Academic Program Description

University Name : Anbar University

Faculty/Institute: College of Science

Scientific Department: Department of Mathematics

Academic or Professional Program Name :Bachelor of Science in Mathematics

Final Certificate Name: Bachelor's degree in Mathematics

Academic System: quarterly

Description Preparation Date: 10/9/2024

File Completion Date: 15/9/2024

Signature:

Head of Department Name:

Dr. Malath R. Jasim

Date: 22/6/2025

Signature:

Scientific Associate Name:

Dr. Ahmed S. Obied

Date: 23/6/2025

The file is checked by:

د. أحمد خليل إبراهيم
مسؤول شعبة ضمان الجودة وتقويم الأداء

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Dr. Ahmed K. Ibrahim

Date: 23/6/2025

Signature:

وزارة التعليم العالي والبحث العلمي
جامعة الأنبار - كلية العلوم
شعبة ضمان الجودة وتقويم الأداء

Approval of the Dean

أ.د. عصمت رمزي عبد الغفور
العميد

1. Program Vision

The academic program of mathematical sciences aims to develop analytical thinking and the ability to solve problems in creative and innovative ways. The mathematics curriculum seeks to provide students with a solid foundation in mathematical theories and their various practical applications.

The program vision encourages students to engage in scientific research and participate in collaborative projects that advance knowledge and innovation. The program focuses on using advanced technology to understand mathematics and apply it in various scientific and engineering fields.

2. Program Mission

The mission of the Mathematical Sciences Academic Program is to provide students with the in-depth knowledge and skills necessary to understand and apply mathematics in various scientific and practical fields. The program seeks to develop students' analytical and creative abilities, enabling them to deal with mathematical challenges and scientific problems efficiently and effectively. Through a comprehensive curriculum covering basic mathematical theories and their advanced applications, the program aims to prepare graduates capable of contributing to scientific and technological progress.

The program encourages scientific research and innovation, and provides opportunities for students to participate in collaborative research projects that contribute to expanding horizons of knowledge. It also focuses on the use of advanced technology in education and research, allowing students to learn about the latest mathematical tools and software. Students are encouraged to develop critical thinking and problem-solving skills, and enhance their ability to effectively communicate mathematical ideas.

Ultimately, the program's mission is to prepare a generation of creative and innovative graduates who have the ability to apply mathematics in a way that contributes to solving global problems and driving progress in their communities and the world at large.

3. Program Objectives

1. Graduating specialized and qualified cadres with professional knowledge and skills in the field of mathematics by keeping pace with scientific developments in a way that meets the emerging needs of the labor market.
2. Preparing and qualifying students capable of completing their graduate studies by developing their scientific and research skills.
3. The student must be able to deliver the scientific material in a sound and coherent manner by following appropriate teaching methods to prepare them as specialized cadres to work in state institutions, including teaching in schools and others in the field of mathematics.
4. Graduating qualified students to work as research assistants in scientific institutions in the field of mathematics.
5. Stimulating the student's logical ability so that he is able to comprehend mathematical concepts.
6. Maintaining the scientific level of the department by attracting and maintaining scientific competencies

4. Program Accreditation

No

5. Other external influences

Public holidays

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	**6**	**27**	**%18**	**According to the approved semester academic system**
College Requirements	**1**	**3**	**%2**	

Department Requirements	**20**	**121**	**%80**	
Summer Training	**nothing**	**nothing**	**nothing**	**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
The first Chapter one 2024-2025	UOA 111	Computer science	**2**	**2**
	UOA 112	Human Rights and Democracy	**1**	**0**
	UOA 113	Arabic Language	**1**	**0**
	ScMath 3101	Calculus1	**4**	**0**
	ScMath 3102	Linear Algebra1	**4**	**0**
	ScMath 3103	Foundation of Mathematics1	**4**	**0**
	Totally		**16**	**2**

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
The first Chapter two 2024-2025	**UOA 121**	programming basic	2	2
	UOA 122	English1	2	
	COS 121	General Mechanic	2	2
	ScMath 3104	Calculus2	4	
	ScMath 3105	Linear Algebra2	4	
	ScMath 3106	Foundation of Mathematics2	4	
	Totally		**18**	**4**

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
The second Chapter one 2024-2025	ScMath 1201	Research method	1	
	ScMath 1202	English2	2	
	ScMath 2201	Advanced Computer1	2	**2**
	ScMath 3201	Advanced Calculus1	4	
	ScMath 3202	Group Theory1	4	
	ScMath 3203	Ordinary Differential Equation1	4	
	ScMath 3204	Numerical Analysis1	2	**2**
	Totally		**19**	**4**

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
The second Chapter two 2024-2025	ScMath 2202	Advanced Computer2	2	**2**
	ScMath 3205	Vector Analysis	2	
	ScMath 3206	Advanced Calculus2	4	
	ScMath 3207	Group Theory2	4	
	ScMath 3208	Ordinary Differential Equation2	4	
	ScMath 3209	Numerical Analysis2	2	**2**
	Totally		**18**	**4**

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
The third Chapter one 2024-2025	ScMath 3301	Mathematical Analysis1	3	
	ScMath 3302	Partial Differential Equation1	3	
	ScMath 3303	Ring Theory1	3	
	ScMath 3304	Graph Theory1	3	
	ScMath 3305	Principles of Statistics and Probability1	3	
	ScMath 3306	Number Theory	3	
	Totally		**18**	

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
The third Chapter two 2024-2025	ScMath 1301	English 3	2	
	ScMath 3307	Mathematical Analysis2	3	
	ScMath 3308	Partial Differential Equation2	3	
	ScMath 3309	Ring Theory2	3	
	ScMath 3310	Graph Theory2	3	
	ScMath 3311	Principles of Statistics and Probability 2	3	
	Totally		**17**	

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
The fourth Chapter one 2024-2025	ScMath 1401	English 4	2	
	ScMath 3401	Topology1	3	
	ScMath 3402	Complex Analysis1	3	
	ScMath 3403	Mathematical Statistics1	3	
	ScMath 3404	Functional Analysis1	3	
	Totally		**14**	

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
The fourth Chapter two 2024-2025	ScMath 1402	Project	2	
	ScMath 3405	Topology2	3	
	ScMath 3406	Complex Analysis2	3	
	ScMath 3407	Mathematical Statistics2	3	
	ScMath 3408	Functional Analysis2	3	
	ScMath 3409	Operations Research	3	
	Totally		**17**	

1. Expected learning outcomes of the program

Knowledge	
Learning outcomes 1	1. The student recognizes mathematical and logical concepts and understands them correctly. 2. Prepare the student intellectually to understand scientific material so that he acquires the ability to solve problems and explain the solution steps in a logical manner. 3. Encouraging mathematics in him by introducing him to the role of mathematics in other sciences and developing his ability to invest knowledge of his specialty in developing society. 4. Recognizing and understanding the basic concepts in all academic subjects, with a focus on specialized subjects.

	5. The student recognizes the interrelationship between the mathematics subjects and understanding each subject qualifies him to comprehend the other subjects, especially in the advanced stages. 6. Practical application using programming to solve various mathematical problems
Skills	
Learning outcomes 2	1. The student acquires the skill and ability to solve various mathematical problems. 2. Prepare and enable the student to solve problems on the blackboard and discuss during the solution in order to provide the students with teaching skills that enable them to practice professionally in their field of specialization. 3. Using modern technologies (display screen, data show) to display engineering shapes and drawings. 4. The ability to use a computer and employ this ability in solving problems that require the use of a computer, as well as using a computer to communicate, view, and search for information. 5. Employing scientific knowledge and the ability to use computers to enable students to acquire scientific research skills.
Learning outcomes 3	Learning outcomes statement 31. Using the method of discussion and dialogue stimulates the student's mentality and enables students to learn the skills of dialogue and discussion, listening to others, and accepting opinions. 2. Enabling the student to employ theories in solving mathematical problems. 3. Acquiring the ability to demonstrate sound mathematical proof and the ability to objectively analyze by collecting and organizing data and drawing conclusions. 4. Motivating students to acquire self-learning skills to acquire new information and skills. 5. Enabling students to acquire e-learning skills and the ability to use various e-learning platforms, Google classroom, Google meet, and other e-learning platforms.
Ethics	
Learning outcomes 4	Learning outcomes statement 4 1. Forming positive inclinations and trends towards studying mathematics, starting from the reception day by attracting students' attention and encouraging them to join the department. 2. Developing the spirit of belonging, responsiveness, desire to join

	the department, and conviction and satisfaction with its choice. 3. Developing students' self-confidence and building a scientific and professional personality to create a generation familiar with their scientific specialization and believing in their role in building society. 4. Instilling the values of citizenship, good morals, sincerity, honesty, and avoiding wrong educational behaviors. 5. Promoting the principles of academic behavior and training students on scientific honesty in presenting and presenting scientific information. 6. Compliance with the department's instructions, respect for others, freedom of thought, and strengthening students' relationships with each other in order to maintain the reputation and level of the department. Developing and enhancing the student's self-confidence by solving problems by relying on himself in searching for the correct answers, developing his ability to analyze and interpret based on logic and mathematical facts, and developing his mathematical sense.

2. Teaching and Learning Strategies

1. Theoretical lectures in the classroom.
2. Discussions, exercises, asking questions, and activities in the classroom.
3. Using methodological books and guiding students to some modern sources on the Internet.
4. Homework assignments, discussing and evaluating students' solutions.
5. E-learning through the use of various e-learning platforms.

3. Evaluation methods

1. Participate in the classroom, follow the method of questions and answers, and observe the students' capabilities.
2. Regular homework and providing the required activities and tasks.
3. Discussions of reports and research presented.
4. Daily exams and short and quick surprise exams.
5. Monthly, semester and final tests.

4. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Rifaat Saad Abdul Jabbar	mathematics	Fractional integral differential equations			yes	
Lina Khaled Kamel	mathematics	Curricula and methods of teaching mathematics			yes	
Ali Kadhim Yaqoob	mathematics	Operations Research			yes	
Ali Rashid Ibrahim	mathematics	Data theory			yes	
Nahed Salim Muhammad	mathematics	Numerical/integral equations			yes	
Malath Rahim Jassim	mathematics	Data theory			Yes	
Essam Kamel Ahmed	mathematics	Mathematical statistics			Yes	
Muhammad Jassim Muhammad	mathematics	Differential equations			Yes	
Omar Karim Ali Hassoun	mathematics	Complex analysis			Yes	
Mustafa akram saeed	mathematics	Numerical Analysis			Yes	
Amen Shaman Amen	mathematics	Data theory			Yes	
Donia Allawi Jarwan	mathematics	Algebra			Yes	
Hamad Muhammad Saleh	mathematics	Numerical Analysis			Yes	

Safwat Abd al- Kadar Hamad	mathematics	artificial intelligence			Yes	

Professional Development

Mentoring new faculty members

New professors were mentored by:

1. Giving model lectures to students.
2. Assigning them to some administrative tasks in the department
3. Watch some lectures.
4. They were informed of the laws of state employees and the university service law
5. Engaging in scientific research by seeking assistance from experienced professors in the department
6. They were involved in many of the department's committees

Professional development of faculty members

1. Participation in training courses and workshops held by the university presidency through continuing education.
2. Preparing academic program description forms and teaching plans for all academic subjects. A committee was formed in the department to follow up on the preparation of study plan forms and follow up on the implementation of the content of the plans according to a specific timetable approved by the department.

5. Acceptance Criterion

1. Adopting the central admission standard, which includes the conditions for accepting students in accordance with approved ministerial instructions.
2. The student's personal interview during the application period.
3. Taking into account the absorptive capacity of the practical department in light of the number of classrooms and the number of teaching staff in the department.

6. **The most important sources of information about the program**
Methodical books, help books, and scientific sources available electronically on the Internet

7. Program Development Plan
1. Preparing a plan and teaching program for all courses, carefully following up on the achieved goals, and employing the accumulated experience of the teaching staff to update the program for the course to address weaknesses in understanding and comprehension and enhance the positive aspects of students. 2. Work to enhance the student's self-confidence by focusing on positive behaviors and effective contributions to building a personality that is aware of its role in developing society and capable of carrying academic and moral integrity in their professional lives. 3. Achieving a correct understanding of the scientific material by preparing questions and discussions and evaluating students on the basis of actual participation and contributions in scientific discussions.

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	
The first stage Chapter one 2024-2025	UoA 111	Computer science	Basic	√	√	√		√		√	√					
	UoA 112	Human rights and democracy	Basic					√	√							
	UoA 113	Arabic	Basic	√	√	√	√	√	√	√		√	√	√	√	
	ScMath 3101	Calculus1	Basic	√	√	√	√	√	√	√		√	√	√		
	ScMath 3102	Linear algebra1	Basic	√	√	√	√	√	√	√	√	√				
	ScMath 3103	Foundations of mathematics 1	Basic	√	√	√		√				√	√			
The first stage Chapter two 2024-2025	UoA 121	Programming basics	Basic	√	√	√		√		√	√					
	UoA 122	English language1	Basic													

	CoS 121	**general mechanic**	**Basic**	√	√	√		√	√						
	ScMath 3104	**Calculus2**	**Basic**	√	√	√	√	√	√	√		√	√	√	
	ScMath 3105	**Linear algebra2**	**Basic**	√	√	√		√				√	√		
	ScMath 3106	**Foundations of mathematics 2**	**Basic**	√	√	√		√							
The second stage Chapter one 2024-2025	ScMath 1201	**Research methodology**	**Basic**	√	√			√							
	ScMath 1202	**English 2**	**Basic**												
	ScMath 2201	**Advanced computers1**	**Basic**	√	√			√	√			√	√	√	
	ScMath 3201	**Advanced Calculus1**	**Basic**	√	√	√	√	√	√						
	ScMath 3202	**Group algebra 1**	**Basic**	√	√	√		√				√	√	√	
	ScMath 3203	**Ordinary differential equations1**	**Basic**	√	√	√	√	√	√			√	√	√	√
	ScMath 3204	**Numerical analysis1**	**Basic**	√	√		√	√	√			√	√	√	

The second stage Chapter two 2024-2025	ScMath 2202	**Advanced computers2**	**Basic**	√	√			√	√			√	√	√	
	ScMath 3205	**Vector analysis**	**Basic**	√	√	√	√	√	√			√	√	√	√
	ScMath 3206	**Advanced calculus2**	**Basic**	√	√	√	√	√	√						
	ScMath 3207	**Group algebra 2**	**Basic**	√	√	√		√				√	√	√	
	ScMath 3208	**Ordinary differential equations2**	**Basic**	√	√	√	√	√	√			√	√	√	√
	ScMath 3209	**Numerical analysis2**	**Basic**	√	√		√	√	√			√	√	√	
The third stage Chapter one 2024-2025	ScMath 3301	**Mathematical analysis1**	**Basic**					√				√			
	ScMath 3302	**Partial differential equations1**	**Basic**	√	√	√	√	√	√			√	√	√	√
	ScMath 3303	**Ring theory1**	**Basic**	√	√			√				√	√		
	ScMath 3304	**Data Theory1**	**Basic**	√	√	√	√	√				√		√	

	ScMath 3305	**Principles of statistics and probability1**	**Basic**	√	√	√	√	√	√	√		√		√	
	ScMath 3306	**Number theory**	**optional**	√	√			√	√						
The third stage Chapter two 2024-2025	ScMath 1301	**English language 3**	**Basic**												
	ScMath 3307	**Mathematical analysis2**	**Basic**					√				√			
	ScMath 3308	**Partial differential equations2**	**Basic**	√	√	√	√	√	√			√	√	√	√
	ScMath 3309	**Ring theory2**	**Basic**	√	√			√				√	√		
	ScMath 3310	**Data theory2**	**Basic**	√	√	√	√	√				√		√	
	ScMath 3311	**Principles of probability statistics2**	**Basic**	√	√	√	√	√	√	√		√		√	

The fourth stage Chapter one 2024-2025	ScMath 1401	**English language4**	**Basic**												
	ScMath 3401	**Topology1**	**Basic**	√	√	√	√	√				√	√	√	√
	ScMath 3402	**Nodal analysis1**	**Basic**	√	√	√	√	√	√	√		√	√	√	
	ScMath 3403	**Mathematical statistics1**	**Basic**	√	√	√		√				√			
	ScMath 3404	**Functional analysis1**	**optional**					√				√			
The fourth stage Chapter two 2024-2025	ScMath 1402	**graduation project**	**Basic**	√				√				√	√		
	ScMath 3405	**Topology2**	**Basic**	√	√	√	√	√				√	√	√	√
	ScMath 3406	**Complex analysis2**	**Basic**	√	√	√	√	√	√	√		√	√	√	
	ScMath 3407	**Mathematical statistics2**	**Basic**	√	√	√		√				√			
	ScMath 3408	**Functional analysis2**	**optional**					√				√			
	ScMath 3409	**Operations research**	**optional**	√	√			√	√				√	√	√

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