

UNIVERSITY of TECHNOLOGY
الجامعة التكنولوجية



**Bachelor of Science (B.Sc.) – Mathematics and
Computer Applications**

بكالوريوس علوم - الرياضيات وتطبيقات الحاسوب



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1. **Mission & Vision Statement**

Vision Statement

The mathematics and computer application academic staff of the Department of Applied Sciences of Technology University believe that students come to understand the discipline of applied mathematics through a combination of course work, laboratory experiences, research, and fieldwork. The combination of instructional methods leads students to a balanced understanding of the scientific methods used by applied mathematics to make observations, develop insights and create theories about the living organisms that populate our planet. Small class sizes within the applied mathematics program foster a close working relationship between academic staff and students in an informal and nurturing atmosphere.

The Branch should be innovative, pioneering and effective within the Branches of applied sciences and Departments of Mathematics of Iraqi Scientific Universities.

Mission Statement

The applied mathematics academic staff pursues a multifaceted charge at Technology University. The Program seeks to provide all applied mathematics students with fundamental knowledge of mathematic, as well as a deeper understanding of a selected focus area within the applied mathematical sciences. The department should be innovative, pioneering and effective within the departments of Iraqi scientific universities, the region and the world in the field of applied sciences.

The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work as field applied mathematics specializing in botany or wildlife. The applied mathematics program also provides the necessary fundamental knowledge of the life sciences to support the Nursing degree, the Environmental Studies degree, and the Associate of Science degree in Forest Technology. In addition, applied mathematics courses provide a key laboratory science experience for those students seeking to complete the general education requirements.

Preparing scientific cadres that depend on the practical and technical side on a distinguished educational level in line with national and international standards of quality and accreditation through conducting research, studies and providing consultations that serve the university and the local and regional community

2. Program Specification

Program code:	B.Sc-Math.	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Mathematics is a wonderfully wide-ranging subject, and Leeds, with one of the UK's largest and most diverse mathematic teaching groups, is well equipped to deliver. The emphasis of the program is the whole organism to which everything is related, be it the molecules that form proteins or communities of organisms in an ecosystem. The degree is popular - for some it's the breadth of the subject that appeals, for others it's a path to specialization. All students have the opportunity to transfer onto our specialist degrees in Calculus, Foundation of Mathematics, and finite Mathematics at the end of the first year.

Level 1 exposes students to the fundamentals of mathematics, suitable for progression to all programs within the programed group. Programed-specific core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. A Leeds Mathematics graduate is therefore trained to appreciate how research informs teaching, according to the University and School Mission statements.

At Levels 2, 3 and 4 students are free to choose more than half of their module credits with the proviso a range of modules are selected that reflect the complexity of life forms from molecules, through organisms, both plants and animals, to populations to ensure the breadth of knowledge expected of a graduate with a mathematic degree. This allows students to develop their own wide-ranging interests in organismal mathematics. Decisions on what to study are made with input from personal tutors.

The research ethos is developed and fostered from the start via practicals, which are either embedded in lecture modules or taught in dedicated practical modules, research seminars and tutorials. There is a compulsory field course in Level 1, which students must pass in order to progress into Level 2, and optional field courses in Levels 2, 3 and 4. At Level 4 all students carry out an independent research project, which may be a xx credit library or data analysis project, or a xx credit field or laboratory based project.

Academic tutorials are held at Levels 1 and 2 with the same tutor, who is also the personal tutor, providing continuity and progressive guidance. Level 1 and 2 tutorials include a number of workshops to teach skills, e.g. library use and presentation skills, followed by assessed exercises, e.g. essays and talks, as opportunities to practice these skills in a subject-specific context.

International years and Industrial placements are also offered and individual needs are discussed with the appropriate tutor and accommodated wherever possible.

3. Program Goals

1. To provide a comprehensive education in applied mathematics and computer applications that stresses scientific reasoning and problem solving across the spectrum of disciplines within applied mathematics.
2. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of life.
3. To provide extensive hands-on training in electronic technology, statistical analysis, laboratory skills, and field techniques
4. To provide thorough training in written and oral communication of scientific information
5. To enrich students with opportunities for alternative education in the area of applied mathematics and computer applications through undergraduate research, internships, and study-abroad
6. Preparing applied scientific cadres equipped with the basics of scientific, social and technical knowledge capable of analytical and creative thinking.
7. Continuous development of the primary study programs to suit the requirements of local development programs and the needs of the community.
8. Supporting postgraduate studies in the various departments of the college and encouraging the development of studies with specializations that meet the needs of the college and keep pace with global scientific and technical development.
9. Continuous development of the capabilities of faculty members, technicians and administrative workers in the college.
10. Follow-up of the college graduates and continuous evaluation of their performance in community service after graduation and setting future plans to develop and expand the community participation.

4. Student Learning Outcomes

The primary purpose of the Mathematics and Computer Applications is to offer quality undergraduate and graduate science curricula. Course offerings in the computer are designed to satisfy the requirements of offered computer curricula; of mathematics and computer requirements of the core curriculum, and of specific requirements of other curricula and programs.

The preparation of scientific staffs rely on practical approach and on an efficient level of education, agreed with standards and accreditation through doing research, studies and counseling that serve the university and the local and regional community.

List the program educational objectives and state where these can be found by the general public.

The educational objectives for the Mathematics and Computer Applications undergraduate program are to produce alumni who have and can:

Outcome 1: Working and Logical Skills:

Become productive, responsible Mathematics and Computer Applications professionals capable of conducting research and/or designing, developing, or maintaining projects in the various areas of Mathematics and Computer Applications. Also, students should be proficient in the application of the laws of logic to mathematical statements. Students encounter this rigorous mathematical thinking in the prerequisite linear algebra course, and expand and sharpen those skills in the required courses. Many other courses require students to write proofs and/or construct algorithms such as mathematical cryptography.

Outcome 2: Ethical Issues, Accumulation of Knowledge and Analytical Skills:

Understand and apply ethical issues and social aspects of Mathematics and Computer Applications in performing their duties as Mathematics and Computer Applications professionals. Students should have a detailed understanding of a broad subset of known mathematical notions and results. Our major courses cover a broad set of fields. Also, students should have the ability to see connections between mathematical notions and applications, to formulate precise and relevant mathematical statements and questions, and to find valid means of resolving those questions. All major courses require extensive problem solving on the part of the student.

Outcome 3: Writing and External Performance:

Continue the learning of new technologies in the Mathematics and Computer Applications area through self-directed professional development or post graduate education. Students should be able to communicate mathematical concepts and reasoning effectively, and should be able to write rigorous

proofs. All of our courses require problem solving, and they require writing to communicate their solutions. Even further Students should be able to perform and compete successfully outside of the classroom environment and outside of the University.

Outcome 4 : Laboratory and Field Studies

Graduates will be able to perform laboratory experiments and field studies, by using scientific equipment and computer technology while observing appropriate safety protocols.

Outcome 5: Scientific Knowledge

Graduates will be able to demonstrate a balanced concept of how scientific knowledge develops, including the historical development of foundational theories and laws and the nature of science.

Outcome 6: Data Analyses

Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses.

Outcome 7: Critical Thinking

Graduates will be able to use critical-thinking and problem solving skills to develop a research project and/or paper.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Koya 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 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	بقرار مقبول	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
<p>NB 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 Grade Point Average (GPA)

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

GPA of a 4-year B.Sc. degrees:

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

7. Curriculum/Modules

Semester 1 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CALC111	Calculus I	63	112	7.00	C	
FOMA112	Foundation of Mathematics I	63	87	6.00	C	
FIMA113	Finite Mathematics	63	87	6.00	C	
COSC114	Computer Science	93	82	7.00	B	
ENLA115	English Language	33	17	2.00	B	
WORSH1	Workshops	45	5	2.00	S	
		360	390	30		

Semester 2 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CALC121	Calculus II	63	112	7.00	C	
FOMA122	Foundation of Mathematics II	63	87	6.00	C	
DIMA123	Discrete Mathematics	93	82	7.00	C	
GEPH124	General Physics	78	72	6.00	B	
HURI126	Human Rights	33	17	2.00	B	
WORSH11	Workshops	45	5	2.00	S	
		375	375	30.00		

8. **Contact**

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