UNIVERSITY OF BABYLON

COLLEGE OF EDUCATION FOR PURE SCIENCES

DEPARTMENT OF MATHEMATICS

DESCRIPTION OF ACADEMIC PROGRAM AND SYLLABUS for Undergraduate Studies

ACADEMIC YEAR:

2024-2025

Prepared and Designed by the Head of the Mathematics Department

Asst. Pro. Dr. Ali Hussein Mahmood

Introduction

The Department of Mathematics at the College of Education for Pure Sciences – University of Babylon offers a comprehensive academic program designed to prepare qualified educational and research professionals in the field of mathematics, in alignment with the evolving needs of society and the labor market. Established in the academic year 1993–1994, the department has since adopted a carefully structured curriculum based on task analysis and clearly defined scientific objectives, with regular reviews to ensure the quality of academic outcomes.

The program is founded on teaching mathematics as a fundamental science that supports various scientific disciplines and enhances students' analytical and logical thinking skills. The curriculum includes both theoretical and applied courses covering areas such as algebra, analysis, statistics, pure and applied mathematics, in addition to pedagogical and cultural subjects that strengthen students' competencies in teaching and scientific research.

The academic program encompasses pathways for both undergraduate and postgraduate studies and actively promotes research collaboration with local and international universities. It emphasizes national priorities, particularly in the field of applied mathematics, and aims to prepare students for advanced studies in diploma, master's, and doctoral programs, both within Iraq and abroad.

The department places special emphasis on educational development by studying the realities of the educational system and offering pedagogical solutions rooted in Islamic thought and modern educational methodologies. It also maintains close cooperation with the Ministry of Education in training and preparing educational personnel and contributes to the development of educational policies through specialized research and studies.

College of Education for Pure Sciences\
Department of Mathematics

Description of Academic Program

University Name	University of Babylon
College	College of Education for Pure Sciences
Academic Department	Department of Mathematics
Academic Program Name	Bachelor of Mathematics
Final Degree Name	Bachelor of Education (Mathematics)
Study System	Semester-based
Approved Program	Curricula and syllabuses according to the Ministry
Other External Influences	Application in middle, secondary schools
Date of Description Preparation	28th Augst 20225
Date of File Completion	28th Augst 20225

File Audited by Quality Assurance Department Manager:

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Approval

Prof. Dr. Bahaa Hussein Saleh

Dean of College

1. Program Vision

The Department of Mathematics offers an advanced academic program that strives for excellence in university education and leadership in scientific research. This is achieved through the development of an integrated educational, pedagogical, and professional system that reinforces the department's status as a center of knowledge and specialized expertise. The program aims to provide optimal learning and teaching opportunities through carefully designed courses that prepare students both scientifically and pedagogically, empowering them to think creatively and respond effectively to the needs of educational institutions within society.

The curriculum is built upon a balanced combination of theoretical and applied courses covering various branches of mathematics, alongside pedagogical and cultural subjects that contribute to preparing educational professionals capable of leading change and development in academic and educational environments. The program also promotes scientific research and provides a stimulating environment for creativity and specialization, positioning the department among the leading mathematics departments at both the Arab and international levels.

2. Program Mission

- The academic program of the Department of Mathematics at the College of Education for Pure Sciences – University of Babylon aims to provide distinguished university education of high quality, contributing to the preparation of qualified graduates with strong scientific and pedagogical competencies who can effectively respond to the needs of the local, Arab, and international labor markets.
- The program is founded on the production of new knowledge through original scientific research, and its reproduction through authorship and translation, enriching human thought and reinforcing the department's status as a leading educational and intellectual center.
- The program places special emphasis on promoting scientific culture and addressing challenges in science education within schools and educational institutions. This is achieved through a comprehensive curriculum and student training that fosters the acquisition of pedagogical and life skills necessary for working in diverse educational environments and confronting contemporary challenges.
- The program seeks to instill noble scientific, national, and humanistic values that respect human dignity and promote diversity and openness. It is committed to serving the local community beyond the college walls by offering scientific and educational consultations and organizing training programs that contribute to the

development of education in intermediate, secondary, industrial, and agricultural schools.

- The program adopts the integration of educational technologies across all academic and professional activities and works to build bridges of collaboration with peer departments in Iraqi, Arab, and international universities to exchange expertise and develop skills. It also adheres to quality assurance and academic accreditation standards, providing continuous training opportunities for academic and administrative staff to enhance institutional performance and develop human capacities capable of engaging with modern technologies and contributing to societal advancement.

3. Program Objectives

The program objectives are divided into three main levels according to Bloom's Taxonomy:

First: General Objectives

These aims to establish a solid scientific and educational foundation that contributes to comprehensive development, including:

- Preparing graduates specialized in mathematics who can actively contribute to societal advancement.
- Meeting the needs of educational institutions with highly competent scientific and professional staff.
- Promoting scientific research and publication in local and international academic journals.
- Supporting students' ability to connect theoretical knowledge with practical applications.
- Developing students' research skills and encouraging continuous academic inquiry.
- Preparing a generation of academically qualified researchers across various fields of mathematics.
- Enhancing scientific communication with specialists at both local and global levels.
- Achieving quality assurance and academic accreditation in line with national and international standards.

Second: Academic Objectives

These focus on developing students' intellectual and professional knowledge and skills, including:

- Graduating highly competent specialists in various branches of mathematics to meet societal needs.

- Preparing for intermediate and secondary school teachers with academic, professional, and cultural readiness.
- Qualifying students to conduct scientific research and pursue higher education in diploma, master's, and doctoral programs.
- Studying the educational realities of society and addressing its challenges through Islamic thought and modern pedagogical approaches.
- Collaborating with the Ministry of Education in preparing and training educational staff and conducting research that contributes to educational knowledge and national development.
- Aligning the program's objectives with the philosophy of the university and the College of Education for Pure Sciences to ensure institutional coherence.

Third: Course-Level Objectives

Course objectives are designed to achieve multiple levels of learning: knowledge, comprehension, application, analysis, synthesis, and evaluation, including:

- Preparing students and refining their skills in mathematics to enable smooth and effective specialization.
- Enhancing students' ability to address mathematical problems through analytical thinking and appropriate solutions.
- Developing self-learning skills and applying them to improve academic and professional performance.
- Achieving integration between theoretical mathematical concepts and practical skills, contributing to the formation of an independent and intellectually aware scientific personality.

4. Program Accreditation

The department has applied for program accreditation but has not yet received official approval.

Nevertheless, efforts are actively underway within the college's strategic framework, as the department has initiated the implementation of Total Quality Management (TQM) in pursuit of program accreditation certification. Faculty members have participated in training workshops organized by the university for this purpose. Accordingly, a Higher Self-Assessment Committee was formed at the college level, along with a Subcommittee within the department. The objectives of these committees include:

1. Promoting a culture of quality and program accreditation.
2. Raising awareness among staff about the importance of quality and accreditation standards.
3. Identifying strengths and weaknesses through survey results and personal interviews conducted within the department.

4. Taking corrective actions to address areas of weakness.
5. Preparing the department to support the college's attainment of program accreditation.
6. Defining strategies to preserve strengths and address challenges by achieving comprehensive self-assessment for the department.

- Several key procedures have been established to ensure the successful implementation of departmental self-assessment, including:

1. Formation of the departmental Self-Assessment Subcommittee.
2. Launching awareness campaigns to explain the concept of Total Quality Management and program accreditation, as part of the university's broader initiative to qualify colleges for ISO certification.
3. Collecting data through personal interviews, survey forms, and existing institutional documents.
4. Discussing the findings within the departmental subcommittee, with full participation from faculty members, students, technical staff, and administrators, to produce a detailed and accurate report to be submitted to the college's Higher Self-Assessment Committee.

5. Other External Influences

Practical training in intermediate, secondary, and preparatory schools affiliated with the Ministry of Education.

6. Program Structure

Program Compenet	No. of courses	Credit H	Percentage	Notes
Institutional requirements	8	16	14.8%	---
College requirements	12	20	22.2%	---
Department requirements	34	107	63%	31 Core Courses 3 Elective Courses
Summar Training	---	---	---	---
Other Activities	Sports	---	---	---
Total	**54**	**143**	**100%**	---

7. Academic Program Description

Stage	Code	Course Name	Credit Hrs	
			Th	Pr
First Year	EpsMaC100101(3,2)	Calculus I	3	2
First Year	EpsMaFm100202(2,2)	Foundations of Mathematics I	2	2
First Year	EpsMaLa100303(2,2)	Linear Algebra I	2	2
First Year	EpsMaGp100404(1,2)	General Physics	1	2
First Year	EpsMaEp100505(1,0)	Educational Psychology	1	0
First Year	EpsMaPc100606(1,2)	Psychology of Classroom Education	1	2
First Year	EpsMaEl100707(2,0)	English Language I	2	0
First Year	EpsMaCs100808(1,2)	Computer Science I	1	2
First Year	EpsMaDh100909(2,0)	Democracy and Human Rights	2	0
First Year	EpsMaC101010(3,2)	Calculus II	3	2
First Year	EpsMaFm101111(2,2)	Foundations of Mathematics II	2	2
First Year	EpsMaLa101212(2,2)	Linear Algebra II	2	2
First Year	EpsMaEt101313(1,0)	Ethics of Teaching Profession	1	0
First Year	EpsMaSd101414(1,0)	Sustainable Development	1	0
First Year	EpsMaAl101515(2,0)	Arabic Language I	2	0
First Year	EpsMaDp101616(1,0)	Development Psychology	1	0
First Year	EpsMaPe101717(1,0)	Principles of Education and Teaching	1	0
Second Year	EpsMaAc201801(3,2)	Advanced Calculus I	3	2
Second Year	EpsMaGa201902(2,2)	Group Algebra I	2	2
Second Year	EpsMaOd202003(2,2)	Ordinary Differential Equations I	2	2
Second Year	EpsMaAs202104(2,2)	Axiomatic Systems	2	2
Second Year	EpsMaAc202205(1,2)	Advanced Computer I	1	2

Second Year	EpsMaDp202306(2,0)	Developmental Psychology	2	0
Second Year	EpsMaEa202407(2,0)	Educational Administration and Secondary Education	2	0
Second Year	EpsMaCa202508(2,0)	Crimes of the Al-Baath System in Iraq	2	0
Second Year	EpsMaAc202609(3,2)	Advanced Calculus II	3	2
Second Year	EpsMaGa202710(2,2)	Group Algebra II	2	2
Second Year	EpsMaOd202811(2,2)	Ordinary Differential Equations II	2	2
Second Year	EpsMaG202912(2,2)	Geometry	2	2
Second Year	EpsMaAc203004(1,2)	Advanced Computer II	1	2
Second Year	EpsMaEl203105(2,0)	English Language II	2	0
Second Year	EpsMaRm203206(2,0)	Research Methodology	2	0
Second Year	EpsMaAl203307(2,0)	Arabic Language II	2	0
Third Year	EpsMaMa303401(2,2)	Mathematical Analysis I	2	2
Third Year	EpsMaRa303502(2,2)	Ring Algebra I	2	2
Third Year	EpsMaNa303603(2,2)	Numerical Analysis I	2	2
Third Year	EpsMaPd303704(2,2)	Partial Differential Equations I	2	2
Third Year	EpsMaPs303805(2,2)	Probability and Statistics I	2	2
Third Year	EpsMaMc303906(2,0)	Methodology and Curriculum	2	0
Third Year	EpsMaOr304007(2,2)	Operations Research (Optional I)	2	2
Third Year	EpsMaMa304108(2,2)	Mathematical Analysis II	2	2
Third Year	EpsMaRa304209(2,2)	Ring Algebra II	2	2
Third Year	EpsMaNa304310(2,2)	Numerical Analysis II	2	2
Third Year	EpsMaPd304411(2,2)	Partial Differential Equations II	2	2
Third Year	EpsMaPs304512(2,2)	Probability and Statistics II	2	2
Third Year	EpsMaEcmh304613(2,0)	Educational Counselling and Mantel Health	2	0
Fourth Year	EpsMGt404701(3,2)	General Topology	3	2

Fourth Year	EpsMaCa404802(3,2)	Complex Analysis	3	2
Fourth Year	EpsMaMs404903(3,2)	Mathematical Statistics	3	2
Fourth Year	EpsMaDt405004(2,2)	Domination Theory (Selected 2)	2	2
Fourth Year	EpsMaRt405106(2,2)	Reliability Theory (Selected)	2	2
Fourth Year	EpsMaEm405207(2,0)	Evaluation and Measurement	2	0
Fourth Year	EpsMaRp405308(4,0)	Research Project	4	0
Fourth Year	EpsMaPe405409(0,8)	Practical Education	0	8

8. Outcomes of the Program

A. Knowledge		L- Outcomes
A1	Acquisition of fundamental and advanced mathematical knowledge, enabling the student to comprehend mathematical concepts and theories in the fields of algebra, analysis, statistics, and geometry, thereby forming a solid foundation of understanding.	**Student's ability to:** 1. Understand and comprehend fundamental and advanced mathematical concepts and theories. 2. Analyze mathematical relationships and connect them to real-world applications. 3. Apply knowledge to solve problems and synthesize ideas to generate innovative solutions. 4. Evaluate mathematical methods and models using critical thinking.
A2	Understanding mathematical relationships and interpreting them accurately, whereby the student demonstrates the ability to analyze mathematical relations and explain both theoretical and applied results within scientific and educational contexts.	
A3	Applying mathematical concepts to solve real-world problems, whereby the student utilizes acquired knowledge to address complex mathematical issues and connect them to practical applications in education and scientific research.	
A4	Analyzing data and mathematical models using mathematical and technological tools, whereby the student masters analytical methods and mathematical software to process data and construct effective mathematical models.	
A5	Synthesizing multiple concepts to develop innovative mathematical solutions, whereby the student demonstrates the ability to integrate	

	diverse concepts and theories to generate new and creative solutions for mathematical and educational problems.	
A6	Evaluating mathematical theories and methods according to scientific standards, whereby the student assesses the effectiveness of mathematical theories and models and compares various approaches using critical and logical thinking.	

B. Skills		**L- Outcomes**
B1	Utilizing mathematical and technological tools in problem-solving, whereby the student masters the use of mathematical software, calculators, and digital analysis tools to address mathematical problems.	**Student's ability to:** 1. Efficiently use mathematical tools and software. 2. Design and conduct lessons and scientific research using precise methodologies. 3. Communicate effectively in academic settings and collaborate within diverse educational environments. 4. Apply logical and critical thinking in educational and research contexts.
B2	Employing logical and critical thinking skills in educational and research contexts, whereby the student demonstrates the ability to analyze problems, evaluate solutions, and make decisions based on scientific principles.	
B3	Designing and delivering effective mathematics lessons using modern instructional strategies, whereby the student applies diverse teaching methods that align with students' levels and educational needs.	
B4	Designing and conducting educational scientific research using precise methodologies, whereby the student completes research projects that involve formulating hypotheses, collecting data, and analyzing results using scientific tools.	
B5	Effective academic communication in both Arabic and English, whereby the student articulates mathematical ideas clearly, both orally and in writing, across diverse educational and research contexts.	
B6	Teamwork and collaboration in diverse educational and professional environments, whereby the student actively participates in group work and demonstrates leadership and coordination skills in executing shared tasks.	

C. Values		L- Outcomes
C1	Commitment to educational and research ethics, whereby the student demonstrates respect for the values of integrity, objectivity, and mutual respect in all academic activities.	**Student's ability to:** 1. Uphold professional ethics and respect human diversity. 2. Demonstrate positive attitudes toward mathematics and education. 3. Engage actively in community service through scientific and educational activities. 4. Exhibit responsibility and self-discipline, with a continuous pursuit of personal development.
C2	Promoting positive attitudes toward mathematics and education, whereby the student expresses appreciation for the importance of mathematics in daily life and society, and demonstrates enthusiasm for learning and teaching it.	
C3	Respecting cultural, religious, and human diversity in educational environments, whereby the student demonstrates refined human behavior that acknowledges differences and promotes the values of tolerance and openness.	
C4	Engaging in community service through scientific and educational activities, whereby the student participates in educational initiatives beyond the university walls, contributing to the dissemination of scientific culture and the achievement of development.	
C5	Demonstrating responsibility and self-discipline in learning and work, whereby the student shows commitment to academic tasks and manages time and effort efficiently to achieve educational goals.	
C6	Continuous readiness for self-development and keeping pace with scientific and technological advancements, whereby the student demonstrates a persistent desire for learning and actively follows recent developments in the fields of mathematics and education.	

9. Learning and Teaching Strategies

Teaching Strategies	Learning Strategies
1. Problem-Based Learning: Encourages students to engage in critical thinking through real-life situations that require mathematical analysis and practical application. **2. Interactive Learning:**	**1. Self-Directed Learning:** Where the student develops autonomy in seeking knowledge and consulting scientific resources beyond the classroom. **2. Active Learning:**

Promotes dialogue and discussion within the classroom, enhancing students' participation in constructing knowledge. **3. Technology-Enhanced Learning:** Utilizes mathematical software, presentations, and digital simulations to clarify abstract concepts. **4. Integrated Learning:** Connects mathematics with other fields such as physics, economics, and education to broaden applied understanding. **5. Collaborative Learning:** Encourages teamwork among students to develop communication skills and solve shared problems. **6. Project-Based Learning:** Assigns students applied mathematical projects that strengthen research, analysis, and presentation skills.	Where the student engages in educational activities such as solving exercises, conducting experiments, and participating in classroom discussions. **3. Collaborative Learning:** Where the student works within groups to solve mathematical problems and exchange ideas and experiences. **4. Critical Thinking-Based Learning:** Where the student analyzes mathematical concepts, evaluates their validity, and compares theories and methods. **5. Self-Assessment-Based Learning:** Where the student reviews their performance, assesses their understanding of the subject, and identifies strengths and areas for improvement. **6. Technology-Based Learning:** Where the student utilizes digital tools such as mathematical software, educational videos, and interactive platforms to deepen understanding.

10. Assessment Methods

1. Written Examinations
Used to assess the student's understanding of mathematical concepts and theories, including essay questions, objective items, and applied problems.

2. Reports and Research Projects
The student is assigned to prepare research or applied projects that evaluate their ability to analyze, synthesize, and apply scientific methodologies.

3. Classroom Presentations
The student is evaluated through presenting mathematical topics to peers, which enhances academic communication skills and self-confidence.

4. Practical Assessment in Laboratories
Applied in computer or applied mathematics courses to assess the student's ability to use technical tools in problem-solving.

5. Homework and In-Class Activities
Used to evaluate the student's commitment and ongoing engagement with the subject, contributing to self-directed and cumulative learning.

6. Self and Peer Assessment
Encourages the student to evaluate their own performance and that of peers according to defined criteria, fostering critical thinking and self-awareness

11. Teaching Faculty

N	Name	Academic Title	Specialization		Special Skills	No. Faculty	
			General	Specialty		Permanent	Temporary
1.	Louay Abdul Hani Jabbar	Professor	Math	General Topology	---	P	
2.	Iftikhar Mudar Talib	Professor	Math	Dynamic Systems	---	P	
3.	Asad Muhammad Ali	Experienced Professor	Math	Modular Algebra	---		T
4.	Karima Abdul Kadhim Mukhrab	Professor	Math	Mathematical Statistics	---	P	
5.	Mushtaq Abdul Ghani Shakheer	Professor	Math	Applied Mathematics	---	P	
6.	Zaher Abdul Hadi Hassan	Professor	Math	Applied Mathematics	---	P	
7.	Zaher Dabis Azawi	Professor	Math	Functional Analysis	---	P	
8.	Ahmed Abdul Ali Imran	Professor	Math	Graph Theory	---	P	
9.	Amir Abdul Hani Jabbar	Professor	Math	Graph Algebra	---	P	
10.	Sahar Mohsen Jabbar	Professor	Math	Differential Equations	---	P	
11.	Aqeel Kitab Muzail	Professor	Math	Complex Analysis	---	P	
12.	Kawthar Fawzi Hamza	Professor	Math	Applied Mathematics	---	P	
13.	Azal Jaafar Musa	Professor	Math	Physical Mathematics	---	P	
14.	Ahmed Sabah Ahmed	Professor	Math	Applied Mathematics	---	P	
15.	Hasna Hassan Shahid	Assistant Professor	Math	Algebra	---	P	
16.	Janan Hamza Farhoud	Assistant Professor	Math	Spectrum Theory	---	P	
17.	Bushra Hussein Aliwi	Assistant Professor	Math	Applied Mathematics	---	P	
18.	Ihab Ibrahim Zidan	Assistant Professor	Math	Arabic Language Teaching Methods	---	P	

19.	Enas Hamoud Mohsen	Assistant Professor	Computer	Artificial Intelligence and Image Processing	---	P	
20.	Lamis Hamoud Mohsen	Assistant Professor	Computer	Information Security and Networks	---	P	
21.	Hawra Abbas Fadel	Assistant Professor	Math	Functional Approximation Theory	---	P	
22.	Mayada Ali Karim	Assistant Professor	Math	Functional Approximation Theory	---	P	
23.	Ali Hussein Mahmood	Assistant Professor	Math	Applied Mathematics	---	P	
24.	Rehab Amer Kamel	Assistant Professor	Math	Functional Approximation Theory	---	P	
25.	Amira Abdul Wahid Finjan	Assistant Professor	Computer	Artificial Intelligence	---	P	
26.	Tofoul Hussein Omran	Lecturer	Computer	Genetic Algorithms	---	P	
27.	Ghazi Abdullah Faisal	Lecturer	Math	Numerical Analysis	---	P	
28.	Nada Muhammad Abbas	Lecturer	Math	Differential Geometry	---	P	
29.	Rawasi Adnan Hamid	Lecturer	Math	Mathematical Statistics	---	P	
30.	Shaima Shaker Juma	Lecturer	Math	Mathematics Teaching Methods	---	P	
31.	Ibtihal Asmar Abboudi	Lecturer	Math	Mathematics Teaching Methods	---	P	
32.	Huda Amer Hadi	Lecturer	Math	Applied Mathematics	---	P	
33.	Fatima Ali Abdul Hussein	Assistant Lecturer	Math	Numerical Analysis	---	P	
34.	Zainab Hussein Abdul Sada	Assistant Lecturer	Math	Functional Approximation Theory	---	P	
35.	Adi Hatem Sahib	Assistant Lecturer	Math	Complex Analysis	---	P	
36.	Haider Faisal Ghazi	Assistant Lecturer	Math	Algebra in Graph Theory	---	P	
37.	Ali Hassan Abdulkhaliq	Assistant Lecturer	Math	Algebra	---	P	
38.	Sanaa Kazim Kamel	Assistant Lecturer	Math	Number Theory	---	P	
39.	Zainab Mahmoud Shaker	Assistant Lecturer	Math	Functional Approximation Theory	---	P	
40.	Aseel Sami Hamad	Assistant Lecturer	Math	Functional Approximation Theory	---	P	

41.	Ehsan Abdulrahman Alwan	Assistant Lecturer	Math	Graph Theory	---	P	
42.	Sara Hussein Abdul	Assistant Lecturer	Math	Module Algebra	---	P	
43.	Ahmed Damd Jassim	Assistant Lecturer	Law	Criminal Law	---	P	
44.	Sadiq Jaafar Marir	Assistant Lecturer	General Sciences	General Science Teaching Methods	---	P	

12. Faculty Development

Orientation of junior faculty members

Short-Term Guidelines:

1. **Carefully review the program description and course offerings.**
New faculty members must understand the program's philosophy, objectives, and learning outcomes to ensure consistency in content delivery.
2. **Adhere to approved teaching plans and update them as needed.**
The curriculum should be implemented according to the timetable, with flexibility in modifying activities to serve learning objectives.
3. **Use modern and interactive teaching strategies.**
The use of active learning, digital technologies, and problem-solving in the classroom is encouraged to enhance interaction and understanding.
4. **Communicate effectively with students and provide academic support.**
It is recommended to build a respectful educational relationship and provide academic and pedagogical guidance to students both inside and outside the classroom.
5. **Participate in department and college academic activities.**
Faculty members are encouraged to attend meetings, participate in academic committees, and participate in student activities to enhance institutional affiliation.
6. **Adhere to professional ethics and academic standards.**
Respect for student rights, academic integrity, and transparency in assessment and academic conduct are respected.

Long-Term Directives:

1. **Continuously Developing Academic and Research Portfolios**
Faculty members are encouraged to publish academically, participate in conferences, and develop their specializations in line with global developments.
2. **Contributing to Curriculum and Course Development**
Proposals to update content and introduce new concepts that enhance the quality of the program and its outcomes are encouraged.

3. Building Academic Collaboration with Other Universities and Institutions
Academic openness, exchange of expertise, and participation in joint research projects locally and internationally are encouraged.

4. Participating in Training and Professional Development Programs
Recommended: Participating in workshops and specialized courses that enhance teaching and research skills.

5. Contributing to Community Service Through Scientific and Educational Activities
Providing consultations and organizing seminars and workshops that serve the educational environment outside the university walls are encouraged.

6. Working to Achieve Quality Standards and Academic Accreditation
Commitment to performance standards, documenting activities, and participating in evaluation and continuous improvement processes are encouraged.

Orientation of senior faculty members

Short-term faculty development:

1. Organizing specialized training workshops on modern teaching methods, focusing on active learning strategies, digital technologies, and the use of critical thinking in teaching mathematics.
2. Providing a comprehensive teaching guide detailing course descriptions, objectives, and outcomes. This helps instructors understand the program's philosophy and ensure consistency in content delivery and student assessment.
3. Encouraging instructors to use e-learning tools and interactive platforms. This enhances the quality of teaching and facilitates access to diverse educational resources.

Long-term faculty development:

1. Supporting academic publishing and participation in local and international conferences. This contributes to building academic portfolios, exchanging experiences, and raising the department's academic ranking.
2. Involving instructors in curriculum and course development. This enhances the spirit of innovation and ensures that content is updated to keep pace with scientific and educational developments.
3. Developing sustainable professional development programs in collaboration with external academic institutions. This provides opportunities for advanced training, academic exchange, and building long-term academic partnerships.

13. Acceptance Criteria

Criteria for Student Admission to the Mathematics Department Academic Program:

Student admission to the Mathematics Department at the College of Education for Pure Sciences is based on a set of academic and administrative criteria that ensure the selection of qualified students for admission to the program. These criteria include:

1. **Successful completion of preparatory studies in the science stream (or equivalent).**
The student must be a science stream graduate, with a strong background in mathematics and science.
2. **Overall competitive average.**
Admission is based on students' grades in ministerial examinations and the central admissions plan determined annually by the Ministry of Higher Education and Scientific Research.
3. **Selection through central admissions or special admissions (parallel or evening).**
Students may apply through approved official channels, including general or special admissions, depending on the department's capacity.
4. **Academic fitness and academic readiness.**
It is preferable for the student to possess logical and analytical thinking skills and a willingness to pursue mathematical courses of a theoretical and applied nature.
5. **Adherence to the general university admissions regulations.**
This includes requirements for age, nationality, prohibiting the combination of two studies, and other ministerial instructions, without taking into account any differences based on gender, race, religious belief, or geographic region.

14. Sources of Feedback and Evaluation

1. **Curriculum plans approved by the Ministry of Higher Education and Scientific Research.**
These are the primary references for determining the program structure, number of credit hours, course distribution, and graduation requirements.
2. **College Academic and Pedagogical Guide.**
Contains program and course descriptions, educational objectives, learning outcomes, and teaching and assessment strategies.
3. **Basic and auxiliary academic books and references.**
Includes books on algebra, analysis, statistics, and applied mathematics, in addition to approved educational references for teaching mathematics.
4. **Local and international peer-reviewed academic journals.**
Used to update academic content, support academic research, and link courses to the latest developments in mathematics.
5. **Digital educational platforms and specialized software.**
Such as GeoGebra, MATLAB, Mathematica, and other tools used in teaching and practical applications.
6. **Reports of academic committees and department councils.**
Include curriculum updates, evaluation results, and recommendations for continuous improvement of the academic program.

15. Academic Program Development Plan

1. **Periodically review and update the curriculum.**
To ensure it keeps pace with scientific and educational developments and meets the needs of the local and international labor market.
2. **Introducing modern courses in applied and digital mathematics.**
Such as data analysis, mathematical modeling, and specialized software, to enhance practical and professional learning.
3. **Enhance the integration of theoretical and applied aspects of the courses.**
Through applied projects, computer labs, and real-life case studies.
4. **Develop learning outcomes according to Bloom's taxonomy and quality standards.**
To ensure clarity of educational objectives and facilitate the evaluation and continuous improvement process.
5. **Introduce modern teaching and learning strategies.**
Such as problem-based learning, collaborative learning, and technology-enabled self-learning.
6. **Expand opportunities for practical and educational training for students.**
Through partnerships with schools and educational institutions, to prepare them in the field before graduation.
7. **Improve academic assessment tools.**
To include analytical tests, projects, presentations, and self- and peer-assessment.
8. **Developing faculty capabilities**
Through workshops, training programs, supporting academic publishing, and participating in conferences.
9. **Enhancing the research dimension of the program.**
By encouraging students to prepare applied research projects and linking them to societal issues.
10. **Activating academic cooperation with local and international universities.**
To exchange expertise, develop curricula, and open up opportunities for joint graduate studies.
11. **Integrating the institutional identity into the design of documents and courses.**
To ensure consistency in form and content with the university's vision and academic values.
12. **Preparing a comprehensive guide for the academic program and courses.**
To facilitate students and faculty members' understanding of the objectives, outcomes, and assessment mechanisms.

16. Program Skills Map

Year	Course Code	Course Name	Core or Elective	Expected Learning Outcomes Tables																	
				Knowledge						Skills						Values					
				A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
First Year	EpsMaC100101(3,2)	Calculus I	Core	*			*		*	*	*			*		*		*	*		
First Year	EpsMaFm100202(2,2)	Foundations of Mathematics I	Core			*		*	*			*	*		*		*		*		*
First Year	EpsMaLa100303(2,2)	Linear Algebra I	Core		*		*	*				*	*	*		*		*		*	
First Year	EpsMaGp100404(1,2)	General Physics	Core	*	*	*				*	*				*		*			*	*
First Year	EpsMaEp100505(1,0)	Educational Psychology	Core			*	*		*			*	*	*		*		*	*		
First Year	EpsMaPc100606(1,2)	Psychology of Classroom Education	Core	*	*			*		*	*				*	*	*				*
First Year	EpsMaEl100707(2,0)	English Language I	Core			*	*		*			*		*	*			*	*	*	
First Year	EpsMaCs100808(1,2)	Computer Science I	Core	*		*		*		*	*		*			*	*		*		
First Year	EpsMaDh100909(2,0)	Democracy and Human Rights	Core		*	*			*	*		*		*			*	*		*	
First Year	EpsMaC101010(3,2)	Calculus II	Core	*			*		*			*	*		*	*				*	*
First Year	EpsMaFm101111(2,2)	Foundations of Mathematics II	Core	*	*			*		*	*			*			*	*	*		

Year	Course Code	Course Name	Core or Elective	Expected Learning Outcomes Tables																	
				Knowledge						Skills						Values					
				A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
First Year	EpsMaLa101212(2,2)	Linear Algebra II	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
First Year	EpsMaEt101313(1,0)	Ethics of Teaching Profession	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
First Year	EpsMaSd101414(1,0)	Sustainable Development	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
First Year	EpsMaAl101515(2,0)	Arabic Language I	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
First Year	EpsMaDp101616(1,0)	Development Psychology	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
First Year	EpsMaPe101717(1,0)	Principles of Education and Teaching	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Second Year	EpsMaAc201801(3,2)	Advanced Calculus I	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Second Year	EpsMaGa201902(2,2)	Group Algebra I	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Second Year	EpsMaOd202003(2,2)	Ordinary Differential Equations I	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Second Year	EpsMaAs202104(2,2)	Axiomatic Systems	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Second Year	EpsMaAc202205(1,2)	Advanced Computer I	Core	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Year	Course Code	Course Name	Core or Elective	Expected Learning Outcomes Tables																	
				Knowledge						Skills						Values					
				A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
Second Year	EpsMaDp202306(2,0)	Developmental Psychology	Core	*	*				*			*	*			*				*	*
Second Year	EpsMaEa202407(2,0)	Educational Administration and Secondary Education	Core	*		*	*				*			*	*			*	*	*	
Second Year	EpsMaCa202508(2,0)	Crimes of the Al-Baath System in Iraq	Core			*	*	*		*			*	*			*		*		*
Second Year	EpsMaAc202609(3,2)	Advanced Calculus II	Core	*			*		*			*	*		*	*	*	*			*
Second Year	EpsMaGa202710(2,2)	Group Algebra II	Core		*	*		*		*	*			*		*	*		*		
Second Year	EpsMaOd202811(2,2)	Ordinary Differential Equations II	Core		*			*	*	*	*	*			*			*		*	*
Second Year	EpsMaG202912(2,2)	Geometry	Core	*		*	*					*	*	*		*	*		*		
Second Year	EpsMaAc203004(1,2)	Advanced Computer II	Core		*			*	*	*	*				*			*		*	*
Second Year	EpsMaEl203105(2,0)	English Language II	Core	*		*	*					*	*		*	*	*			*	
Second Year	EpsMaRm203206(2,0)	Research Methodology	Core		*	*			*	*			*	*		*			*		*
Second Year	EpsMaAl203307(2,0)	Arabic Language II	Core	*		*	*				*			*	*		*	*			*

Year	Course Code	Course Name	Core or Elective	Expected Learning Outcomes Tables																	
				Knowledge						Skills						Values					
				A1	A2	A3	A1	A2	A3	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
Third Year	EpsMaMa303401(2,2)	Mathematical Analysis I	Core			*		*	*	*	*			*				*	*	*	
Third Year	EpsMaRa303502(2,2)	Ring Algebra I	Core	*			*		*		*	*			*	*		*	*		
Third Year	EpsMaNa303603(2,2)	Numerical Analysis I	Core		*		*	*		*	*			*			*		*		*
Third Year	EpsMaPd303704(2,2)	Partial Differential Equations I	Core	*			*		*	*		*	*				*	*		*	
Third Year	EpsMaPs303805(2,2)	Probability and Statistics I	Core			*		*	*			*	*		*	*				*	*
Third Year	EpsMaMc303906(2,0)	Methodology and Curriculum	Core	*	*	*				*	*			*		*			*		*
Third Year	EpsMaOr304007(2,2)	Operations Research (Optional I)	Elective			*		*	*	*				*	*		*	*		*	
Third Year	EpsMaMa304108(2,2)	Mathematical Analysis II	Core		*		*	*			*	*			*			*		*	*
Third Year	EpsMaRa304209(2,2)	Ring Algebra II	Core	*	*				*			*		*	*	*	*		*		
Third Year	EpsMaNa304310(2,2)	Numerical Analysis II	Core	*		*		*		*	*		*					*		*	*
Third Year	EpsMaPd304411(2,2)	Partial Differential Equations II	Core		*		*		*			*		*	*	*			*		*
Third Year	EpsMaPs304512(2,2)	Probability and Statistics II	Core	*		*		*		*	*		*				*	*		*	
Third Year	EpsMaEcmh304613(2,0)	Educational Counselling and Mantel Health	Core		*		*	*		*				*	*	*		*			*

Year	Course Code	Course Name	Core or Elective	Expected Learning Outcomes Tables																	
				Knowledge						Skills						Values					
				A1	A2	A3	A1	A2	A3	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	C5	C6
Fourth Year	EpsMGt404701(3,2)	General Topology	Core	*		*	*			*	*			*			*			*	*
Fourth Year	EpsMaCa404802(3,2)	Complex Analysis	Core		*	*			*	*			*		*	*			*	*	
Fourth Year	EpsMaMs404903(3,2)	Mathematical Statistics	Core	*			*		*		*	*		*			*	*	*		
Fourth Year	EpsMaDt405004(2,2)	Domination Theory	Elective	*	*			*		*		*	*			*		*			*
Fourth Year	EpsMaRt405106(2,2)	Reliability Theory	Elective		*	*		*			*			*	*	*	*		*		
Fourth Year	EpsMaEm405207(2,0)	Evaluation and Measurement	Core	*			*		*	*			*		*			*		*	*
Fourth Year	EpsMaRp405308(4,0)	Research Project	Core		*	*		*			*	*		*		*	*		*		
Fourth Year	EpsMaPe405409(0,8)	Practical Education	Core	*			*		*	*		*			*	*		*		*	*