equation in two dimensions	Lecture and Discussion	Quarterly and daily attendance exams
28-30 Weeks	12 Hours	Solve the wave and heat equation by iterative methods	Iterative methods for solving partial differential equations of the first and second order	Lecture and Discussion	Quarterly and daily attendance exams

10. **Course Evaluation**	
* Semi-daily and monthly tests and surprise exams. * Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students. * Close follow-up to solve chapter questions and pay attention to the process of writing simple reports about any valuable information or an outstanding mathematician.	
11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1- Methods for solving partial differential equations (Dr. Atallah Thamer Al-Ani) 2- Partial differential equations for scientific and engineering colleges (Dr. Atallah Thamer Al-Ani).
Main references (sources)	1- Partial Differential Equations W.A.Straus 2-Advanced differential equations
Recommended books and references (scientific journals, reports…)	Partial Differential Equations with fourier Series an Boundary value Problems (Nakhle H. Asmar)
Electronic References, Websites	https://www.bing.com/search?q=https%3A%2F%2Fwww.alfreed-ph.com&form=IPRV10#

Course Description Form Probability and statistics

1. Course Name:	Probability and statistics
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	*120 hours, (4 hours per week *30 per week)
6. Course administrator's name (mention all, if more than one name)	Name: Assis. prof.D Sarah Abdel Hussein Bandar Email: sara.ab@uomisan.edu.iq
7. Course Objectives	
Course Objectives	The course aims to provide the student with basic information on each of the following topics: ❖ Descriptive statistics: definitions, statistical symbols, random variables, population, sample data, plotting data, measures of central tendency (arithmetic mean, median, mode), measures of dispersion, correlation and regression. ❖ Introduction to probability: definitions, experiments, events, counting methods, permutations and combinations, theories of probability, laws of probability (the law of addition of probabilities, the law of conditional probability, the law of multiplying probabilities), independent events, conditional events, Bayes' theorem, examples, external questions. ❖ Random variables and probability distributions: definitions, continuous and discrete random variables, continuous and discrete probability distributions, examples theories, external questions ❖ Mathematical expectation and variance: Definitions, theories, examples, moments, function generating the moments, external questions
8. Teaching and Learning Strategies	
Strategy	1- In-person lectures in the classroom 2- The method of discussion and dialogue between the student and the teacher 3- Daily and monthly attendance tests 4- Preparing the student scientifically and educationally according to solid scientific foundations 5- Education by making the student a teacher to enhance his self-confidence 6- Assigning the student to make reports on topics related to the curriculum vocabulary 7- Distributing students into a work team to solve assignments during the lecture in order to stimulate the spirit of ability and cooperation with each other

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-5	20	The student learns what was presented in the lecture	Descriptive statistics	Presentation lecture and discussion	Attendance exams (daily and monthly)
6-10	20	The student learns what was presented in the lecture	Correlation and regression (least squares method, matrices, and Cramer's determinants method)	Presentation lecture and discussion	Attendance exams (daily and monthly

11-15	20	The student learns what was presented in the lecture	Introduction to probability Random variables	Presentation lecture and discussion	Attendance exams (daily and monthly
16-20	20	The student learns what was presented in the lecture	Probability distributions Discrete and continuous	Presentation lecture and discussion	Attendance exams (daily and monthly
21-25	20	The student learns what was presented in the lecture	Mathematical expectation and variance	Presentation lecture and discussion	Attendance exams (daily and monthly
26-30	20	The student learns what was presented in the lecture	Some special probability distributions	Presentation lecture and discussion	Attendance exams (daily and monthly

10. Course Evaluation

1- Semi-daily and monthly tests and surprise exams.
2- Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students.
3- Close follow-up on solving chapter questions and paying attention to the process of writing simple reports on any valuable information or an outstanding mathematician.

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- Introduction to Statistics / Author: Dr. Humbled Mahmoud Al-Rawi 2- Probability Theory, written by: Dr. Walid Al-Nouri
Main references (sources)	1-Probability and Statistics By Morris H. De Groot 2-Intoduction to Mathematical Statistics By Hogg and Craig
Recommended books and references (scientific journals, reports...)	1- Theories and problems in probability (Schaum's Abstracts Series) Written by Dr. Seymour Lipschitz Translated by Dr. Sameh Dawoud/Ain Shams University An 2- Introduction to probability theory and mathematical statistics ; by Rohtag
Electronic References, Websites	1) https://youtu.be/7mnbfzmte1I 2) https://www.alfreed-ph.com/2018/09/9-pdf.html 3) https://www.youtube.com/watch?v=Q0zDzxKfWFY https://www.youtube.com/watch?v=jDycsIub4ZE https://www.youtube.com/watch?v=qs_79VE5-Hs

Course Description Form Mathematical Analysis

1. Course Name:	Mathematical analysis
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	*120 hours, (4 hours per week *30 per week) * 180 units, (6 units per week * 30 weeks)
6. Course administrator's name (mention all, if more than one name)	Name: Dr. Hadeel Ghazi Abd Ali Email: hadeel_ghazi@uomisan.edu.iq
7. Course Objectives	
Course Objectives	* An expanded and complementary study of the first stage regarding the foundations of mathematics. * Study and understand the metric space and everything related to it (sequences, infinite series, continuity, regular continuity and compact spaces). * Solve problems and prove theories related to metric space. * Study the derivative and learn about its properties and applications (Rolle's theorem, chain rule, maximum and minimum value, average value and their results). * Expanding students' awareness regarding the issue of the Riemann integral, the necessary and sufficient condition for the Riemann integral, the fundamental theorem in calculus, and its relationship to the concept of continuity, the derivative, and sequences. * Students' understanding of measurement theory, its properties, and special concepts. *Linking mathematical analysis with the concept of topology.
8. Teaching and Learning Strategies	
Strategy	* In-person lectures in classrooms. * Discussion method, surprise exams, and methods of refining skills. * Asking intellectual questions or holding a competition between students, stimulating creative thinking and answering clearly and quickly to the problems presented**.**

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
2 Weeks	8 Hours	The student is able to understand the given material	Real Numbers	Lecture and Discussion	Quarterly and daily attendance exams
4 Weeks	16 Hours	The student is able to understand the given material	Metric Spaces	Lecture and Discussion	Quarterly and daily attendance exams
3 Weeks	12 Hours	The student is able to understand the given material	Sequences in Metric Spaces	Lecture and Discussion	Quarterly and daily attendance exams.
3 Weeks	12 Hours	The student is able to understand the given	Infinite Real Series	Lecture and Discussion	Quarterly and daily attendance

		material			exams.
3 Weeks	12 Hours	The student is able to understand the given material	Continuity in Metric spaces	Lecture and Discussion	Quarterly and daily attendance exams
3 Weeks	12 Hours	The student is able to understand the given material	Derivative	Lecture and Discussion	Quarterly and daily attendance exams
4 Weeks	16 Hours	The student is able to understand the given material.	Riemann's integral	Lecture and Discussion	Quarterly and daily attendance exams
4 Weeks	16 Hours	The student is able to understand the given material	Measure Theory Lebesgue integral	Lecture and Discussion	Quarterly and daily attendance exams

10. Course Evaluation

* Semi-daily and monthly tests and surprise exams.
* Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students.
* Close follow-up to solve chapter questions and pay attention to the process of writing simple reports about any valuable information or an outstanding mathematician.

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**قدمة في التحليل الرياضي /الأستاذ الدكتور عادل غسان نعوم / ١٩٨١**
Main references (sources)	**ة في التحليل الرياضي /الأستاذ الدكتور عادل غسان نعوم / ١٩٨١**
Recommended books and references (scientific journals, reports…)	***Principles of Mathematical Analysis by Walter Rudin /1953** ***Mathematical Analysis by Tom Apostol /1957**
Electronic References, Websites	https://ar.khanacademy.org **أكاديمية خان/**

56. Course Name:
Ring Theory
57. Course Code:
58. Semester / Year:
Year
59. Description Preparation Date:
2024-2025
60.Available Attendance Forms:
61.Number of Credit Hours (Total) / Number of Units (Total)
4 Hours (120 Hours)/ 6 Units (40 Units)
62. Course administrator's name (mention all, if more than one name)
Name: Dr. Hiba Rabeea Baanoon Email: hibabaanoon@uomisan.edu.iq
63. Course Objectives
1-Theoretical Understanding: • Understand basic definitions, such as: rings, fields, ideals, homomorphisms, and isomorphisms. • Master the properties of arithmetic operations in rings. • Identify different types of rings, such as: commutative rings, and integral domain. • Study the properties of ideals.

- Understand the fundamental isomorphism theorem for rings.

2- Practical Skills:

- Solve problems related to ring operations.
- Prove properties of rings using principles of mathematical logic.
- Develop logical and analytical thinking skills.

3-Personal Skills:

- Enhance problem-solving and critical thinking skills.
- Improve communication and mathematical expression skills.
- Develop teamwork and collaboration skills.
- Increase self-confidence and self-learning ability.
- Stimulate innovation and creativity in solving mathematical problems.

4- Interdisciplinary Connections:

- Relate ring theory to other areas of mathematics, such as: linear algebra, and topology.
- Demonstrate the importance of ring theory in solving real-world problems.

5- Educational Objectives:

- Cultivate a love for mathematics and self-learning.
- Encourage students to think creatively.
- Prepare students for further study of advanced mathematics topics.
- Qualify students for work in research and teaching.

64. Teaching and Learning Strategies

1-Active Learning:

- **Project-based learning:** Assigning students research projects related to ring theory, such as: analyzing the properties of a specific ring, or proving a mathematical theorem.
- **Class discussions:** Encouraging students to participate in discussions about the concepts and principles of ring theory.
- **Inquiry:** Posing open-ended questions to students to stimulate their critical thinking and analysis of concepts.

2-Use of Technology:

- Distance learning: Providing access to distance learning through online educational platforms.

3-Connecting Theory to Practice:

- **Providing real-world examples**: Linking theoretical concepts to their applications in other fields such as: physics, engineering, and computer science.
- **Inviting guest speakers:** Inviting experts in the field of ring theory to give lectures and

workshops for students.

4-Assessment of Learning:

- **Continuous assessment:** Using tools such as short quizzes, homework assignments, and participation in discussions to assess student progress.
- **Final assessment:** Using comprehensive exams to assess student learning of the entire year's content.

65. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
3 Weeks	12 Hours	Understanding Rings and Fields: Properties and Operations	Definition and Properties of Rings	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
2 Weeks	8 Hours	Understanding Subrings of Rings: Definitions, Examples, and Properties.	Subrings	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
5 Weeks	20 Hours	Understanding Ideas: Properties, Significance, and	Ideals and Quotient Rings	Lecture and Discussion	Exams: Daily: Short quizzes to

		Construction of Quotient Rings.			assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
2 Weeks	8 Hours	Understanding the Meaning and Significance of ring homomorphism.	Rings homomorphisms	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
6 Weeks	24 Hours	Studying Special Types of Ideals: Properties, Relations, and Examples	Special ideals	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
2 Weeks	8 Hours	Understanding Polynomial Rings: Properties and Examples	Polynomials' rings	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly:

					Comprehensive exams to assess learning progress.
2 Weeks	8 Hours	Understanding the Meaning of Modules with its Properties and Examples.	Modules Theory	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
2 Weeks	8 Hours	Understanding the Meaning of Submodules with its Properties and Examples.	Modules Theory	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
2 Weeks	8 Hours	Understanding the Meaning of modules homomorphisms with its Properties and Examples.	Modules Theory	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.

2 Weeks	8 Hours	Learning About Special Types of Modules with Examples	Modules Theory	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
2 Weeks	8 Hours	Learning About Special Types of Submodules with Examples	Modules Theory	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.

66. Course Evaluation

1- 50 Grade:

- Reports: 10 points
- Daily Quizzes and Preparation: 5 points
- Monthly Exams: 35 points

2- Final Exam: 50 points

67. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Abstract and linear Algebra, By David M. Burton, 1972

Main references (sources)	Abstract and linear Algebra, By David M. Burton, 1972
Recommended books and references (scientific journals, reports…)	▪ Foundations of Module and Ring Theory, by Robert Wisbauer, 2018. ▪ Modules and Rings by F.kasch, 1982
Electronic References, Websites	https://ar.khanacademy.org Khan Academy

Course Description Form Numerical Analysis

12. Course Name:	Numerical Analysis
13. Semester / Year:	annual
14. Description Preparation Date:	2024-2025
15. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
16. Number of Credit Hours (Total) / Number of Units (Total)	120 hours, (4 hours per week * 30 per week) 6 units
17. Course administrator's name (mention all, if more than one name)	Name: Dr. Asma Jassim Harfash Email:

18. **Course Objectives**

Course Objectives	• **Learn the basics of numerical analysis and error analysis** • **Study methods for solving nonlinear equations in one variable and methods for solving a system of nonlinear equations as well as a system of linear equations.** • **Study of interpolation** • **Study of numerical calculus** • **Study numerical solutions of ordinary differential equations** • **Study methods for solving initial value problems**

19. Teaching and Learning Strategies

Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

20. **Course Structure**

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 weeks	That the student understands the importance of numerical analysis and realizes its methods for solving some non-linear practical problems for which analytical solutions may not be available or for which it is difficult to find analytical solutions.	Theoretical: analysis of errors / sources of errors / errors in mathematical operations. Types of practical errors: Program relative error and absolute error.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Studying the concepts of convergence, stability and types of continuity	Theoretical: The concept of convergence and the concept of stability	Lecture and discussions	Discuss daily exam, and attendance exams

				Monthly
4 weeks	Study some types of numerical methods for solving	Theoretical: numerical solutions for nonlinear equations / determining the locations of the roots / the method of bisecting intervals / the secant method / the iterative method for the solid point / convergence of iterative methods / the Newton-Raphson method / finding the roots of polynomials / methods for solving a system of non-linear equations using the Newton-Raphson method and the solid point method / Bairstow's method/ Study and analyze the types of errors related to these methods and discuss their convergence rates. Practical: Interval bisection method program, secant method program, Newton-Raphson method program, solid point iterative method program, program for solving a system of nonlinear equations.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	Nonlinear equations and systems.	Theoretical: Numerical solutions for linear systems (regular matrices - inverses - rank of the matrix) / Kauss elimination method / Kauss-Gordon method / partial anchoring / Cramer's method / Trigonometric analysis method. Indirect methods Practical: Cramer's method program to solve a system of linear equations, using a function found in MATLAB To calculate the best polynomial data fit coefficients.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Solving systems using direct methods	Inclusion and interpolation / finite differences / Newton's progressive and regressive method and central formulas / proportional differences method / Lagrange's formula / least squares method / horizontal curves methods	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Learn the methods of inclusion Completion and some other methods	Numerical integration and differentiation / Newton's formulas for numerical differentiation / Trapezium rule for numerical integration / Simpson's rule / Three-eighths rule / Paul's rule / Wedel's rule / Romberg's method for improving results /Gauss Quadratic Numerical Integration Methods /Gauss Lender's Method	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
5 weeks	Some methods for solving differential equations	Differential equation solutions / Tyler series method / Explicit Euler method / Developed Euler method / Renca-Kutta method / Solving		

		a system of differential equations		

21. Course Evaluation

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

22. Learning and Teaching Resources

Required textbooks

- Numerical analysis and its numerical calculation methods, written by Dr. Muhammad Mansour Sobh and Dr.
- Saleh bin Muni` Al-Harbi. Al Rushd Library, Kingdom of Saudi Arabia 0116
- Numerical Techniques (Numerical Analysis), second edition, written by Yassin Ahmed
- Al-Shaboul, Arab Community Library for Publishing and Distribution - Amman, Jordan 0117.
- Numerical analysis and programming methods on the electronic calculator, written by: Dr. Abdul Muttalib Ibrahim Al-Sheikh Ahmed, Ministry of Higher Education, University of Technology
- .0111
- Numerical Analysis, 2nd Edition by L. Ridgway Scott, Princeton University Press UK 2015.
- Numerical Analysis, 1st Edition by Ian Jacques and Colin
- Judd by Chapman and Hall, 1987.
- Matlab 2018a application program

Main references (sources)	Applied Numerical Analysis by Gerald ،C.F. and Wheatley ،P.O; Addison Wesley publishing ،Inc. ،.4891
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form Curricula and teaching methods

23. Course Name:	Curricula and teaching methods
24. Semester / Year:	annual
25. Description Preparation Date:	2024-2025
26. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
27. Number of Credit Hours (Total) / Number of Units (Total)	60 hours, (2 hours per week * 30 weeks) 4 units
28. Course administrator's name (mention all, if more than one name)	Name: Ayat Muhammad Jabr Email:

29. **Course Objectives**

Course Objectives	• **1- Types of curricula and the foundations of their construction.** • **2- The four components of the curriculum - educational objectives, scientific subject content, teaching methods and evaluation** • **3- The foundations of good teaching planning**

30. Teaching and Learning Strategies

Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

31. **Course Structure**

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
2 weeks	The student learns the concepts presented in the lecture	Basic concepts in the curriculum	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	The student learns the concepts presented in the lecture	Foundations of building the curriculum	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	The student learns the concepts presented in the lecture	Organizing the curriculum	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	The student learns the concepts presented in the lecture	Types of curricula	Lecture and discussions	Discuss daily exam, and

				attendance exams Monthly
2 weeks	The student learns the concepts presented in the lecture	Elements of the curriculum/curriculum as a five-year system	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	The student learns the concepts presented in the lecture	Educational objectives	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	The student learns the concepts presented in the lecture	Workshop	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks	The student learns the concepts presented in the lecture	Teaching planning		
2 weeks	The student learns the concepts presented in the lecture	Content/Textbook		
2 weeks	The student learns the concepts presented in the lecture	Calendar		
2 weeks	The student learns the concepts presented in the lecture	Types of tests		
2 weeks	The student learns the concepts presented in the lecture	Teaching methods and teaching aids		
2 weeks	The student learns the concepts presented in the lecture	Educational means		

32. Course Evaluation

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

33. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**كتب طرائق تدريس الرياضيات، تطوير في مجال الرياضيات المدرسية**
Main references (sources)	**اساليب تدريس الرياضيات المعاصرة، تاليف نائل جواد الناطور**
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form Counseling and mental health

34. Course Name:	Counseling and mental health
35. Semester / Year:	annual
36. Description Preparation Date:	2024-2025
37. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
38. Number of Credit Hours (Total) / Number of Units (Total)	60 hours, (2 hours per week * 30 weeks) 4 units
39. Course administrator's name (mention all, if more than one name)	Name: Ashraf Saleh Email:

40. **Course Objectives**

Course Objectives	• **The mathematics student learned about the importance of psychological counseling and mental health in daily life** • **How to employ this knowledge in facing daily life situations in the field of education, family and society.** • **It makes students of colleges of education feel the value and importance of counseling and mental health in their dealings with school students after graduation and exercising their specialties as teachers in primary, middle and middle schools.**

41. Teaching and Learning Strategies

Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution. 6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

42. **Course Structure**

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 weeks	Acquiring knowledge in the field of psychological counselling, and converting this knowledge into behavior that contributes to guiding oneself and others	- A general lecture on counseling and mental health as a course of study - Guidance, psychological counselling, counseling psychology, the meaning of educational counselling. The origins and development of psychological counselling. - Development of the concepts	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

		of guidance and counselling		
4 weeks	Acquiring knowledge in the field of psychological counselling, and converting this knowledge into behavior that contributes to guiding oneself and others	Justifications for psychological counselling, goals of psychological counselling. The relationship between counseling and other sciences. The relationship between counseling and other sciences. Fundamentals of guidance and counselling: Foundations General, philosophical foundations.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Acquiring knowledge in the field of psychological counselling, and converting this knowledge into behavior that contributes to guiding oneself and others	Fundamentals of guidance and counselling: Foundations Psychological, social and neurological. Fields of psychological counselling. Methods of psychological counseling. Guidance and guidance theories: Psychoanalytic theory. Behavioral theory.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Acquiring knowledge in the field of psychological counselling, and converting this knowledge into behavior that contributes to guiding oneself and others	Guidance and guidance theories: Self-theory. Existential theory. Information needed for the psychological counseling process: Importance of information, problems in collecting information, types of information Means of collecting information: Cumulative record case study anecdotal record - Second semester exam	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks	Acquiring knowledge in the field of psychological counselling, and converting this knowledge into behavior that contributes to guiding oneself and others	Means of collecting information: the biography Corresponding observational tests and measures Counseling and guidance in school: Objectives of counseling and guidance in school	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
4 weeks	Acquiring knowledge in the field of psychological counselling, and converting this knowledge into behavior that contributes to guiding oneself and others	The mentor teacher: his functions and preparation. The educational counselor, his functions and preparation. The need for counseling programs in school. The meaning of mental health, negative definitions, positive definitions.	Lecture and discussions	Discuss daily exam, and attendance exams Monthly
8 weeks	Acquiring knowledge in the field of psychological counselling, and converting this knowledge into behavior that contributes to guiding oneself and others	Manifestations of mental health, basic concepts related to mental health, the relationship of mental health to other sciences. Characteristics of a normal personality, a normal person	Lecture and discussions	Discuss daily exam, and attendance exams Monthly

		and an abnormal person. - Mental health standards. Manifestations of normal and abnormal behavior, personality integration. Psychological crises, the meaning of psychological crises, proper ways to solve psychological crises. Defensive tricks, frustration, psychological disorders. Psychological defense mechanisms. Compatibility, the meaning of compatibility, adaptation, differences between compatibility and adaptation. Types of compatibility, characteristics of a compatible person - Second semester exam		

43. Course Evaluation

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

44. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1- علم نفس الشخصية)١٩٩١(حنا عزيز داود، وناظم هاشم العبيدي ـ جامعة بغداد 2- الإرشاد النفسي والتوجيه التربوي)١٩٩١(مصطفى محمود الإمام، و أنور حسين عبدالرحمن ـ جامعة بغداد. 3- أصول علم النفس)١٩٨٢(أحمد عزت ارجح، الإسكندرية.
Main references (sources)	تم إعتماد مصادر حديثة بحثت موضوعي الإرشاد النفسي والصحة النفسية إلى جوار المصادر الأساسية المبينة في أعلاه، لغرض إعداد المادة المقررة على وفق مفردات اللجنة القطاعية المعتمدة في وازرة التعليم العالي والبحث العلمي، ومن هذه المصادر: .1التوجيه والإرشاد النفسي)٢١١٥(حامد عبد السلام زهارن، القاهرة ـ عالم الكتب .2مبادىء التوجيه والإرشاد النفسي)٢١١١(سامي محمد ملحم، عمان ـ دار المسيرة .3مبادىء الإرشاد النفسي للمرشدين والأخصائيين)٢١١٨ (محمد أحمد خدام مشاقبة، عمان .4المرجع في الصحة النفسية)٢١١٩(أديب محمد الخالدي، بغداد ـ مكتب أبابيل. .5الصحة النفسية)٢١١٩(سامر جميل رضوان، عمان ـ دار المسيرة.
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Study Materials for The 4th Stage

Course Description Form Mathematical Statistics

1. Course Name:	Mathematical Statistics
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	*120 hours, (4 hours per week *30 per week)
6. Course administrator's name (mention all, if more than one name)	Name: Assis. Prof .D Sarah Abdel Hussein Bandar Email: sara.ab@uomisan.edu.iq
7. Course Objectives	
Course Objectives	Providing the student with basic information in the field of mathematical and applied statistics by knowing the types of random variables and probability distributions of their discrete and continuous types, as well as methods for using integrals in finding common and marginal functions, and then knowing the basic functions such as the functions generating the moments and the discriminant functions, as well as knowing how to find a good estimator through the most commonly used methods. The ease and use of point or period estimation methods, as well as knowledge of the characteristics of a good estimator. Finally, the student acquires how to test statistical hypotheses and the extent of the correlation between variables by integrating them with the health, social, educational reality and other fields.
8. Teaching and Learning Strategies	
Strategy	1- In-person lectures in the classroom 2- The method of discussion and dialogue between the student and the teacher 3- Daily and monthly attendance tests 4- Preparing the student scientifically and educationally according to solid scientific foundations 5- Education by making the student a teacher to enhance his self-confidence

68. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-5	20	The student learns what was presented in the lecture	Introduction to probability and discrete distributions	Presentation lecture and discussion	Attendance exams (daily and monthly)
6-11	24	The student learns what was presented in the lecture	Continuous distributions	Presentation lecture and discussion	Attendance exams (daily and monthly
12-14	12	The student learns what was presented in the lecture	Moments and the functions generating them / finding the M.G.F for both continuous and discrete distributions	Presentation lecture and discussion	Attendance exams (daily and monthly
15-18	16	The student learns what was presented in the lecture	Point estimation methods	Presentation lecture and	Attendance exams (daily

				discussion	and monthly
19-23	20	The student learns what was presented in the lecture	Properties of a good estimator	Presentation lecture and discussion	Attendance exams (daily and monthly
24-26	12	The student learns what was presented in the lecture	The exponential family	Presentation lecture and discussion	Attendance exams (daily and monthly
27-30	16	The student learns what was presented in the lecture	Statistical hypothesis tests	Presentation lecture and discussion	Attendance exams (daily and monthly

9. Course Evaluation

1- Semi-daily and monthly tests and surprise exams.
2- Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students.
3- Close follow-up on solving chapter questions and paying attention to the process of writing simple reports on any valuable information or an outstanding mathematician.

10. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to mathematical statistics, by Hogg and Craig.
Main references (sources)	1- مقدمة في نظرية الإحصاء /المؤلف د.عبد الله توفيق الهلباوي 2- الاستدلال الإحصائي/المؤلف د.جلال مصطفى الصياد 3- الإحصاء الرياضي /المؤلف د.امير حنا هرمز 4- Probability and Statistics, by Morris, H. Degroot
Recommended books and references (scientific journals, reports...)	1- مقدمة في نظرية الإحصاء /المؤلف د.عبد الله توفيق الهلباوي 2- SOME BASIC THEORY FOR STATISTICAL INFERENCE
Electronic References, Websites	4) https://youtu.be/7mnbfzmte1I 5) https://www.alfreed-ph.com/2018/09/9-pdf.html 6) https://www.youtube.com/watch?v=Q0zDzxKfWFY

Course Description Form General Topology

1. Course Name:	General Topology
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	*120 hours, (4 hours per week *30 per week) * 180 units, (6 units per week * 30 weeks)
6. Course administrator's name (mention all, if more than one name)	Name: Dr. Hadeel Ghazi Abd Ali Email: hadeel_ghazi@uomisan.edu.iq
7. Course Objectives	
Course Objectives	* Study and understand topological spaces and everything related to them (open and closed sets, neighbors, and bases) and how to solve their examples. * Identify the types of derived sets (inner, outer, boundary, limit and closure points), their properties, and how to find them. * Expanding students' understandings regarding the continuity in topological space and its equivalent definitions and linking them to their definition in other branches of mathematics. * Definition of homeomorphism mappings in topological spaces. * Study of compact space and definition of the cover (open, closed, finite and countable) and its properties. *Introducing students to Lindeloff space and its relationship to compact space and its properties. * Introducing students to the basic definitions of the axioms of separation and hereditary property, topological property. *Understanding connected and disconnected spaces, their equivalent definitions, a types of connected (local and communicative)
8. **Teaching and Learning Strategies**	
Strategy	* In-person lectures in classrooms. * Discussion method, surprise exams, and methods of refining skills. * Asking intellectual questions or holding a competition between students, stimulating creative thinking and answering clearly and quickly to the problems presented**.**

9. **Course Structure**

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 Weeks	16 Hours	The student is able to understand the given material	Topological Space	Lecture and Discussion	Quarterly and daily attendance exams
3 Weeks	12 Hours	The student is able to understand the given material	Derived sets	Lecture and Discussion	Quarterly and daily attendance exams
3 Weeks	12 Hours	The student is able to understand the given material	Continuity between topological spaces	Lecture and Discussion	Quarterly and daily attendance exams.

3 Weeks	12 Hours	The student is able to understand the given material	Derived topological spaces	Lecture and Discussion	Quarterly and daily attendance exams.
3 Weeks	12 Hours	The student is able to understand the given material	Compact spaces	Lecture and Discussion	Quarterly and daily attendance exams.
5 Weeks	20 Hours	The student is able to understand the given material	Separation axioms	Lecture and Discussion	Quarterly and daily attendance exams.
4 Weeks	16 Hours	The student is able to understand the given material	Connected spaces	Lecture and Discussion	Quarterly and daily attendance exams

10. Course Evaluation

* Semi-daily and monthly tests and surprise exams.
* Divide the class into several groups, give each group various exercises, and make the process of evaluating answers mutual between the students.
* Close follow-up to solve chapter questions and pay attention to the process of writing simple reports about any valuable information or an outstanding mathematician.

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Topology by James R. Munkres/1999
Main references (sources)	Topology by James R. Munkres/1999
Recommended books and references (scientific journals, reports…)	* التبولوجيا العامة/ د.عريبي الزوبعي General topology by N. Bourbaki, /1996.
Electronic References, Websites	https://ar.khanacademy.org أكاديمية خان/

Course Description Form Complex Numbers

1. Course Name:	Complex Numbers
2. Semester / Year:	annual
3. Description Preparation Date:	2024-2025
4. Available Attendance Forms:	Lectures are delivered to students in person ccording to the schedule announced in the department
5. Number of Credit Hours (Total) / Number of Units (Total)	4 Hours (96 Hours)/ 6 Units (42 Units)
6. Course administrator's name (mention all, if more than one name)	Name: lecture : Ahmed Kareem Mutashar Email: ahmed86km@uomisan.edu.iq
7. Course Objectives	
Course Objectives	1. Acquiring mathematical knowledge of the prescribed subjects and understanding the sufficient meanings behind each mathematical concept. • Developing understanding of applying the nodal analysis subject as an integrated system of basic concepts that will provide a basis for understanding numerical systems. • Applying the steps to solve a mathematical problem by analyzing the problem and developing and implementing a solution plan. • Comparing complex functions with real functions to apply what the student learned in the mathematical analysis subject in the previous stage 2. Mastering Problem-Solving Skills: • Analyzing complex problems and identifying their influencing factors. • Utilizing appropriate methods and techniques to solve problems. • Evaluating results and determining optimal solutions. 3. Developing Communication and Expression Skills: • Explaining mathematical concepts clearly and accurately. • Using appropriate mathematical terminology when communicating with others. 4. Developing Teamwork Skills: • Collaborating with classmates to solve problems and complete projects. • Exchanging ideas and information effectively. • Respecting others' opinions and cooperating to achieve common goals. 5. Raising Awareness of the Importance of Differential Equations in Various Fields: • Understanding the role of differential equations in various scientific, technological, and engineering fields. • Applying differential equations to solve real-world problems in different fields. • Appreciating the achievements of mathematicians and their contributions to human civilization. 6. Cultivating a Love for Learning and Exploration: • Arousing students' curiosity and love for learning. • Encouraging them to explore and innovate. • Developing a sense of accomplishment and satisfaction in themselves.
8. **Teaching and Learning Strategies**	

Strategy	**1-Active Learning:** • **Project-Based Learning** :Assigning students research projects related to complex numbers, such as: Solving specific exercises, researching problems that can be solved using special functions. • **Classroom Discussions**: Encouraging students to participate in discussions about the concepts of: Complex numbers, Elementary functions, Residues and poles • **Inquiry:** Posing open-ended questions to students to stimulate their critical thinking and analysis of concepts. **2-Use of Technology:** • Distance learning: Providing access to distance learning through online educational platforms. **3-Connecting Theory to Practice:** • **Providing real-world examples**: Linking theoretical concepts to their applications in other fields such as: physics, engineering, and computer science. **4-Assessment of Learning:** • **Continuous assessment:** Using tools such as short quizzes, homework assignments, and participation in discussions to assess student progress. • **Final assessment:** Using comprehensive exams to assess student learning of the entire year's content.

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 Week	16 Hours	The student is able to understand the material	Complex numbers	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
4 Week	16 Hours	The student is able to understand the material	Analytic functions	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
4 Week	16 Hours	The student is able to understand the material	Elementary functions	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
4 Week	16 Hours	The student is able to understand the material	Sequences ، series ،power series	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.
4 Week	16 Hours	The student is able to understand the material	Residues and poles	Lecture and Discussion	Exams: Daily: Short quizzes to assess understanding of concepts. Monthly: Comprehensive exams to assess learning progress.

10. **Course Evaluation**	
1-50 Grade: Reports: 10 points Daily Quizzes and Preparation: 5 points Monthly Exams: 35 points 2-Final Exam: 50 points	
11. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1-Complex variables and applications by Ruel V.Churchill الكتاب المساعد : مقدمة في التحليل العقدي، د. ابتسام كمال الدين و د.عطا الله ثامر.
Main references (sources)	Lectures prepared by me.
Recommended books and references (scientific journals, reports…)	مبادئ التحليل المركب الدكتور محمود كتكت سلسلة شوم للتحليل المركب
Electronic References, Websites	https://ar.khanacademy.org Khan Academy

Course Description Form Numerical Analysis

45. Course Name:	
46. Semester / Year:	annual
47. Description Preparation Date:	2024-2025
48. Available Attendance Forms:	Lectures are delivered to students in person according to the schedule announced in the department
49. Number of Credit Hours (Total) / Number of Units (Total)	
50. Course administrator's name (mention all, if more than one name)	Name: Email:
51. **Course Objectives**	
Course Objectives	•
52. Teaching and Learning Strategies	
Strategy	1) That the student remembers the information and laws given in the course. 2) That the student understands the course topics and the mathematical problems related to them . 3) The student should be able to apply what he has learned to solve mathematical problems . 4) That the student is able to analyze the text of the question and arrange the information to benefit from it in the solution and obtain correct results. 5) The student composes problems related to the course topics and then arrives at their correct solution.

	6) The student should have ideas about the course material and know how to devise appropriate laws to solve it.

53. Course Structure

Week	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
4 weeks			Lecture and discussions	Discuss daily exam, and attendance exams Monthly
8 weeks			Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks			Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks			Lecture and discussions	Discuss daily exam, and attendance exams Monthly
7 weeks			Lecture and discussions	Discuss daily exam, and attendance exams Monthly
3 weeks			Lecture and discussions	Discuss daily exam, and attendance exams Monthly
2 weeks			Lecture and discussions	Discuss daily exam, and attendance exams Monthly

54. Course Evaluation

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

55. Learning and Teaching Resources

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