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T3

2020

Program Specification

Program Name: B. Sc. of mathematics	
Qualification Level : Graduate	
Department: Mathematics	
College: College of Sciences Al-zulfi	
Institution: Majmaah University	

Content

A. Program Identification and General Information

1. **Program Main Location:**

Colleges Complex in Al-zulfi

2. **Branches Offering the Program:**

None

3. **Reasons for Establishing the Program:**
(Economic, social, cultural, and technological reasons, and national needs and development, etc.)

1- Prepare qualified graduates to contribute to the service of comprehensive development in the Kingdom in various areas of life.

2- To fill the positions in specialization jobs in any place of the government and private sectors.

3- Upgrading scientific research in the field of mathematics and statistics and conducting scientific research to find appropriate solutions and participate in National and international conferences.

4- Working in information technology as data analysts and contributing to the preparation of strategic plans.

- **High demand for duly qualified graduates from the department of mathematics to fill the positions in the various areas mentioned as follows:**

  i. **School teachers in Ministry of Education.**

  ii. **Mathematicians in government ministries and institutions, and private sectors that require mathematical skills such as: Ministry of Finance, Saudi Arabian Monetary Agency, General Organization for Social Insurance, Central Department of Statistics and Information, Public Pension Agency, Banks, Research Centers, ARAMCO, SABIC, etc.**

  iii. **Meritorious students pursue higher studies and ultimately join as faculty in colleges, technical colleges and universities in the Kingdom of Saudi Arabia.**

- **Increasing interest of the local community in higher education.**

Evidence:
(pages 9 and 10 from program study plan: annex A**)**

4. **Total Credit Hours for Completing the Program: (137)**

137 hours, 8 semesters (4 years)

Evidence:
(page 8 from program study plan: annex A**)**

5. Professional Occupations/Jobs:

1- Work in the public and private education sector.

2- Work as a lecturer in the department or in one of the departments of mathematics in the Kingdom's universities.

3- Working in research centers.

4- Work in the military sector.

5- Work in information technology as data analysts and contributors in the preparation of strategic plans.

Evidence:
(page 11 from program study plan: annex A**)**

6. Major Tracks/Pathways (if any)**:**

Major track/pathway	Credit hours (For each track)	Professional Occupations/Jobs (For each track)
1. Mathematics	137	**Teacher / Instructor / Statistician / Data analyst / Banker / Accountant**

7. Intermediate Exit Points/Awarded Degree (if any)**:**

Intermediate exit points/awarded degree	Credit hours
1. Not Applicable	NA.

Evidence:
(Pages 8, 12, 13 and 14 from program study plan: annex A**)**

B. Mission, Goals, and Learning Outcomes

1. Program Mission:

Qualify students to excel in mathematics and its applications and possess research skills to compete in labor market and to participate in community service and sustainable development.

https://www.mu.edu.sa/en/colleges/college-of-science-al-zulfi/185946

2. Program Goals:

Graduates of mathematics program will be able to:

1. Understand and explain mathematical ideas and concepts in a scientific and objective method taking into consideration the professional and ethical responsibility.

2. Communicate and present mathematical ideas in effectively both orally and in writing.

3. Apply general concepts in solving life problems using technical means.

4. Work individually or within a teamwork.

5. To obtain admission in postgraduate programs, and compete in labor market.

https://www.mu.edu.sa/en/colleges/college-of-science-al-zulfi/185946

3. Relationship between Program Mission and Goals and the Mission and Goals of the Institution/College.

The mathematics program is one of the programs offered by the college and the university, and therefore the mission and objectives of the department are consistent with the mission and goals of the college and the university through the following main points:

- Providing high-quality education to the students.
- Preparing and qualifying national cadres to compete in the labor market and to Continue higher studies programs.
- Contributing to the overall sustainable development of the country.
- Encouraging the culture of scientific research.
- Serving the community.
- Distinguished accredited program.

Evidence:
(Matrix of goals consistency from quality assurance committee: annex B.2)

4. Graduate Attributes:

Mathematics	

5. Program learning Outcomes*

Knowledge and Understanding	
K1	**Reproduce** fundamentals and concepts of Mathematics and basic science**.**
K2	**Use** computer mathematical software in solving mathematical Problems.
K3	Continue to **acquire** and **outline** mathematical knowledge and skills.
K4	**Construct** mathematical arguments and proofs and **apply** the underlying structures of Mathematics.

Skills	
S1	**Communicate mathematical ideas**, both orally and in writing.
S2	**Demonstrate** the work independently and within a team.
S3	**Illustrate** and bear responsibility for different situations.
S4	**Analyze** and realize the codes of ethics and their importance

Competences	
C1	**Show** the ability for decision making.
C2	**Identify** , **formulate** and **solve** Mathematical Problems.
C3	Critically **interpret** numerical and graphical data.
C4	**Analyze** a mathematical problem and **suggest** appropriate tools for studying it in depth.

*

* Add a table for each track and exit Point (if any)

Learning Outcomes KPI's

Lo's		KPI's	
Code	Description	Code	Description
K1	Reproduce fundamentals and concepts of Mathematics and basic science	**K1.1**	Use of mathematical steps toward solving several problems
		K1.2	Identification of Mathematical Principles
		K1.3	Interpretation and appropriate presentation of results
K2	Use computer mathematical software in solving mathematical problems	**K2.1**	The ability of using mathematical programming
		K2.2	Errors measurements
		K2.3	Analyzing the numerical results
K3	Continue to acquire and outline mathematical knowledge and skills	**K3.1**	Mathematical Reasoning
		K3.2	Strategy/Procedures
		K3.3	Mathematical Terminologies and Notations
K4	Construct mathematical arguments and proofs and apply the underlying structures of Mathematics	**K4.1**	Solving equations and finding an answer
		K4.2	Formulate the problem using equations

Lo's		KPI's	
Code	**Description**	**Code**	**Description**
		K4.3	Reasoning in obtaining mathematical proofs
S1	<u>Communicate</u> mathematical ideas, both orally and in writing	**S1.1**	Ability to express ideas and answer questions
		S1.2	Oral Communication
		S1.3	Written Communication
S2	<u>Demonstrate</u> the work independently and within a team	**S2.1**	Monitors Group Effectiveness
		S2.2	Working with Others
		S2.3	Personal Organization/Time Management
S3	<u>Illustrate</u> and bear responsibility for different situations	**S3.1**	Solving of the problems
		S3.2	Contributions
		S3.3	Leadership
S4	<u>Analyze</u> and realize the codes of ethics and their importance	**S4.1**	Focus on the task
		S4.2	Students attitude towards the problems
		S4.3	Personal Organization/Time Management
C1	<u>Show</u> the ability for decision making	**C1.1**	Ability to express ideas and answer questions
		C1.2	Oral Communication
		C1.3	Written Communication
C2	<u>Identify</u>, <u>formulate</u> and <u>solve</u> mathematical problems	**C2.1**	Identify the given problems
		C2.2	Formulate the rules
		C2.3	Problem Solving
C3	Critically <u>interpret</u> numerical and graphical data	**C3.1**	Depth and Breadth of Understanding
		C3.2	Diagrams and/or sketches
		C3.3	Gathering of information
C4	<u>Analyze</u> a mathematical problem and <u>suggest</u>	**C4.1**	Define the problem
		C4.2	Suggest the appropriate tool

Lo's		KPI's	
Code	Description	Code	Description
	appropriate tools for studying it in depth	C4.3	Analyze and interpret results of the problem

Evidence:
(Approval of learning outcomes through department meeting #15: annex B.3)

Program Specification

C. Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	4	8	% 5.83
	Elective	2	4	% 2.83
College Requirements	Required	6	18	% 13.13
	Elective	1	2	% 1.45
Program Requirements	Required	25	91	% 66.42
	Elective	4	10	% 7.29
Capstone Course/Project	Required	2	4	% 2.92
Field Experience/ Internship				
Others				
Total				100 %

* Add a table for each track (if any)

2. Program Study Plan

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
Level 1	CSI 101	Introduction to Computer Science	Required		3	College
	MTH 101	Calculus 1	Required		4	Department
	PHYS -101	General Physics-1	Required		3	College
	SENG 101	Scientific English Language	Required		3	College
	MTH 231	Mathematics Basis	Required		3	College
Level 2	ARAB 101	Language Skill	Required		2	University
	BIOL 101	General Biology	Required		3	College
	CHEM 101	General Chemistry	Required		3	College
	SAT 101	Statistics and Probability1	Required	MTH 231	3	College
	MTH 102	Calculus 2	Required	MTH 101	4	Department
	SALM 102	Islamic culture	Required		2	University
Level 3	SAT 202	Statistics and probability 2	Required	SAT 101 + MTH 203	4	Department
	MTH 203	Calculus in several variables	Required	MTH 102	4	Department
	MTH 232	Discrete Mathematics	Required	MTH 231	3	Department

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
	MTH 241	Linear Algebra 1	Required	MTH 231	4	Department
	MTH 271	Introduction to geometry	Required	MTH 231	3	Department
Level 4	SALM 103	Islam of economic system	Required	MTH 203	2	University
	SAT 203	Applied Statistics 1	Required	SAT 102	3	Department
	MTH 204	Vector Calculus	Required	MTH271	4	Department
	MTH 221	Ordinary Differential Equations	Required	MTH 203	4	Department
	MTH 251	Numerical Analysis 1	Required	MTH 241	4	Department
Level 5	SALM 102	Islam and society construction	Required		2	University
	MTH 342	Number Theory	Required	MTH 231	3	Department
	MTH 352	Linear Programming	Required	MTH 241	4	Department
	MTH 353	Mathematical applications in computer	Required	MTH 203	3	Department
	MTH 381	Real Analysis 1	Required	MTH 203	3	Department
	-	Department Elective	Required		2	Department
Level 6	MTH 322	Mathematical Methods	Required	MTH 221	4	Department
	MTH 323	Partial Differential Equations	Required	MTH 221	4	Department
	MTH 343	Group Theory	Required	MTH 241	4	Department
	-	College Elective	Elective	-	2	College
	-	Departmental Elective	Elective	-	3	Department
Level 7	MTH 444	Rings and Fields	Required	MTH 343	4	Department
	MTH 472	Topology	Required	MTH 381	4	Department
	MTH 482	Complex Analysis	Required	MTH 381	4	Department
	MTH 491	Graduate Project 1	Required		2	Department
	-	University Elective	Elective	-	2	University
	-	Departmental Elective	Elective	-	2	Department
Level 8	MTH 445	Coding and Cryptography Theory	Required	MTH 444	3	Department
	MTH 473	Differential Geometry	Required	MTH 241	4	Department
	MTH 483	Functional Analysis	Required	MTH 472	3	Department
	MTH 492	Graduate Project 2	Required	MTH 491	2	Department

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
	-	University Elective	Elective	-	2	University
	-	Departmental Elective	Elective	-	3	Department

* Include additional levels if needed
** Add a table for each track (if any)

The Elective Program Courses Requirements:

course code	Course name	Credit Hour	Pre- Requisite	Co-Requisite
SAT 304	Applied Statistics 2	3	SAT 203	
MTH 311	Mathematical Modeling	2	MTH 231	
MTH 313	Financial Mathematics	2	MTH 102	
MTH 314	Bio Mathematics	2	MTH 231	
MTH 334	Graph Theory	2	MTH 231	
MTH 335	Mathematics History	2	MTH 231	
MTH 346	Linear Algebra 2	2	MTH 241	
MTH 355	Game Theory	2	MTH 252	
MTH 405	Calculus of Variation	3	MTH 221	
SAT 405	Data Analysis	2	SAT 202	
MTH 412	Topics in Applied Mathematics	3	MTH 221	
MTH 415	Principals of Mechanics	3	MTH 102	
MTH 416	Fluid Mechanics	3	MTH 415	
MTH 433	Mathematical logic	2	MTH 231	
MTH 454	Optimization Technique	3	MTH 352	
MTH 456	Numerical Analysis 2	3	MTH 251	
MTH 484	Real Analysis 2	3	MTH 381	
MTH 485	Fourier Analysis	2	MTH 323 +MTH 482	

Evidence:
(Pages 14-22 from program study plan: annex A)

Program Specification

3. Course Specifications
Insert hyperlink for all course specifications using NCAAA template

> **Department webpage**
> **https://www.mu.edu.sa/en/colleges/college-of-science-al-zulfi/19827**

4. Program learning Outcomes Mapping Matrix
Align the program learning outcomes with program courses, according to the following desired levels of performance (**I = Introduced   P = Practiced   M = Mastered**)

Course code & No.	Program Learning Outcomes											
	Knowledge and understanding				Skills				Competences			
	K.1	**K.2**	**K.3**	**K.4**	**S.1**	**S.2**	**S.3**	**S4**	**C.1**	**C.2**	**C.3**	**C.4**
ARAB 101						I			P			
BIOL 101	I					I			I			
CHEM 101	I					I			I			
CSI 101	I	I								I		
MTH 101	I				I					I		
PHYS-101	I						I				I	
SAT 101			I						I		I	
SENG 101	I				I				I			
MTH 102	I						I					I
SALM 102						I			P			
SALM 103						P			M			
SAT 202			P			P			P			
MTH 203	I				I					I		
SAT 203			P				M			P		
MTH 204	P							I				I
SAT 304		M						M			M	
MTH 221	P							I				I
MTH 231	I				I					I		
MTH 241	I				I					I		
MTH 251			P					I			P	
MTH 271	P		P							I		
MTH 311	M						M				M	
MTH 313		I					P		M			
MTH 314	M						M				M	
MTH 322				I				I		P		
MTH 323				P				P				P
MTH 334	M							P				M
MTH 335	M							M				M
MTH 342	P			I								I
MTH 343				P		M				P		

Course code & No.	Program Learning Outcomes											
	Knowledge and understanding				Skills				Competences			
	K.1	K.2	K.3	K.4	S.1	S.2	S.3	S4	C.1	C.2	C.3	C.4
MTH 346				M				P		M		
MTH 352				I		P		I				
MTH 353		I					I				P	
MTH 355				M				M			P	
MTH 381	P			I								I
MTH 405	M							P		P		
SAT 405		P						M			P	
MTH 412			M	I		P						
MTH 415	M						P			M		
MTH 416	M						P			M		
MTH 444				P	M					P		
MTH 445		P						P	M			
MTH 456		M						M	M			
MTH 472	P			P	P							P
MTH 473				P	P							P
MTH 482	P			P								P
MTH 483				M	M							M
MTH 484	P			P								P
MTH 485	M			M	M							
MTH 491		P				M				M		
MTH 492			M		M							M

* Add a table for each track (if any)

5. Teaching and learning strategies to achieve program learning outcomes
Describe policies, teaching and learning strategies, learning experience, and learning activities, including curricular and extra-curricular activities, to achieve the program learning outcomes.

- **Lectures that are considered as direct teaching between the lecturer and students, whether through class rooms or by using e-learning (blackboard). This strategy occupied the most of the time.**

- **Aimed teaching that is a strategy for developing oral discussion, creativity and imagination.**

- **Cooperative learning is a strategy to encourage students to work together by dividing them to small groups for solving and discussion about the topics and class activities.**

- **Promote problem-solving is a strategy involve that students are asked to solve**

problems related to the given topic individually and within a team.

- **Writing to learn is an important strategy where students are encouraged to write the lectures to remember more, also they are given assignments to enhance their abilities and thinking skills.**

- **Tutorials Students are attending tutorial lectures, which were mostly done by tutor staff and the lecturers' office to get more information about any topic or discuss certain tasks.**

Evidence:

(Courses specifications: annex C.1 and courses reports: annex C.2)

6. Assessment Methods for program learning outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure achievement of program learning outcomes in every domain of learning.

- **Oral**
- **Quizzes**
- **Home works**
- **Group Assignments**
- **Midterms**
- **Final Exam**
- **Projects**

Evidence:
(Courses specifications: annex C.1 and courses reports: annex C.2)

D. Student Admission and Support:

1. Student Admission Requirements

The admission process for all students of MU is performed mainly electronically via the Edu-Gate electronic system. Electronic admission starts by student's online application and completed by MU sending an acceptance letter and files of those who are accepted.

The following requirements have been stipulated for the admission of the new student:

- **An applicant for admission must have a Saudi High School Certificate - Science Section (SHSCSS) or its equivalent. The High school certificate should not be**

more than five years old.

- **Must have an Aptitude Test Certificate (ATC) administered by the National Center for Assessment in Higher Education.**
- **The minimum qualifying scores in Saudi High School Certificate - Science Section and (ATC) tests are: A total equivalent percentage of 65% (based on 30% from the SHSCSS + 30% from the ATC + 40% from cumulative Basic Science of SHSCSS).**
- **Must not have been dismissed from another university for disciplinary reasons.**
- **When applicants exceed availability, priority is given to the students with higher grades.**

Evidence:
(Deanship of Admission and Registration webpage: annex D.1)

2. Guidance and Orientation Programs for New Students

- **At the beginning of the year, there are academic guidance activities help the new students to know the equipment and facilities of the college.**
- **Distribute the new students among the academic guidance lists for all staff members.**
- **The absence of new students is followed by committee of students' affairs in the program.**
- **Some guidance and advices are provided through the university, college and program webpage.**
- **All new students are distributed among advisors to support them during their first semester and to help them regarding any academic or other issues that might face them.**
- **The satisfaction of new students is measured using the NCAAA Students Experience Survey.**

Evidence:
(Pages 19, 22 and 28 from report of academic guidance committee: annex D.2; Website of the university, college and department: annex D.3)

3. Student Counseling Services
(academic, career, psychological and social)

- **The program handbook gives details and all requirements of the program.**

- **List of academic guidance and office hours per week are declared on each faculty member office.**

- **The program shares with its students any important information related to the academic process, including the impact of COVID-19 on educational process through various technical tools such as the blackboard system, the use of official emails and various social media.**

Evidence:
(Program Handbook: annex D.4; Sample of faculty schedule: annex D.5)

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4. Special Support
(low achievers, disabled, gifted and talented)

- **The college's complex is provided all the requirements of disabled students (elevators, car parking, and special paths).**

- **Cooperative learning or other forms of teamwork are an active method to meet the needs of low achievers and gifted students.**

- **Monitoring and helping the low achievers through discussed them, and identify the causes for the low performance. They are asked for extra support in office hours.**

- **Participate the talented students in internal and external activities.**

Evidence:
(Sample of academic guidance model: annex D.6; Mathematics Club Reports: annex D.7 and annex D.8)

E. Teaching and Administrative Staff

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professors	Applied Mathematics	Actuarial Science		1	1	2
Associate Professors	Applied Mathematics	Actuarial Science		1	1	2
Assistant Professors	Pure Mathematics	Functional Analysis		1	1	2
	Statistic	Statistic		-	1	1
Lecturers						
Teaching Assistants	Pure Mathematics	Functional Analysis		3	3	6
	Applied Mathematics	Actuarial Science and partial differential equations				
Technicians and Laboratory Assistants	Technician of Labs	Technician of Labs		1	1	2
Administrative and Supportive Staff						
Others (specify)						

Evidence:
(Needed teaching staff through department meeting #3: <u>annex E.1</u>; Page 10 from report on the development of the operational plan 1441-1442: <u>annex E.2</u>)

2. Professional Development

2.1 Orientation of New Teaching Staff
Describe briefly the process used for orientation of new, visiting and part-time teaching staff

- **Orientation workshop is conducted at the beginning of every academic year for new faculty members.**
- **Program handbook.**
- **Periodical meetings with heads of academic committees and course coordinators.**
- **Workshops conducted by the deanship of development and quality assurance.**

2.2 Professional Development for Teaching Staff

Describe briefly the plan and arrangements for academic and professional development of teaching staff (e.g., teaching & learning strategies, learning outcomes assessment, professional development, etc.)

- **Workshops conducted by the deanship of development and quality assurance.**

- **Workshops conducted by the deanship of scientific research.**

- **Periodical program scientific seminars.**

- **Participating the program in quality assurance workshops that conducted by the college.**

- **Schedule of periodical workshops of quality assurance that conducted in the program.**

- **The university and department support for participating in conferences.**

Evidence:
(Announcements on the deanship of quality and skills development webpage: annex E.3; Sample of quality assurance and scientific research workshops: annex E.4; Schedule of periodical and scientific research workshops: annex E.5 and annex E.6)

F. Learning Resources, Facilities, and Equipment

1. Learning Resources.

Mechanism for providing and quality assurance of learning resources (textbooks, references and other resource materials, including electronic and web-based resources, etc.)

Learning Resources, Facilities, and Equipment is considered the backbone for supporting teaching and learning processes.

Learning Resources:

University Central Library:

In MU, there is a central library that contains mathematical sciences textbooks and references. Faculty members can find references for their course using the online MU digital library link to search and borrow the required book. Service is summarized in giving the opportunity for all male & female affiliates of the university to book sources of information in the possession of another beneficiary of the university libraries, as well as completing the borrowing process electronically through the beneficiary's library account.

To access the site Click here

http://maktabat.mu.edu.sa/

Digital Saudi Library (DSL)

DSL is the gateway to the world of knowledge largest gathering of academic e-books in the Arab world, where currently has more than (114 000), full-text e-book in various scientific disciplines, and has more than 300 global publisher like Elsevier, Springer, Pearson, Wiley, Taylor & Francis, McGraw hill And contain at books for publishers such as world-class academics. For more

https://sdl.edu.sa/SDLPortal/en/Publishers.aspx

Databases Handbook

http://mu.edu.sa/en/deanships/deanship-library-affairs/electronic-guide

College Library

There is a college library that includes all textbooks required by faculty and teaching staff.

The coordinator of scientific affairs unit gathers all required textbooks (latest updated editions) and send them to the program H.O.D to be requested. All faculty members are encouraged to check number of textbooks and references and number of students in his section. The vice dean of student affairs is responsible about contacting the university library to provide the department with the required books. Mainly, students use the course evaluation form that partially includes questions about the availability of the textbooks, references and other web or electronic versions. Replacing the textbook requires approval procedure through the Department Council. In some cases, university council approval is required.

The adequacy of textbook should be checked by the instructor before the beginning of the semester and to provide the coordinator of scientific affairs unit with the required number of textbooks.

2. Facilities and Equipment
(Library, laboratories, medical facilities, classrooms, etc.).

Facilities

Laboratories

Laboratories are well equipped for practical training of students according to the course requirements. Technicians are available for laboratory management, but there is shortage in assistants for course tutoring. The department two laboratories follow College of Science safety instructions that ensure the safety of students and equipment. The following table shows the available labs in Mathematics Department and related courses that serve.

Lab Name	Capacity (Students)	Courses Related	Software Installed
Mathematics Lab No. 1	15	Mathematical Applications in computer – Numerical Analysis(1),(2) – Applied Statistics (1),(2)	Mathematica MATLAB SPSS Maple
Mathematics Lab No. 2	30		

Mathematics department maintains all its laboratories with up-to-date equipment and ensures College of Science safety instructions. All the laboratories have signs showing equipment and safety instructions.

Classrooms

There are several classrooms shared with other College of Science programs. Mathematics Program is housed within the College of Science building and shares some common facilities with other departments. The College of Science already moved to a new location four years ago. Classrooms are adequately equipped with educational electronic with high technology media with interactive smart boards. Each classroom has acceptable seating for maximum 20-30 students. The classrooms

and the associated equipment are acceptable and provide a good environment to students and faculty in order to achieve the program educational objectives and student outcomes.

3. **Arrangements to Maintain a Healthy and Safe Environment** (According to the nature of the program)

- **All the labs have clear safety procedures.**

- **There are brochures explain the instructions and rules.**

- **There are no any dangerous materials in the labs and classrooms.**

- **The complex is designed to exist Good ventilation.**

- **There are signs explain the emergency exit and assembly points according the international criteria.**

Evidence:
(Pages from Self-study report attached in google drive store)

G. Program Management and Regulations

1. Program Management
1.1 Program Structure
(including boards, councils, units, committees, etc.)

In the beginning of every academic year the department council formulates or reformulates the internal committees for granting the quality of teaching and learning and its various operations.

Department Council

Head of Department

Board of — **Secreta** — **Facult** — **Committees**

- Advisory
- Schedules and examinations
- Study Plan
- Quality Assurance and Accreditation
- Student Support
- Scientific Research

- Media and Community
- Self – Study
- Assessment and Evaluation
- Alumni and
- Questionaries' and Statistics Committee
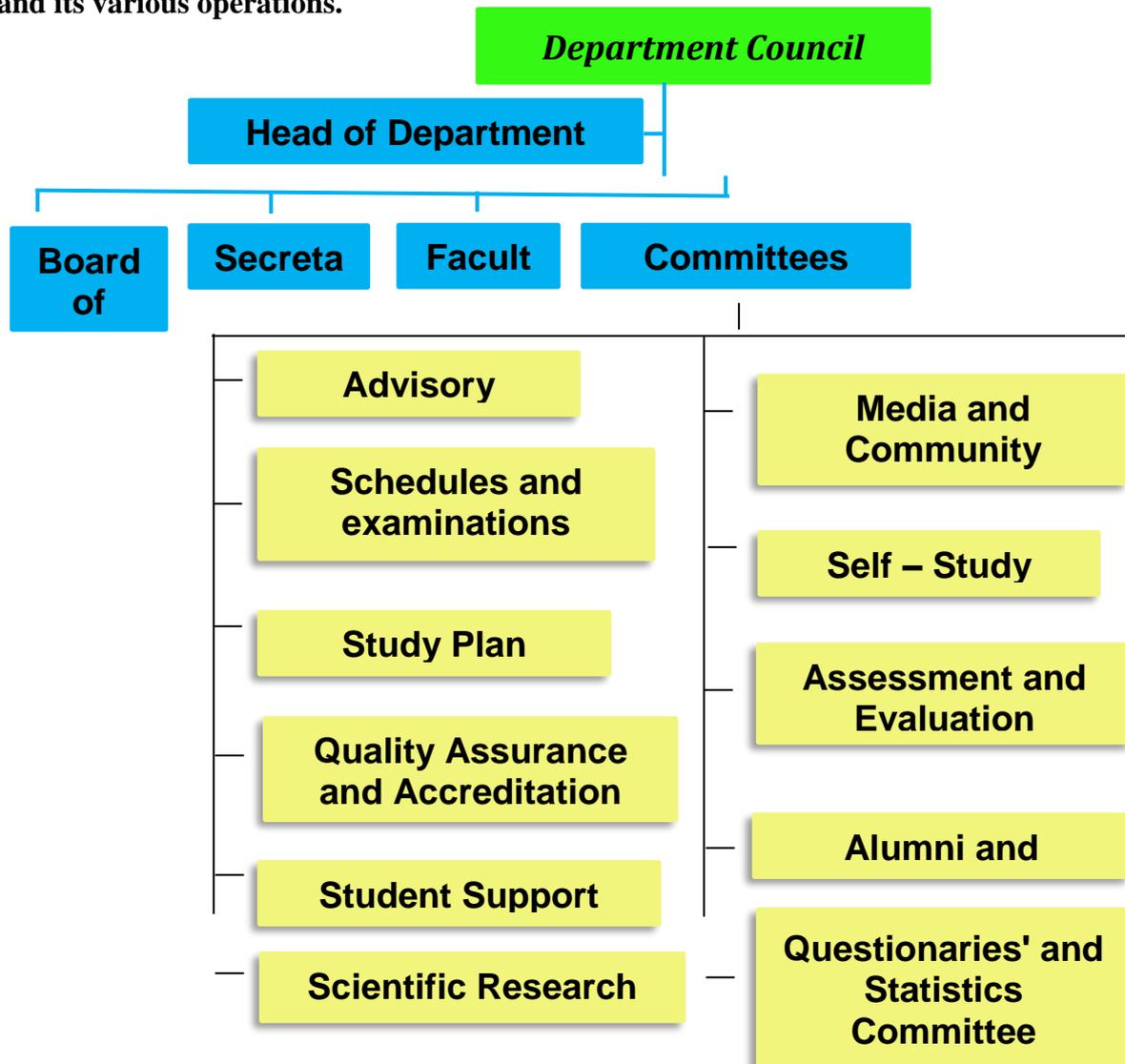
Among these committees is the quality assurance committee which has responsibility of supervising all quality assurance work and preparing, designing, implementing, analyzing then giving feedbacks and reports and action plans.

1.2 Stakeholders Involvement

Describe the representation and involvement of stakeholders in the program planning and development. (students, professional bodies, scientific societies, alumni, employers, etc.)

- **The program has advisory committee which take held twice every year for consultation and discussion of new trends and needs.**

- **The program has student council for consultation and discussion of how to provide all the facilities for the students.**

- **The alumni share their opinions and suggestions about the program goals and outcomes through surveys and direct contact by alumni unit.**

Evidence:
(Student advisory council formation: annex G.1 and annex G.2; Report of the graduates of batch: annex G.3; Advisory committee formation: annex G.4)

2. Program Regulations

Provide a list of related program regulations, including their link to online version: admission, study and exams, recruitment, appeals and complaint regulations, etc.)

The Edu-Gate in the Deanship of Admissions and Registration is available to all students to register, drop, add, and monitor their progress. All Detailed information about regulations, standards can be found in the List of study and Exams for undergraduate and Executive Rules of Al - Majmaah University.

https://edugate.mu.edu.sa/mu/ui/home.faces;jsessionid=4zvGkQ5hjdvX2XaAqdzEScruSmEVHnNY79uAEvzxWE46XkM_ULUu!2092929867

Registration Procedure:

Students are automatically registered at the beginning of each semester for some credit hours according to his academic standing. Students with GPA of 2.0 are eligible to register up to 14 credit hours, while those of 4.5 GPA or above are eligible for up to 20 credit hours as a maximum after consultant and approval of their academic advisor. Students register online (through the Edu-Gate system).

Withdrawal:

Students have the right to withdraw from an academic semester within the withdrawal period announced in the academic calendar for that semester. No withdrawal is allowed during the last five weeks before the final examination. The college's vice dean for

academic affairs must approve the withdrawal request after reviewing the authenticity of the student's reasons for withdrawal.

Transfer Students:

Transfers from other universities:

The procedure for evaluating transfer applications to the college from outside the university is as follows:

- **Fill in the university application form.**
- **Upon receiving all applications, the university registrar office sends all applications that satisfy the college requirements to the college vice dean of academic affairs office. The college vice dean of academic affairs office prepares the applicant's information for the program chairman(H.O.D), who evaluates the presented applications information and write a report and forward it to the college council for approval.**
- **The maximum allowable percentage of credit hours that could be transferred to students from other universities is 40% of the total credit hours in the curriculum.**

Transfers from other programs within the College of Science:

The procedure for evaluating transfer applications to the program from other programs within the college is as follows:

- **Student should have a cumulative GPA of more than 3.0 (out of 5.00)**
- **Fill in the between Departments Transfer Form**
- **The departmental committee studies the application and recommends acceptance for approval by departmental council. Then the recommended applications will be forwarded to the college council for final approval.**
- **All of the previous courses he has studied including his grades, his term and cumulative averages, will be entered into the academic record of a student who has changed from one major to another according to the provisions of the regulations governing examination.**

Students' rights and duties:

MU published the students code of ethics (Evidence) in 1435\1436 that contains students' rights and duties. Also, the code of ethics is published on the MU website

https://www.mu.edu.sa/sites/default/files/content/2016/10/code%20of%20ethics.pdf

 The Students Affairs Deanship published Student Violation List in 1439\1440, It contains all needed information for students Violation of regulations.

The grievance and complaints of students are applied fairly through different procedures. The following procedures can be used:

1- **The first procedure is that a student can register his complain directly though the Edu-Gate system using a link provided by the MU**

   https://edugate.mu.edu.sa/mu/ui/home.faces

All complaints are private and addressed to the college that the students belong to.

 The second procedure is to complain directly to the Head of department in a written or by oral communication. All complains are taken seriously and dealt based on MU regulations.

MU published several guides and manuals to explain regulations in a simple way for students to help them to know their rights and duties such as: class attendance, exam excuses, recorrect exam sheets, Student Council, registration, withdrawn and transferring and others. These information are available in a form of manuals and guides and published online here

https://www.mu.edu.sa/en/departments/vice-rector-educational-affairs/18575

Students Counselling:

The process of advising the College of Science students starts with an orientation program specifically designed to inform new students of the program. Lectures are presented by faculty members. College of Science has a system for student advising which includes a college committee for advising, where each program is represented by a faculty member.

A system for advising is in place for the Mathematics Program students. Each student in the program is assigned to an academic advisor, who assists him in getting familiar with the available services, understanding the University and Program policies, explaining the curriculum, and resolving problems or issues they might face. The academic advisor is also responsible for monitoring and guiding the student progress throughout his academic education.

Students' Progress Monitoring procedure:

Mathematics Program is similar to all other programs at MU as it follows the semester system. Two semesters are offered in each academic year (each semester is also called a level). The duration of each semester is fifteen weeks excluding examinations; in addition, there is an optional 8- weeks summer semester. Teaching during summer is in fact administrated whenever faculty is available.

The B.Sc. is a four-year program which consists of eight semesters. The Deanship of Admission and Registration follows the achievements of the students through the Edu-Gate system. The college of Science and mainly the vice-deanship of academic affairs manage the approval process of the final grades in the following stages:

1- The Deanship of Admission and Registration opens the Edu-Gate for inserting grades during the last three weeks.

2- The instructor entering grades of his course divided into two main grades: activities and final. The activities grade contain 60 grades of midterm exams, quizzes, homework, case study, etc., and 40 grades final exam. The instructor should fill and sign the approval grading form. At this stage, instructor can only save grades without confirmation.

3- The grading form then signed by the HOD

4- The instructor after the approval should confirm and submit grades

Students can monitor their grades through Edu - Gate using their accounts. The HOD, advisors and instructors can follow the achievements of students and following theirs progress. When a student finish all graduation requirements, it will be seen in the Edu-Gate system.

Examination and Grading System:

The examination and grading system of the program abide by the following regulations:

1- Success in a course is usually based on the combination of a grade awarded for the course work, plus a grade for the final examination.

2- Each course will have a total of 100 points, and these are distributed as follows: 60% for the coursework (quizzes, assignments, homework, mini-projects and midterm exams) and 40% for the final examination.

3- The passing mark in each course is 60% out of the total.

4 - The program grading system follows the requirements at MU which is based on a maximum of 5 as shown in the following table:

Letter Grade	Numerical	Point Average
A+	95 - 100	5.00
A	90 – Less than 95	4.75
B+	85 – Less than 90	4.50
B	80 – Less than 85	4.00
C+	75 – Less than 80	3.50
C	70 – Less than 75	3.00
D+	65 – Less than 70	2.50
D	60 – Less than 65	2.00
F	Below 60	1.00

A student's grade point average (GPA) is determined by dividing the cumulative point value of all courses attempted by the number of units in the student's semester schedule. An example is the following hypothetical student's report having five courses in a particular semester is shown in the following Table

Course No.	Credit Hours	Letter Grade	Point Average	Grade Point (Credit Hours × Point Avera
1	3	F	1.0	3.0
2	2	C+	3.5	7.0
3	4	B	4.0	16.0
4	3	D	2.0	6.0
5	3	A	4.75	14.25
Total	15	---	---	46.25

This student's semester grade point average GPA is (46.25/15) = 3.083. Similarly, for all the semesters taken, the Cumulative Grade Point Average (CGPA) is calculated. The cumulative grade point value is translated into performance standing as shown in the following Table

Grade Range	Standing
4.50 upwards	**Excellent**
3.75- 4.50	**Very Good**
2.75- 3.75	**Good**
2.00- 2.75	**Pass**
Less than 2.00	**Fail**

Attendance:

 Considering that regular course attendance is necessary for academic success, MU requires that students should attend at least 75% of the lectures and tutorials or labs. Students failing to meet this requirement in any of the courses will be prohibited from attending the final examination of that course and will have an F (Fail) grade in that course. Furthermore, the student who is absent in the final examination of a course(s) will not be given a substitute examination, except for a valid reason accepted by the college council. The attendance regulations are included in the College of Science Guide.

Student Councils:

The students council is formed by the decision of the H.O.D . with 8 members. There are annual and biannual meeting with the H.O.D to discuss students issues and to listen to their suggestions.

Evidence:

(Laws of undergraduate study and examinations and Majmaah university implementation rules: annex G.5; Program Handbook: annex D.3)

H. Program Quality Assurance

1. Program Quality Assurance System
Provide online link to quality assurance manual

 Program Webpage:
https://www.mu.edu.sa/en/colleges/college-of-science-al-zulfi/175026

 Program store in google drive:

https://drive.google.com/drive/folders/1eCwSPjKAmSuYOW9DUFH8vwX4nmGMVtTz

2. Program Quality Monitoring Procedures

There is an effective quality assurance committee and management system in the program that consistent with the college and university quality systems. This committee which reporting on this standard collected the relevant documents to this standard from different sources.

The documents include: Quality Management reports, APR, KPIs Reports. The committee reviewed the standard, sub-standards and the best practices. Then the committee met together to fill the ratings of the Self Evaluation Scales based on the analysis of the available documents.

After obtaining feedback from the independent evaluator, a committee of experienced faculty members was formed to consider this review and updated the SSRP. After addressing the external evaluator comments, the quality assurance committee reviewed the report for consistency and completeness prior to final submission to NCAAA.

Teaching staff are participate in planning, quality assurance, and decision-making processes through the program council and different committees. Employee , and students participate through the consultant committees.

The program evaluates all performance indicators of the university(33), all courses are activated by LMS system (Black Board) and the evaluation of the stakeholders is high. All these points are compared with the internal benchmark (Computer Sciences Department) and external benchmark (Al- Qassim University Mathematics program).

Evidence:
(KPI's report: annex H.2; Department annual report: annex H.3)

3. Arrangements to Monitor Quality of Courses Taught by other Departments.

- The program sends its suggestions about the contents and learning outcomes of courses taught by other Departments.
- The program takes look of these courses files and discusses the results and recommendations with the staff in charge.
- Overall improvement plan is prepared by considering the recommendations by staff members in their courses reports at the end of each term.

Evidence:

4. Arrangements Used to Ensure the Consistency between Main Campus and Branches (including male and female sections)

- **By regular communication between them through meeting, telephones and emails.**
- **Existence of coordinator for each course who organize the following:**
  - **Completion and standardization of (teaching – midterms - final exam - etc.).**
  - **Coordinate with the other faculty in the overall course content.**
  - **Assurance of identification of the assignments in both sections (male – female).**
- **Participating of the faculty members (male –female) in all department committees.**

Evidence:
(Department meeting #12 (i.e. Distribution courses coordinators): <u>annex H.1</u>; Sample of coordinator emails: <u>annex H.4</u>)

5. Arrangements to Apply the Institutional Regulations Governing the Educational and Research Partnerships (if any).

- **The program applies the regulations governing the educational and research partnerships through deanship of community service and deanship of scientific research.**
- **The program has consultant council which take held twice every year for consultation and discussion of new trends and needs.**

6. Assessment Plan for Program Learning Outcomes (PLOs), and Mechanisms of Using its Results in the Development Processes

The Mathematical Program assesses and evaluates the extent to which its PLOs are being met using a variety of instruments and methods on a regular basis. These procedures are used to collect the data needed for evaluation. After that, evaluation in the form of data interpretation is carried out to see how effectively the outcomes are being met. Finally, the results of both the assessment and evaluation processes are used to improve the program on a continuing basis. The assessment, evaluation, and

feedback stages for the program's continuous improvement follow the three steps below:

1. The PLOs' assessment tools (i.e., collecting relevant data) are either direct or indirect. Direct assessments of PLOs are generally based on course work, whereas indirect assessments are usually based on questionnaires. This step includes designing survey forms and questions that are appropriate for the specific and applicable date.

2. The evaluation (interpreting) processes are then followed by analyzing and comparing the data to a pre-set performance indicator, as well as reviewing those areas that scored relatively low.

The mathematical program's Assessment and Evaluation Plan (AEP) aims to evaluate all learning outcomes over the course of two academic years (40-41/ 41-42). The plan's results will be used to improve the Mathematical Program's Mission, course objectives, teaching tactics, assessment methods, and learning outcomes. They will give decision-makers a clear picture to allow them to make future decisions and understand the program's strengths and weaknesses. The process of program improvement is demonstrated in the figures below:

The following table shows the method of distributing the measurement of learning outcomes from the mathematics
Program for the academic year 1440/1441:

FIRST TERM	SECOND TERM
K1: Reproduce fundamentals and concepts of Mathematics and basic science	K2: Use computer mathematical software in solving mathematical Problems
K4: Construct mathematical arguments and proofs and apply the underlying structures of Mathematics	K3: Acquire and outline mathematical knowledge and skills
S1: Communicate mathematical ideas, both orally and in writing	S2: Demonstrate the work independently and within a team
S4: Analyze and realize the codes of ethics and their importance	S3: Manipulate mathematical problems practically

C3: Critically interpret numerical and graphical data	C1: Show the ability for decision making
C4: Analyze a mathematical problem and suggest appropriate tools for studying it in depth	C2: Identify , formulate and solve Mathematical Problems

Evidence:
 (Learning Outcomes Assessment Plan: annex H.10)

7. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Effectiveness of teaching & assessment	Students	Surveys	End of academic year
Learning resources	Students	Surveys	End of academic year
Effectiveness of teaching & assessment	Graduates	Surveys	End of academic year
Learning resources	Graduates	Surveys	End of academic year
Effectiveness of teaching & assessment	Alumni	Surveys	End of academic year
Learning resources	Alumni	Surveys	End of academic year
Leadership and communication skills	Alumni	Surveys	End of academic year
Leadership, effectiveness of teaching & assessment, learning resources, partnerships	Internal independent evaluation	Visits	End of academic year
Leadership, effectiveness of teaching &	External independent evaluation	Visits	End of academic year

Program Specification

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
assessment, learning resources, partnerships			

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, partnerships, etc.)

Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others (specify)

Evaluation Methods (e.g., Surveys, interviews, visits, etc.)

Evaluation Time (e.g., beginning of semesters, end of academic year, etc.)

Evidence:

(Questionnaire Reports; Report of program survey: **annex H.5**, Report of learning experience survey: **annex H.6** and Report of courses evaluation survey: **annex H.7**, Internal independent evaluation: **annex H.8**; External independent evaluation: **annex H.9**)

8. Program KPIs*

The period to achieve the target (**2019 – 2022**) year.

Internal benchmark: Computer Science Dept. 1440/1441H
External benchmark: Math Dept. Qassim University H 1440 – 1441

Mathematics Program KPIs

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
1	KPI 1	Percentage of achieved indicators of the program operational plan objectives	90 %	KPIs report	End of academic year
2	MU-P1.a	Stakeholder evaluation of community services	4.75	Survey	End of academic year
	MU-P1.b			Survey	End of academic year
3	KPI 2	Students' Evaluation of quality of learning experience in the program	3.8	Survey	End of academic year
4	KPI 3	Students' evaluation of the quality of the courses	4.25	Survey	End of academic year
5	KPI 4	Completion rate	45 %	From Deanship of Admission and Registration, annual report of department	Beginning of academic year
6	KPI 5	Percentage of students entering programs who successfully complete first year.	65 %	From Deanship of Admission and Registration, annual report of department	Beginning of academic year

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
7	KPI 6	Students' performance in the professional and/or national examinations	25 %	From Kiffayat report	Beginning of academic year
8	KPI 7	Graduates' employability and enrolment in postgraduate programs Percentage of graduates from the program who within a year of graduation were a. employed b. enrolled in postgraduate programs during the first year of their graduation to the total number of graduates in the same year	55 % 10%	From Graduation committee report	Beginning of academic year
9	KPI 8	Average number of students in the class	9.00	From Deanship of Admission and Registration: times tables	End of academic year
10	KPI 9	Employers' evaluation of the program graduates proficiency	3.5	Survey	End of academic year
11	KPI 10	Students' evaluation of the offered services	3.8	Survey	End of academic year
12	MU-P2	Proportion of students have one notification or more.	1.5	From Deanship of Admission and Registration	Beginning of academic year
13	MU-P3	Proportion of deprived students.	5.00	From Deanship of Admission and Registration	Beginning of academic year
14	MU-P4	The number of student searches	2.00	From scientific research committee report	Beginning of academic year
15	KPI 11	Ratio of students to teaching staff	9.00	From Deanship of Admission and Registration, annual report of department	Beginning of academic year
16	KPI 12	Percentage of teaching staff distribution Percentage of teaching staff distribution based on a.Gender b. Branches c. Academic Ranking	4: 6: 18	From Deanship of Admission and Registration, annual report of department	Beginning of academic year
17	KPI 13	Proportion of teaching staff leaving the program	0 %	From Deanship of Admission and Registration, annual report of department	End of academic year

Program Specification

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
18	KPI 14	Percentage of publications of faculty members	50 %	From scientific research committee report	Beginning of academic year
19	KPI 15	Number of refereed publications / member of teaching staff: x/1	2.37	From scientific research committee report	Beginning of academic year
20	KPI 16	Number of citations/ All teaching staff: X/1	255	From scientific research committee report	Beginning of academic year
21	MU-P5	Percentage of teaching staff participating in professional development activities	90 %	Survey	End of academic year
22	KPI-P17.a	Stakeholder evaluation of the learning resources	4.4	Survey	End of academic year
23	KPI-P17.b		4.6	Survey	End of academic year
24	KPI-P17.c		4.35	Survey	End of academic year
25	KPI-P17.d		4.55	Survey	End of academic year
26	KPI-P17.e		4.7	Survey	End of academic year
27	KPI 18	Stakeholder evaluation ratings of the Mission Statement and Objectives.	4.55	Survey	End of academic year
28	KPI 19	Proportion of courses in which there was independent verification within the institution.	86 %	From Quality Committee of Course specification and reports	End of academic year
29	KPI 20	Proportion of courses in which student evaluations were conducted during the year.	100 %	From courses evaluation report	End of academic year
30	KPI 21	Proportion of students participating in extracurricular activities.	85 %	From student affair committee report	End of academic year
31	KPI 22	Number of community education programs provided by the program.	8.0	From community services committee report	End of academic year

* including KPIs required by NCAAA

Recommendation

Recommendations based on key performance indicator (KPI)

analysis 1441/1442H

1. Enhancing the mechanism to collect survey data.

2. Automation of collecting and measuring of data for KPIs.

3. Increasing student evaluation of academic and career counselling.

4. Keep tracking of the Academic Advising activities and improve its work.

5. Updating the study plan especially the first year courses to involve the topics of difficulties, which may face the students in their secondary study.

6. Opening of new tracks in the program to increase the number of new students.

7. Writing recommendations and action plan and to be followed in the operational of the next academic year.

8. Studying the detailed subjects of the exam and analyzing the strong and weaknesses to enhance the teaching strategies in specific fields.

9. Encourage lecturers to join scientific research activities and seminars to enhance their skills and abilities.

10. Assist female lecturers in the female section in obtaining PhD admission internally or externally.

11. Increment of PhD holders in female section by contracting with new staff.

12. Instructors should be encouraged to participate in external funds from external research centers.

13. Updating the software by communicating with the Deanship of Information Technology and providing them with the modern programs required in the educational process.

Evidence:
(KPIs report: **annex H.2**)

I. Specification Approval Data

Council / Committee	*THE DEPARTMENT COUNCIL*
Reference No.	*5TH MEETING*
Date	*2 /2 / 1441 H*