جامعة الزيتونــة الأردنيــة
Al-Zaytoonah University of Jordan
كلية العلوم وتكنولوجيا المعلومات
Faculty of Science and information Technology

" عراقة وجودة"
"Tradition and Quality"

Study Plan for Bachelor program - Study Plan Development and Updating Procedures/ Mathematics Department	QF01/0407-4.0E

Course Plan for **Mathematics** (Bachelor Program) No.: (**2021-2022**)		
Approved by Deans Council by decision (09/19/2020-2021) dated (28/7/2021)		
(**133**) Credit Hours	Study system / hybrid program	
Type of specialty	☐ **Humanitarian** ✓ **Scientific / technical**	☐ **Medical Sciences**

Teaching style	Percentage of study plan hours / number	Model used (synchronous: asynchronous)
Complete e-learning courses	10% - 20% Maximum / number( ) C h	2:1 (For SUN. TUE. THER) or 1:1 (for MON. WED.)
Blended Learning courses (For Humanity)	40% - 60% Maximum / number( ) C h	2:1 (For SUN. TUE. THER) or 1:1 (for MON. WED.)
Blended learning courses (for scientific and medical)	30% -50% Maximum / number () C h	2:1 (For SUN. TUE. THER) or 1:1 (for MON. WED.)
Traditional learning courses (for humanity)	20% Minimum / number ( ) C h	3:0 For all academic divisions
Traditional learning courses (for scientific and medical)	30% Minimum / number () C h	3:0 For all academic divisions

Important note: (The teaching patterns of the subjects are distributed at all academic levels in the program)

Program vision Providing students with the necessary knowledge, skills and competencies in various fields of mathematics through the use of modern teaching and learning strategies and the use of various means of technology.
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Program mission and objectives:
1. Provides students with the basic concepts in mathematics.
2. Provides students with knowledge in the various mathematical fields.
3. Provides students with sufficient proficiency in technology.
4. Enhances the student's teaching skills for their school teaching careers.
5. Preparing graduates with various skills needed for scientific research and for competency in different fields of work.

Program learning outcomes (*(MK= Main Knowledge, MS= Main Skills, MC= Main Competences)*

Main knowledge	
MK1	Knowledge of the main concepts in pure mathematics.
MK2	Knowledge of the main concepts in applied mathematics.
MK3	Explain concepts, principles and theories in the fields of probability and statistics.
MK4	Possession of technological culture related to the fields of mathematics and its applications.
Basic skills	
MS1	Making use of mathematical logic in practical life.
MS2	Engaging scientific methodology as a way of thinking and as a tool in facing problems.
MS3	Applying mathematical software packages in problem solving.
MS4	Being capable of data analysis.
MS5	Capability of teaching according to modern educational techniques.
MS6	Develop creative and innovative methods of teaching mathematics.
General competencies	
MC1	Showing the ablity to work under ethical and professional standards within teams.
MC2	Gaining critical thinking and scientific research skills.

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Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	Prerequisite Co-requisite	Indicative	
Fully electronic learning	Blended learning	Traditional learning							Semester	year
1.	**University Requirements (27) Credit Hours**									
1.1	**Mandatory requirement (21 credit hour)**									
*			0420101	Military Sciences	3	3	0		1	1
*			0420151	National Education	3	3	0		2	1
*			0420271	Life skills	3	3	0		1	2
*			0420115	Communication skills in Arabic	3	3	0	Remedial Arabic Language	1	1
*			0420123	Communication skills in English	3	3	0	Remedial English Language	2	1
*			0420261	Entrepreneurship and innovation	3	3	0		2	2
*			0420241	Leadership and social responsibility	3	3	0		1	2
1.2	**University elective requirements(06 credit hour)**									
*			0420142	Human Civilization	3	3	0		1	1
*			0420253	Development and environment	3	3	0		1	2
*			0420172	Digital skills	3	3	0	Remedial computer skills	2	1
*			0420201	first aid	3	3	0		2	2
*			0420134	Sports and health	3	3	0		1	1
*			0420212	Islamic culture	3	3	0		1	2
.			0420392	Principals of Psychology	3	3	0		1	3
.			0420341	Principals of German Language	3	3	0		2	3

Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	Prerequisite Co-requisite	Indicative	
Fully electronic learning	Blended learning	Traditional learning							Semester	year
2.	**Faculty Requirements (21) Credit Hours**									
	*		0115130	Introduction to Information Technology	3	3	0	Synchronized with remedial computer skills	1	1
		*	0101101	Calculus (1)	3	3	0	--------------	1	1
		*	0101140	Statistics and Probability	3	3	0	--------------	1	1
	*		0114150	Professional Skills for Scientific Faculties	3	3	0	Introduction to Information Technology		
	*		0112120	Principles of Programming	3	3	0	Introduction to Information Technology	2	1
			0150111	General Physics (1)	3	3	0	--------------	2	1
		*	0101221	Linear Algebra (1)	3	3	0	--------------	1	2

Teaching style	Course No.	Course name	it & y al		Prerequisite Co-requisite	Indicati ve

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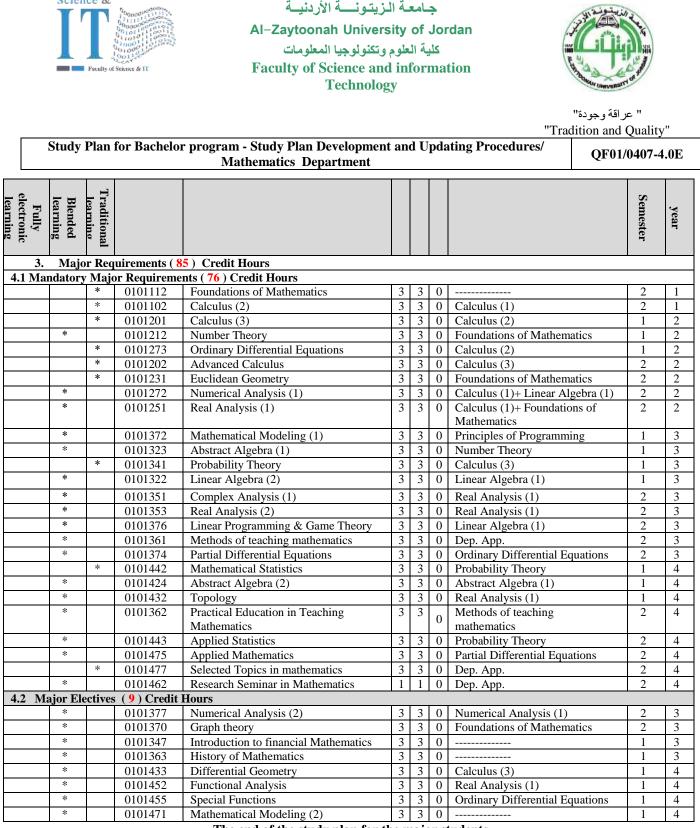**Faculty of Science and information Technology**

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Fully electronic learning	Blended learning	Traditional learning							Semester	year
3. Major Requirements (85) Credit Hours										
4.1 Mandatory Major Requirements (76) Credit Hours										
		*	0101112	Foundations of Mathematics	3	3	0	--------------	2	1
		*	0101102	Calculus (2)	3	3	0	Calculus (1)	2	1
		*	0101201	Calculus (3)	3	3	0	Calculus (2)	1	2
	*		0101212	Number Theory	3	3	0	Foundations of Mathematics	1	2
		*	0101273	Ordinary Differential Equations	3	3	0	Calculus (2)	1	2
		*	0101202	Advanced Calculus	3	3	0	Calculus (3)	2	2
		*	0101231	Euclidean Geometry	3	3	0	Foundations of Mathematics	2	2
	*		0101272	Numerical Analysis (1)	3	3	0	Calculus (1)+ Linear Algebra (1)	2	2
	*		0101251	Real Analysis (1)	3	3	0	Calculus (1)+ Foundations of Mathematics	2	2
	*		0101372	Mathematical Modeling (1)	3	3	0	Principles of Programming	1	3
	*		0101323	Abstract Algebra (1)	3	3	0	Number Theory	1	3
		*	0101341	Probability Theory	3	3	0	Calculus (3)	1	3
	*		0101322	Linear Algebra (2)	3	3	0	Linear Algebra (1)	1	3
	*		0101351	Complex Analysis (1)	3	3	0	Real Analysis (1)	2	3
	*		0101353	Real Analysis (2)	3	3	0	Real Analysis (1)	2	3
	*		0101376	Linear Programming & Game Theory	3	3	0	Linear Algebra (1)	2	3
	*		0101361	Methods of teaching mathematics	3	3	0	Dep. App.	2	3
	*		0101374	Partial Differential Equations	3	3	0	Ordinary Differential Equations	2	3
		*	0101442	Mathematical Statistics	3	3	0	Probability Theory	1	4
	*		0101424	Abstract Algebra (2)	3	3	0	Abstract Algebra (1)	1	4
	*		0101432	Topology	3	3	0	Real Analysis (1)	1	4
	*		0101362	Practical Education in Teaching Mathematics	3	3	0	Methods of teaching mathematics	2	4
	*		0101443	Applied Statistics	3	3	0	Probability Theory	2	4
	*		0101475	Applied Mathematics	3	3	0	Partial Differential Equations	2	4
		*	0101477	Selected Topics in mathematics	3	3	0	Dep. App.	2	4
	*		0101462	Research Seminar in Mathematics	1	1	0	Dep. App.	2	4
4.2 Major Electives (9) Credit Hours										
	*		0101377	Numerical Analysis (2)	3	3	0	Numerical Analysis (1)	2	3
	*		0101370	Graph theory	3	3	0	Foundations of Mathematics	2	3
	*		0101347	Introduction to financial Mathematics	3	3	0	--------------	1	3
	*		0101363	History of Mathematics	3	3	0	--------------	1	3
	*		0101433	Differential Geometry	3	3	0	Calculus (3)	1	4
	*		0101452	Functional Analysis	3	3	0	Real Analysis (1)	1	4
	*		0101455	Special Functions	3	3	0	Ordinary Differential Equations	1	4
	*		0101471	Mathematical Modeling (2)	3	3	0	--------------	1	4

The end of the study plan for the major students

Subjects taught in the major for students of other majors (university requirements, college requirements, major family requirements, support requirements)

Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	The type of requirement and the recipient
Fully electronic learning	Blended learning	Traditional learning						
		*	0101104	Calculus (2) for Engineering	3	3	0	**support requirement.** Faculty of Engineering & Technology - for the Departments: Mechanical Engineering, Computer & Communication Engineering and Civil & Infrastructure Engineering. Faculty of Science

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					Students				& Information Technology-Department of physics
		*	0101205	Calculus (3) for Engineering Students	3	3	0	**support requirement.** Faculty of Engineering & Technology- for the Departments: Mechanical Engineering, Computer & Communication Engineering and Civil & Infrastructure Engineering. Faculty of Science & Information Technology-Department of physics
		*	0101273	Ordinary Differential Equations	3	3	0	**support requirement.** Faculty of Engineering & Technology- for the Departments: Mechanical engineering, Computer & Communication Engineering, Civil & infrastructure Engineering. Faculty of Science & Information Technology-Department of physics
		*	0101105	General Mathematics	3	3	0	**support requirement.** Architecture and Design
		*	0101221	Linear Algebra (1)	3	3	0	**support requirement.** Faculty of Science & Information Technology- for the IT Departments.
	*		0101272	Numerical Analysis (1)	3	3	0	**support requirement.** Faculty of Science & Information Technology- for the IT Departments.
		*	0101101	Calculus (1)	3	3	0	**college requirements.** Faculty of Science & Information Technology. Faculty of Engineering & Technology
		*	0101140	Statistics and Probability	3	3	0	**college requirements.** Faculty of Science & Information Technology.