

**Description of the Academic Program
and Course Syllabus
(Department of Mathematics)**

2026

Academic Program Description Form

University Name: Al-Farabi University
Institute/College: College of Education
Scientific Department: Mathematics
Name of Academic or Professional Program: Bachelor's Degree in Mathematics
Final Certificate: Bachelor of Education in Mathematics
Study System: Annual
Date of Preparing the Description: 23/6/2026
Date of Filing: 23/6/2026

Signature:	Signature:
Head of Department Name:	Scientific Assistant Name:
Date:	Date:

Reviewed by the Quality Assurance and University Performance Division

Name of Director, Quality Assurance and University Performance Division:	Date
Signature	

Approval of the Dean

1. Program Vision

To build a promising future through learned students and graduates capable of keeping pace with scientific development and technological progress, able to contribute to building Iraq toward the level of advanced nations. The department aspires to be a leader in attracting talents and competencies in the field of mathematics, and a center for attracting researchers, expertise, and competencies in this field, making its graduates an influential addition locally, regionally, and internationally.

2. Program Mission

To build a specialized cadre of scientifically and professionally qualified teachers capable of preparing a learned, developed, and cultured generation in middle and secondary schools, and to prepare researchers capable of connecting with society scientifically and able to solve many practical societal problems through the application of mathematics in practical life, in line with labor market requirements.

3. Program Objectives

The educational objectives of the Mathematics Program are to prepare graduates capable of:

- Achieving a successful professional career while possessing broad knowledge of mathematics, including pure mathematics, applied mathematics, statistics, and related fields.
- Integrating academic preparation with modern developments and techniques in mathematics and its applications across various disciplines.
- Working effectively within teams and communicating professionally with colleagues and specialists from diverse scientific and professional fields.

4. Programmatic Accreditation

Has the program obtained programmatic accreditation? From which body? Al-Qadisiyah University

There is no formal accreditation program — however there is a twinning arrangement with Al-Qadisiyah University.

5. Other External Influences

Twinning with Al-Qadisiyah University / College of Education / Department of Mathematics.

6. Program Structure

Program Structure	Number of Courses	Credit Hours	Percentage	Notes *
Institution Requirements	9	24	14.11%	
College Requirements	10	36	21.17%	
Department Requirements	24	110	64.7%	
Summer Training	0	0	0	
Other				

* Notes may indicate whether the course is core (basic) or elective.

7. Program Description

Year / Level	Course Code	Course or Subject Name (English)	Credit Hours - Theoretical	Credit Hours - Practical	Units
First Stage 2024-2025	Department Requirements				
	MATH102	Foundations of Mathematics	2	2	6
	MATH101	Calculus	3	2	8
	MATH103	Linear Algebra	2	2	6
	PHYS101	General Physics	2	0	4
	College Requirements				
	PSYC101	Developmental and Educational Psychology	2	0	4
	EDUC101	Fundamentals of Education	1	0	2
	University (Ministry) Requirements				
	COMP181	Computer 1	0	2	2
	SPOR101	Sport	1		0
	ENGL181	English Language	1	0	2
	ARAB181	Arabic Language	1	0	2
	HUMN181	Democracy and Human Rights	1	0	2
	Total		15	9	38
	Additional Department Courses				
	MATH201	Advanced Calculus	3	2	8
Second Stage 2024-2025	MATH203	Ordinary Differential Equations	2	2	6
	MATH202	Group Theory	3	0	6
	MATH204	Systems of Axioms and Geometry	3	0	6
	College Requirements				
	Leader201	Fundamentals of Scientific Research	2	0	4
	EDUC203	Educational Administration and Secondary Education	2	0	4
	LANG281	Developmental Psychology	2	0	4
	University (Ministry) Requirements				
	CRIM281	Crimes of the Defunct Ba'ath Party	1	0	2
	COMP281	Computer 2	1	0	2
	ARAB182	Arabic Language	1	0	2
	ENGL182	English Language	1	0	2
	Department Requirements Total		20	4	42
	Additional Department Courses				
	1MATH30	Mathematical Analysis	2	2	6
	2MATH30	Rings Theory	2	2	6
	3MATH30	Partial Differential Equations	2	2	6
	4MATH30	Probability and Statistics	2	2	6
	5MATH30	Numerical Analysis	2	2	6
Third Stage 2024-2025	College Requirements				
	1EDUC30	Curriculums and Teaching Methods	2	0	4
	PSYC301	Educational Counseling and Psychological Health	2	0	4
	University (Ministry) Requirements				
	3LANG38	English Language	1	0	2
	Department Requirements Total		15	10	40
	MATH401	General Topology	2	2	6
	MATH402	Complex Analysis	2	2	6
Fourth Stage 2024-2025	MATH403	Mathematical Statistics	2	2	6
	MATH405	Elective 1 (Measure Theory)	2	2	6
	MATH406	Elective 2 (Cryptography)	2	2	6
	EDUC401	Research Project	0	2	2
	College Requirements				
	EDUC402	Measurement and Evaluation	2	0	4
	3EDUC40	Practical Education	1	2	4
	4ENGL18	English Language	1	0	2
	Total		14	14	42

7. Expected Learning Outcomes of the Program

Knowledge	Learning Outcomes
A- Knowledge Objectives: make the student able to: A1- Know mathematical and logical thinking methods. A2- Know mathematical proofs. A3- Acquire the skill of writing proofs. A4- Formulate mathematical proofs with a mathematical mindset. A5- Know a group of mathematical facts about a specific theory and how to apply them. A7- Form a foundation for abstract mathematics. A8- Be familiar with various mathematical applications in practical life. The student should also be able to: Explain the concepts of mathematics. Master mathematical skills. Study mathematical topics. Explain mathematical operations and processes for numbers and their related mathematical forms. Explain mathematical algorithms and treatments to solve problems. Explain the foundations of mathematics, its theories, and its knowledge. Compare integration and differentiation in mathematics. Master concepts of contemporary mathematics. Compare mathematical figures and drawings.	Learning Outcomes

Skills	Learning Outcomes
B- Skill Objectives: make the student able to: B1- Acquire skills in the practical application of acquired information and knowledge. B2- Apply laws and theories correctly and relate them to practical life. B3- Discover information independently. B4- Use mathematical logic to prove facts. B5- Strengthen functional skills to foster a spirit of competition. B6- Acquire the skill of producing educational materials.	Learning Outcomes

Values and Thinking	Learning Outcomes
C- Value and Emotional Objectives: make the student able to: C1- Cooperate, participate, and engage with others. C2- Acquire a spirit of community and cultural belonging. C3- Perform tasks sincerely. C3- Work diligently with seriousness. C5- Build self-confidence through educational partnership. C6- Strengthen emotional skills by fostering a spirit of competition among students.	Learning Outcomes

8. Teaching and Learning Strategies

1. Lectures and supported discussions presented using Data Show.
2. Using modern technologies and electronic methods in providing information.
3. Using modern resources to obtain knowledge and information.
4. Exploratory methods, purposeful and motivating discussion to encourage thinking, and using Data Show and appropriate visual displays.

9. Evaluation Methods

1. Short daily quizzes.
2. Monthly examination.
3. Submission of reports and classroom activities.

10. Teaching Staff

Teaching Staff (continued)

Specialization - General	Specialization - Special	Academic Rank	Staff Count - On Payroll	Staff Count - Lecturer	Special Requirements/Skills (if any)
Mathematics	Numerical Analysis	Lecturer	On payroll		
Mathematics	Topology / Algebra	Assistant Lecturer	On payroll		
Mathematics	Applied Mathematics	Assistant Lecturer	On payroll		
Mathematics		Assistant Lecturer			
Mathematics	Partial Differential Equations	Assistant Lecturer	On payroll		
Mathematics	Applied Mathematics	Assistant Lecturer	On payroll		

Professional Development

Orientation of New Faculty Members

1. Participation in discussion sessions under the guidance of experienced instructors.
2. Involving them in courses on teaching methods and modern teaching techniques.
3. Involving them in administrative and scientific committees within the department to develop their sense of belonging and train them in administrative work.

Professional Development of Teaching Staff Members

1. Encouraging them to publish research that develops their expertise.
2. Encouraging them to participate in courses, workshops, and seminars that develop their skills.
3. Holding courses and workshops specifically on scientific promotions and their requirements.

10. Acceptance Criteria

1. Average of all secondary school courses combined with the mathematics grade for sixth-year scientific stream.
2. Student's preference/desire.

11. Most Important Sources of Information about the Program

- The student admission document issued by the Ministry of Education.
- Central admission results.
- Educational supervision card and information on educational supervisors.
- Student's personal documents.

14. Program Development Plan

- Raising awareness of commitment to regulations and laws.
- Guidance on behavioral and emotional balance within the university.
- Commitment to the regulations governing student discipline and related behaviors.

Curriculum Skills Map

Please mark the squares corresponding to the individual learning outcomes of the courses assessed by the program.

Note: The detailed skills-mapping matrix (Year 1–4, mapping each course to General/Transferable Skills, Values, Skill Objectives, and Knowledge Objectives) follows the same checkbox grid structure as the original document, listing all courses below by year:

Year / Level	Course Code	Course Name	Core/Elective
First Year	101	Foundations of Mathematics	Core
	102	Calculus	Core
	103	Linear Algebra	Core
	104	General Physics	Core
	105	Fundamentals of Education	Core
	106	Computer 1	Core
	107	Democracy and Human Rights	Core
	108	Arabic Language	Core
	109	Developmental Psychology	Core
	112	English Language	Core
Second Year	213	Advanced Calculus and Integration	Core
	214	Group Theory	Core
	215	Systems of Axioms and Geometry	Core
	216	Ordinary Differential Equations	Core
	217	Fundamentals of Scientific Research	Core
	218	Computer 2	Core
	219	Educational Administration and Secondary Teaching	Core
	220	Crimes of the Defunct Ba'ath Party in Iraq	Core
	221	Developmental Psychology	Core
	222	English Language	Core
	223	Arabic Language	Core
Third Year	324	Mathematical Analysis	Core
	325	Numerical Analysis	Core
	326	Probability and Statistics	Core
	327	Partial Differential Equations	Core
	328	Rings Theory	Core
	329	Educational Counseling and Psychological Health	Core
	330	Curriculums and Teaching Methods	Core
Fourth Year	431	General Topology	Core
	432	Complex Analysis	Core
	433	Mathematical Statistics	Core
	434	Measurement and Evaluation	Core
	435	Research Project	Core
	436	Practical Education	Core
	437	Applied Mathematics	Elective
	438	Financial Analysis	Elective