

Tikrit University

جامعة تكريت



First Cycle – Bachelor's Degree (B.Sc.) -Mathematics Sciences

بكالوريوس – علوم رياضيات

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1. **Mission & Vision Statement**

Vision Statement

The mathematics academic staff of the Natural and Behavioral Sciences Division at Tikrit University believe that students gain a comprehensive understanding of the discipline of mathematics through a blend of coursework, practical applications, research, and problem-solving. By employing various instructional approaches, students are exposed to the diverse methods employed by mathematicians to analyze, interpret, and formulate theories about numerical systems, patterns, and structures. The mathematics program at our university emphasizes small class sizes, enabling close collaboration between faculty members and students in a supportive and engaging environment. This fosters an informal and nurturing atmosphere where students can thrive and develop their mathematical skills.

Mission Statement

The mathematics academic staff at Tikrit University undertakes a diverse range of responsibilities. The program aims to equip all mathematics students with a solid foundation in mathematical principles while offering them the opportunity to delve deeper into specific areas of focus within the field. The curriculum and advisory services are carefully crafted to prepare graduates for their future careers, whether they choose to work as mathematicians specializing in fields such as cryptography or data analysis, or pursue advanced degrees in mathematics, computer science, or related disciplines. Moreover, the mathematics program plays a vital role in supporting other degree programs such as Engineering, Economics, and Physics by providing essential mathematical knowledge and skills. Additionally, mathematics courses serve as integral components of the general education requirements, offering students a valuable laboratory-like experience in the realm of scientific inquiry and problem-solving.

2. **Program Specification**

Programme code:	BSc-MATH	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Mathematics is a remarkably expansive discipline, and at Tikrit University, we boast one of the largest and most diverse groups of mathematics educators in the UK, enabling us to offer a comprehensive program. Our curriculum centers on the interconnectedness of mathematical concepts, ranging from fundamental principles to complex applications. Whether it is exploring the intricacies of abstract algebra or analyzing mathematical models in real-world scenarios, our program caters to a broad spectrum of interests and career aspirations.

The mathematics degree program attracts a wide range of students. For some, it is the breadth of the subject itself that captivates them, while others see it as a pathway to specialization in

a specific area of mathematics. At the end of their first year, all students have the opportunity to transfer to our specialized degree programs in fields such as Statistics, Applied Mathematics, or Mathematical Modeling.

The first level of the program introduces students to the fundamental principles of mathematics, providing a strong foundation for progression into any of the programs within the mathematics program group. At the second level, students delve deeper into program-specific core topics, preparing them for advanced, research-driven subject-specific modules at the third and fourth levels.

At Tikrit University, we strive to train mathematics graduates who appreciate the synergy between research and teaching. Our curriculum is designed to reflect the university's and school's mission statements, ensuring that students understand how research informs the teaching of mathematics and how mathematical insights drive further discoveries and applications. By the time they graduate, our mathematics students possess a well-rounded education that equips them to tackle mathematical challenges with confidence and contribute to the advancement of the field.

At Tikrit University, the mathematics program offers students a wide range of choices in selecting their module credits at Levels 2, 3, and 4. This flexibility enables students to delve into various aspects of mathematics, spanning from molecules to organisms and populations. The curriculum emphasizes the breadth of knowledge expected of a mathematics graduate, allowing students to explore their own interests in organismal biology.

The program nurtures a research-oriented mindset through practical embedded within lecture modules or taught separately, research seminars, and tutorials. These components provide hands-on experiences and opportunities for students to engage with research methodologies. Additionally, a mandatory field course in Level 1 ensures practical fieldwork skills, while optional field courses are available in subsequent levels.

At Level 4, all students undertake an independent research project, offering them the choice between library or data analysis projects and field or laboratory-based projects. This allows students to develop valuable research skills and apply their knowledge to real-world scenarios.

Academic tutorials are held at Levels 1 and 2, with the same tutor serving as a personal tutor, ensuring continuity and progressive guidance. These tutorials incorporate workshops that teach essential skills such as library usage and presentation techniques. Students then have the opportunity to apply these skills through assessed exercises, such as essays and talks, within a subject-specific context. The mathematics program also recognizes the importance of international exposure and industry experience. It offers international years and industrial placements, allowing students to broaden their horizons and gain practical insights into mathematical applications. Individual needs and preferences are considered, and accommodations are made whenever feasible. Overall, the mathematics program at Tikrit University provides students with a comprehensive and dynamic learning experience, combining theoretical knowledge with practical applications, research opportunities, and personalized guidance.

3. **Program Goals**

1. Continuous pursuit of excellence in knowledge in education and scientific research.
2. The student's ability to gather information and acquire scientific and practical skills through graduation projects.
3. Preparing students for postgraduate studies in the field of mathematics.
4. Developing specialized scientific personnel in the graduate program and promoting interaction with other sciences.
5. Qualifying students as teachers in the Ministry of Education.
6. Encouraging scientific research and enhancing students' debating skills.

4. **Student Learning Outcomes**

A- Cognitive Objectives:

- 1- To provide students with a solid understanding of mathematics and the use of scientific methods in reasoning and individual analysis as a basis for research and study.
- 2- To develop students' ability to employ analytical and numerical methods to solve problems and find optimal solutions.
- 3- To elevate students' proficiency in both general and specialized areas of mathematics.

B- Program Skills Objectives:

- 1- To teach students how to think logically.
- 2- To instruct students in the analysis and application of the prescribed curriculum.
- 3- To enhance students' mental and self-competence within their specialization, as it is a crucial aspect of their field of study.
- 4- To equip students with effective communication skills and proficiency in utilizing modern teaching techniques.

C- Affective and Values Objectives:

- 1- To develop essential communication and interpersonal skills through activities such as sports events, educational guidance, college conferences, departmental seminars, and student research discussions.
- 2- To teach students how to cultivate and enhance their creative and innovative thinking skills within their field of specialization, by constructing mathematical models for societal issues and finding solutions to them.

Outcome 1:

Mathematical Modeling Graduates will be able to apply mathematical models to analyze and understand complex relationships in various mathematical contexts, such as systems of equations, differential equations, and optimization problems.

Outcome 2:

Effective Communication Graduates will be able to effectively communicate mathematical concepts, theories, and findings to both technical and non-technical audiences through clear and concise oral and written communication.

Outcome 3:

Practical Applications Graduates will be able to apply mathematical principles and techniques to solve real-world problems in fields such as finance, engineering, computer science, and statistics.

Outcome 4:

Analytical and Computational Skills Graduates will possess strong analytical and computational skills, including the ability to use mathematical software, programming languages, and numerical methods to analyze and solve mathematical problems.

Outcome 5:

Mathematical Reasoning Graduates will demonstrate proficiency in mathematical reasoning, including the ability to construct logical arguments, prove theorems, and critically evaluate mathematical statements.

Outcome 6:

Independent Research Graduates will be able to design and conduct independent research projects, applying mathematical methodologies, data analysis techniques, and critical thinking to explore and contribute to the advancement of mathematical knowledge.

5. Academic Staff

Hassan Hussien Ebrahim | Ph.D. in Mathematics | Professor

Email: Hassan1962pl@tu.edu.iq

Mobile no.: 07701220084

Mohammed Taha Ahmed | Ph.D. in Statistic | Professor

Email: muhammad111@tu.edu.iq

Mobile no.: 07703054787

Mizal Hamad Thawi | Ph.D. in Mathematics | Professor

Email: mizalobaidi@tu.edu.iq

Mobile no.: 07701991263

Akram Salim | Ph.D in Mathematics | Professor

Email: akr_tel@tu.edu.iq

Mobile no. : 07703839769

Taha Hameed Jasim | Ph.D in Mathematics | Professor

Email: tahahameed@tu.edu.iq

Mobile no. : 07705167616

Nabeel Ezzulddin Arif | Ph.D. in Mathematics | Professor

Email: nabarif@tu.edu.iq

Mobile no.: 07701737803

Laith Khaleel Shaakir | Ph.D. in Mathematics | Professor

Email: dr.laithkhaleel@tu.edu.iq

Mobile no.: 07705134357

Azher Abbas Mohammad | Ph.D. in Mathematics | Assistant Prof.

Email: drazh64@tu.edu.iq

Mobile no.: 07701685448

Nazar Khalaf Hussein | Ph.D in Mathematics | Assistant Prof.

Email: nazar.dikhil@tu.edu.iq

Mobile no.: 07703740817

Mundher Abdullah Khaleel | Ph.D. in Mathematics | Assistant Prof.

Email: mun880088@tu.edu.iq

Mobile no.: 07731987133

Firas Adel Fawzi | Ph.D. in Mathematics | Assistant Professor

Email: firasadil01@tu.edu.iq

Mobile no.: 07737966180

Zeyad Mohammed Abdullah | Ph.D. in Mathematics | Assistant Professor

Email: zeyaemoh1978@tu.edu.iq

Mobile no.: 07713928828

Suha Ibrahim Salih Al-Ali | PhD in Mathematics | Instructor

Email: Suhaibrahim3@tu.edu.iq

Mobile NO. : 07704263991

Esraa Habeeb Khaleel | Ph.D. in Mathematics | Instructor

Email: esraa.h.khaleel@tu.edu.iq

Mobile no.:07722507974

Thekra Ibraheem Latif | Ph.D. in Mathematics | Instructor

E-mail: thekra.i.latif@tu.edu.iq

Mobile no: 07724964457

Yaamr abduleef hussien | M.A in Business Administration | Instructor

Email: yaamr.a.hussein@tu.edu.iq

Mobile no.: 07724003400

Ahmed Maher Salih | M. Sc. in Mathematics | Assistant Lecturer

Email: ahmed.m.salih@tu.edu.iq

Mobile no.:07710644427

Ahmed Muwafaq Azeez | M. Sc. in Mathematics | Assistant Lecturer

Email: ahmedm.azeez@tu.edu.iq

Mobile no.:07719820885

Reem Taha Abdulqader | M. Sc. in Mathematics | Assistant Lecturer

Email: reemalhwez84@tu.edu.iq

Mobile: 07705146794

Sabah Salman Hamdi | M.Sc. in Physics | Assistant Lecturer

Email: Sabah.S.Hamdi@tu.edu.iq

Mobile no.: 07702580208

Narmin Jamal Khaleel | M.Sc. in Mathematics | Assistant Lecturer

Email: narmin.j.khaleel35382@st.tu.edu.iq

Mobile no.: 07712199858

Rana Hazim Jasim | M.Sc. in Mathematics | Assistant Lecturer

Email: Rana.hazim@tu.edu.iq

Mobile no.:07701831233

Mays Waleed Shakir | M.Sc. in Physics | Assistant Lecturer

Email: mays.w.shakir.phys503@st.tu.edu.iq

Mobile no.:07716960216

Samer Abdulqader Salih | M.Sc. in Mathematics | Assistant Lecturer

Email: Samer.A.Salih@tu.edu.iq

Mobile no.: 07700609150

Ahmed Fayeq Saber | M.S. in English language | Assistant Lecturer

Email: ahmed.f.saber@tu.edu.iq

Mobile no.:07701874000

Dabya Mahmood Ali| M.Sc. in Mathematics | Assistant Lecturer

Email: dhabiaa.m.ali@tu.edu.iq

Mobile no.: 07703382231

Ayham Mahmoud Abbad |M.A in Translation |Assistant Lecturer

Email: ayham.m.abbad@tu.edu.iq

Mobile no.: 07706631296

Hind Khaled Kolaib |M.Sc. in Mathematics |Assistant Lecturer

Email: Hind.Khaled@tu.edu.iq

Mobile no.: 07712116357

Bushra Aadel Saleh |M.A. in Arabic Language| Assistant Lecturer

Email: bushra.a.salih@st.tu.edu.iq

Mobile no.: 07710651587

Saad Hussien Ali| M.A in Law | Assistant Lecturer

Email: saad.h.ali@tu.edu.iq

Mobile no.: 07746450453

6. Credits, Grading and GPA

Credits

Tikrit University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
<p>Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:

$$\text{CGPA} = [(1\text{st module score} \times \text{ECTS}) + (2\text{nd module score} \times \text{ECTS}) + \dots] / 240$$

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH101	Foundation of Mathematics 1	93	107	8	C	
MATH102	Calculus 1	93	107	8	C	
MATH103	Topics in Mathematics	78	72	6	B	
	General Physics	63	37	4	B	
	Arabic Language	32	18	2	E	
	Human Right	32	18	2	E	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH104	Foundation of Mathematics 2	93	107	8	S	MATH101
MATH105	Calculus 2	93	107	8	S	MATH101
MATH106	Linear Algebra	93	57	6	C	
	Computer Applications	63	37	4	B	
	English Language 1	32	18	2	E	
	Democracy and Freedom	32	18	2	E	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH -201	Advance Calculus	93	107	8	C	
MATH -202	Ordinary Differential Equations	93	57	6	C	
MATH -203	Probability and Statistics	93	57	6	C	
MATH -204	Group Algebra	93	57	6	C	
	English Language 3	32	18	2	E	

	management Principles	32	18	2	E	
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Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH -205	Partial Differential Equations	93	107	8	C	
MATH -206	Numerical Analysis 1	93	107	8	C	
MATH -207	Rings Algebra	93	107	8	C	
	English Language 3	32	18	2	E	
	Research Methodology	63	37	4	E	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH -301	Mathematical Analysis 1	93	107	8	C	MATH -104
MATH -302	Operation Research	78	72	6	B	
MATH -303	Mathematical Statistics 1	78	122	8	C	MATH -203
MATH -304	Numerical optimization	93	57	6	C	MATH -206
	English Language 4	32	18	2	E	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH -305	Mathematical Analysis II	93	107	8	S	MATH -303
MATH -306	Mathematical Statistics II	78	72	6	S	MATH -302
MATH -307	Number Theory	78	72	4	C	
MATH -308	Chaos Theory	78	72	6	C	
	MATLAB	63	37	6	C	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH - 401	Complex Analysis 1	78	72	6	C	
MATH - 402	Topology 1	78	72	6	C	
MATH - 403	Research Project	17	133	6	C	
MATH - 404	Fractals	78	72	6	S	MATH -308
MATH - 405	Functional Analysis 1	93	57	6	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH - 406	Complex Analysis 2	78	72	6	S	MATH - 401
MATH - 407	Topology 2	78	72	6	S	MATH - 402
MATH - 408	Graph Theory	78	72	6	C	
MATH - 409	Theory of Differential Equations	78	72	6	S	MATH -205
MATH - 410	Functional Analysis 2	78	72	6	S	MATH - 405

8. **Contact**

Program Manager:

John Smith | Ph.D. in Biology | Assistant Prof.

Email:

Mobile no.:

Program Coordinator:

John Smith | Ph.D. in Biology | Assistant Prof.

Email:

Mobile no.:
