Program Specification

(Postgraduate Programs)

Program Name:	**Master of Science in Mathematics**
Program Code (per the Saudi Standard Classification of Educational Levels and Specializations):	**054101**
Qualification Level:	7
Department:	Mathematics and Statistics
College:	Science
Institution:	**Imam Mohammad Ibn Saud Islamic University**
Program Specification:	**New** ☐ **updated*** ☒
Last Review Date:	**2024/10/8**

*Attach the previous version of the Program Specification.

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A. Program Identification and General Information:

1. Program's Main Location:

Main Campus for the Male Section

2. Branches Offering the Program (if any):

King Abdullah City for the Female Section.

3. System of Study:

☐ Coursework & Thesis	✓ Coursework

4. Mode of Study:

✓ On Campus	☐ Distance Education	☐ Other ……(specify)

5. Partnerships with other parties (if any) and the nature of each: None

- Partnership Arrangement:
- Type of Partnership:
- Duration of Partnership:

6. Professions/jobs for which students are qualified:

331404 Statistics Assistant.
121117 Statistics Manager.
211102 Astronomy Specialist.
212003 Statistician.
231017 Mathematics and Statistics Lecturer.

7. Relevant occupational/ Professional sectors:

- Banking.
- Insurance.
- Public Health.
- Telecommunications
- Financial Services.
- Market research.
- Operational research.
- Agriculture.
- Education.

8. Major Tracks/Pathways (if any): N.A.

Major track/pathway	Credit hours (For each track)	Professions/jobs (For each track)
N.A.		

9. Exit Points/Awarded Degree (if any): Yes

Exit points/Awarded degree	Credit hours
Intermediate exit points/awarded degree	Credit hours
Higher Diploma in Mathematics	24

Exit Point Professional Occupations/Jobs

331404 Statistics Assistant.
121117 Statistics Manager.
211102 Astronomy Specialist.
212003 Statistician.

10. Total credit hours: (41)

B. Mission, Goals, and Program Learning Outcomes

1. Program Mission:
To prepare well qualified staff who will contribute effectively in economic and social developments of Saudi Arabia and who will work innovatively on enhancing the higher education system of the country in the field of mathematics and its applications to other disciplines.

2. Program Goals:
PG1. Developing the student's abilities and potentials to enhance their mathematical skills. PG2. Providing the students with appropriate skills to become independent learners and be experienced in doing scientific research. PG3. Providing a strong package of professional skills to assure good integration in careers that uses mathematics and to contribute to economic and social developments of Saudi Arabia. PG4. Enhancing the student's scientific background, to continue graduate studies in the Ph.D. at national or international universities.

3. Program Learning Outcomes:*	
Knowledge and Understanding:	
K1	Demonstrate a solid understanding of advanced topics in Mathematics.
K2	Outline the areas of specialization through studying specific topics relevant to research in mathematics.
Skills:	
S1	Apply advanced mathematical knowledge to analyze problems and develop innovative solutions.
S2	Develop critical skills with regard to literature searching, appraising and evaluating from a variety of sources and synthesizing the results.
S3	Communicate in a clear and concise manner orally, on paper and using IT.
S4	Make efficient use of computer for acquiring, analyzing and presenting information.
Values, Autonomy, and Responsibility:	
V1	Demonstrate integrity, professional and academic ethics, participation in finding constructive solutions to some societal issues, and a commitment to responsible citizenship.
V2	Self-evaluate of the level of learning and performance, insist on achievement and excellence, and make logical decisions supported by evidence and arguments independently.
V3	Lead teamwork with functional flexibility and effectiveness, and take responsibility for professional development, participating in developing the group's performance, and enhancing the quality of life.

* * Add a table for each track (if any)

Exit Point Program Learning Outcomes:*	
Knowledge and Understanding:	
K1	Exhibit a strong grasp of advanced mathematical topics.
K2	Identify areas of specialization by studying specific topics related to mathematical research.
Skills:	
S1	Utilize advanced mathematical knowledge to analyze complex problems and propose innovative solutions.
S2	Develop critical skills in researching, evaluating, and synthesizing information.
S3	Communicate in a clear and concise manner orally, on paper and using IT.
S4	Employ good use of the computer for gathering, analyzing, and presenting information.

Values, Autonomy, and Responsibility:	
V1	Exhibit integrity, uphold professional and academic ethics, contribute to solving societal issues, and demonstrate a commitment to responsible citizenship.
V2	Assess your own learning and performance, strive for improvement, and make decisions based on clear reasoning and evidence.
V3	Work well in teams, adapt to different roles, take responsibility for your growth, help improve the team's performance, and contribute to bettering the overall environment.

C. Curriculum:

1. Curriculum Structure:

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Course	Required	7	28	68.3%
	Elective	3	9	22.0%
Graduation Project (if any)		1	4	9.7%
Thesis (if any)		0	0	0%
Field Experience(if any)		0	0	0%
Others (.....)		0	0	0%
Total		11	41	100%

* Add a separate table for each track (if any).

2. Program Courses:

The Master's degree program in Mathematics follows a two-semester system, requiring a minimum study duration of 2 years (full-time).

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	MAT 6121	Advanced Linear Algebra	Required	None	4(3,0,2)	Program
	MAT 6171	Topology	Required	None	4(3,0,2)	Program
	MAT 6141	Numerical Analysis	Required	None	4(3,0,2)	Program
Level 2	MAT 6111	Introduc. to Measure and Integration	Required	None	4(3,0,2)	Program
	MAT 6113	Introduc. to Functional Analysis	Required	None	4(3,0,2)	Program
	MAT 6123	Algebra (1)	Required	None	4(3,0,2)	Program
Level 3	MAT 6231	Partial Differential Equations	Required	MAT 6111 MAT 6113	4(3,0,2)	Program
	MAT 6xxx	Elective Course 1 (List A or List B)	Elective	None	3(2,0,2)	Program
	MAT 6xxx	Elective Course 2 (List A or List B)	Elective	None	3(2,0,2)	Program
Level 4	MAT 6xxx	Elective Course 3 (List A or List B)	Elective	None	3(2,0,2)	Program
	MAT 6299	Research Project	Elective	None	4(4,0,0)	Program

* Include additional levels (for three semesters option or if needed).
** Add a table for the courses of each track (if any)

Exit Point: To obtain a higher diploma in mathematics, all courses of the first year of the program's study plan must be completed, provided that the total number of credit hours earned is not less than 24 hours.

Elective Courses:

List A

1. MAT 6215: Applied Functional Analysis;
2. MAT 6242: Numerical Methods for ODEs;

3. MAT 6245: Numerical Optimization;
4. MAT 6247: Statistical Theory and Inference;
5. MAT 6249: Finite Markov Chains and Applications;
6. MAT 6253: Combinatorial Optimization;
7. MAT 6261: Coding Theory & Cryptography;
8. MAT 6263: Mathematical and Computational Modeling;
9. MAT 6265: Mathematical Modeling and Infections;
10. MAT 6281: Selected Topics in Applied Mathematics (1);
11. MAT 6283: Selected Topics in Applied Mathematics (2).

List B

1. MAT 6217: Introduction to Operator Theory;
2. MAT 6219: Introduction to Ergodic Theory;
3. MAT 6224: Algebra (2);
4. MAT 6226: Number Theory;
5. MAT 6228: Group Representation;
6. MAT 6233: Ordinary Differential Equations;
7. MAT 6251: Graph Theory & Combinatorics;
8. MAT 6255: Algebraic Graph Theory;
9. MAT 6275: Differential Geometry;
10. MAT 6285: Selected Topics in Pure Mathematics (1);
11. MAT 6287: Selected Topics in Pure Mathematics (2).

3. Course Specifications:

Insert hyperlink for all course specifications using NCAAA template (T-104)

Attached

4. Program learning Outcomes Mapping Matrix:

Align the program learning outcomes with the program's courses according to the desired performance levels.
(I = Introduced, P = Practiced, M = Mastered).

Course code & No.	Program Learning Outcomes								
	Knowledge and understanding		Skills				Values, Autonomy, and Responsibility		
	K1	K2	S1	S2	S3	S4	V1	V2	V3
MAT 6111	I	I	I	I	I	I	I	I	P
MAT 6121	I	I	I	I	I	I	I	I	P
MAT 6141	I	I	I	I	I	I	I	I	P
MAT 6113	I	I	I	I	I	I	I	I	P
MAT 6123	I	I	I	I	I	I	I	I	P
MAT 6231	I	I	I	I	I	I	I	I	P
MAT 6171	P	I	I	I	M	M	M	P	P
MAT 6215	M	P	P	P	M	M	M	P	P
MAT 6217	M	P	P	P	M	M	M	P	P
MAT 6219	M	P	P	P	M	M	M	P	P
MAT 6242	M	P	P	P	M	M	M	P	P
MAT 6243	M	P	P	P	M	M	M	P	P
MAT 6245	P	I	I	I	P	P	P	I	I
MAT 6247	P	I	I	I	P	P	P	I	I
MAT 6249	P	I	I	I	P	P	P	I	I
MAT 6253	P	I	I	I	P	P	P	I	I
MAT 6255	P	I	I	I	P	P	P	I	I
MAT 6261	P	I	I	I	P	P	P	I	I
MAT 6263	M	P	P	P	M	M	M	P	P
MAT 6265	M	P	P	P	M	M	M	P	P
MAT 6281	M	P	P	P	M	M	M	P	P
MAT 6283	P	I	I	P	M	M	M	P	P
MAT 6224	P	I	I	P	M	M	M	P	P
MAT 6226	M	P	P	P	M	M	M	P	P
MAT 6228	M	P	P	P	M	M	M	P	P
MAT 6233	M	P	P	P	M	M	M	P	P
MAT 6251	M	P	P	P	M	M	M	P	P
MAT 6275	M	P	P	P	M	M	M	P	P
MAT 6285	M	P	P	P	M	M	M	P	P
MAT 6287	M	P	P	P	M	M	M	P	P
MAT 6299	M	M	M	M	M	M	M	M	M

* Add a separate table for each track (if any).

5. Teaching and learning strategies applied to achieve program learning outcomes:

Describe teaching and learning strategies to achieve the program's learning outcomes in all areas.

To achieve program learning outcomes, a variety of teaching and learning strategies, such as lectures and tutorials, will be utilized alongside curricular and extra-curricular activities. This approach aims to create an engaging learning environment that connects theoretical knowledge with real-world applications. By promoting collaboration, critical thinking, and ethical engagement, the program prepares graduates to address complex challenges and make meaningful contributions to their communities and industries. This comprehensive strategy ensures students are equipped to meet the Program Learning Outcomes in knowledge, skills, values, autonomy, and responsibility.

5.1. Teaching and Learning Strategies.

5.1.1. Active Learning Techniques

- Collaborative Group Projects: Students work in diverse teams to tackle complex mathematical problems. Each project requires them to analyze a real-world issue (e.g., climate modeling, economic forecasting) and develop solutions using mathematical concepts. This promotes analytical and problem-solving skills (S1) while enhancing teamwork and communication.
- Peer Teaching Sessions: Organize structured peer-led review sessions where students take turns explaining key concepts to their classmates. This method not only reinforces their understanding but also hones their ability to communicate mathematical ideas clearly and accurately (S4).

5.1.2. Project-Based Learning

- Real-World Problem Solving: Assign projects that require students to design mathematical models addressing current societal challenges, such as optimizing resource allocation in healthcare or predicting trends in social media. This approach integrates theoretical knowledge with practical application (S2).
- Interdisciplinary Research Projects: Encourage students to collaborate with peers from other disciplines (e.g., computer science, economics) to explore how mathematics can be applied across various fields, illustrating its versatility (K2). For example, a project might involve statistical analysis of economic data to forecast market trends.

5.1.3 Technology Integration

- Software Training Workshops: Offer hands-on workshops on using mathematical software tools e.g., MATLAB, R, Python, SPSS. Students learn to apply these tools for data analysis, simulations, and visualizing mathematical concepts, thereby developing their proficiency in utilizing technology (S5).
- Online Collaboration Platforms: Utilize platforms such as Google Workspace or Microsoft Teams to facilitate group work and discussions. Students can collaborate on projects, share resources, and provide peer feedback, enhancing their engagement and teamwork skills.

5.1.4. Inquiry-Based Learning

- Research Assignments: Assign students to conduct literature searches on specific mathematical topics, requiring them to critically appraise sources and synthesize findings into a cohesive report. This builds their research skills and ability to analyze diverse materials (S3).
- Problem Posing and Exploration: Create opportunities for students to formulate their own mathematical questions based on real-world scenarios. This approach encourages independent thinking and critical analysis (V2), allowing them to explore topics that pique their interest.

5.2. Curricular Activities

5.2. 1. Workshops and Seminars

- Guest Lectures and Industry Panels: Invite professionals from various fields to share their experiences and discuss how they use mathematics in their careers, including mathematical education subjects. This exposure helps students understand the relevance of their studies and the ethical considerations involved in applying mathematics (K2, V1).
- Skill Development Workshops: Provide workshops focused on specific skills, such as data visualization, mathematical programming, and ethical decision-making. These sessions can include case studies that prompt students to consider the societal impact of their mathematical work.

5.2. 2. Assessment and Feedback

- Formative Assessments: Implement regular quizzes, homeworks, Exams, presentations, and project reviews to provide ongoing feedback to students. This helps them assess their understanding and encourages self-evaluation of their learning (V2).
- Portfolio Development: Require students to create a portfolio documenting their projects, research papers, and reflections on their learning journey. This portfolio not only showcases their skills but also encourages reflective practice.

5.3. Extra-Curricular Activities

5.3.1. Math/Science Clubs

- Study Groups and Tutoring Programs: Establish student-led study groups and peer tutoring sessions. These initiatives create a supportive learning environment where students can collaborate on challenging topics and help each other succeed (V3).
- Outreach Initiatives: Organize community outreach programs, such as math tutoring for local high school students or workshops for underrepresented groups. This promotes responsible citizenship and ethical engagement with the community (V1).

5.3.2. Conferences and Competitions or national specific exam

- Participation in Math Competitions: Encourage students to enter national and international math competitions, fostering their analytical and creative problem-solving abilities (S1).
- Academic Conferences: Support students in attending and presenting at academic conferences, allowing them to share their research, network with professionals, and improve their communication skills (V3).

5.3.3. Leadership Development

- Mentorship Programs: Pair students with faculty or industry mentors who can provide guidance on academic and career choices. This helps students develop a sense of responsibility and ethical decision-making (V1).
- Leadership Roles in Group Projects: Assign students' roles within their project teams that allow them to take on leadership responsibilities. This encourages adaptability and the development of leadership skills necessary for professional success (V3).

6. Assessment Methods for program learning outcomes:

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

The program should devise a plan for assessing Program Learning Outcomes (all learning outcomes should be assessed at least once in the program's cycle).

6.1. Direct Assessment Methods

6.1.1. Exams and Quizzes

Midterm and Final Exams: Each semester will include a midterm and a final exam. These assessments will test students' understanding of fundamental principles of mathematics (K1) and their ability to articulate mathematical concepts and apply them in various contexts (K2). The exams will consist of

a mix of multiple-choice questions, problem-solving exercises, and theoretical questions, ensuring comprehensive coverage of the material.
Weekly homework/Quizzes: Short quizzes will be administered at the end of each week to evaluate students' grasp of recent topics. These quizzes will focus on analytical skills and problem-solving (S1), helping identify areas that may require further review before major exams.

6.1.2. Projects and Presentations

Mathematical Modeling Projects: Students will work on projects that require them to design mathematical models addressing real-world problems, such as optimizing resource allocation in supply chains or analyzing population growth. Each project will culminate in a presentation, allowing students to demonstrate their communication skills (S4) and their ability to apply theoretical knowledge in practical scenarios (S2).
Research Papers: Assigned in last semester of Year 2, students will draft a research paper that involves conducting literature searches, critically appraising sources, and synthesizing findings related to a specific mathematical topic or application. This assessment will gauge their research abilities (S3) and understanding of the historical context and applications of mathematics (K2).

6.1.3. Peer and Self-Assessment

Peer Reviews: Throughout the program, students will engage in peer reviews for group projects and presentations. This method encourages collaborative learning and accountability while allowing students to practice critical evaluation (V3).
Self-Reflection Journals: Students will maintain journals (personal records) throughout the program to document their learning experiences, ethical considerations, and self-evaluations of their performance (V2). These journals will be submitted at the end of each academic year for assessment, focusing on personal growth and reflection.

6.2. Indirect Assessment Methods

6.2.1. Surveys and Questionnaires

Student Feedback Surveys: At the end of each semester, students will complete surveys assessing their learning experiences, perceived skill development, and the effectiveness of instructional methods. The feedback collected will be used to adjust the curriculum and teaching strategies. In addition, they will assess their ability regarding all PLOs.
Exit Surveys: Conducted during graduation, these surveys will ask students to reflect on their overall educational experience and how well the program prepared them for their careers, particularly regarding ethical behavior (V1) and their ability to self-evaluate (V2).

6.2.2. Focus Groups

Alumni Focus Groups: Organized every two years, these focus groups will involve recent graduates discussing the relevance of the skills and knowledge gained in the program to their professional lives. Insights from these discussions will help evaluate the program's effectiveness and inform future curriculum development.

6.2.3. Course Evaluations

End-of-Semester Evaluations: Conducted regularly at the end of each semester, these evaluations will assess course content, teaching effectiveness, and overall student satisfaction. The results will provide indirect insights into the achievement of learning outcomes and inform potential improvements.

6.3. Assessment Plan Overview Cycle Structure

6.3.1. Assessment Frequency:

Each PLO will be assessed at least twice throughout the program, with one additional assessment conducted in related degrees, ensuring a comprehensive evaluation including mapping PLOs to courses.

6.3.2. Reflective Analysis:

Students will also submit a reflective analysis that evaluates their personal growth, learning outcomes from the experience, and their ability to critically assess their contributions and responsibilities (V2). This analysis will encourage students to connect their practical experiences back to the theoretical frameworks studied throughout the program.

D. Thesis and Its Requirements (if any):N.A.

1. Registration of the thesis:

(Requirements/conditions and procedures for registration of the thesis as well as controls, responsibilities and procedures of scientific guidance)

2. Scientific Supervision:

(The regulations of the selection of the academic supervisor and their responsibilities, as well as the procedures/ mechanisms of the scientific supervision and follow-up)

3. Thesis Defense/Examination:

(The regulations for selection of the defence/examination committee and the requirements to proceed for thesis defence, the procedures for defence and approval of the thesis, and criteria for evaluation of the thesis)

H. Student Admission and Support:

1. Student Admission Requirements:

In addition to the conditions mentioned in the Chapter 5, article (13) p. 10 of the Unified Policies of Graduate Studies in Saudi Universities (UGSP) and Regulations Governing Postgraduate Studies in Universities - Issued by University Affairs Council Resolution No. 2/9/1444 (https://units.imamu.edu.sa/deanships/GRADUATE/circulations/Documents/Law1.pdf),

applicants to the Master Program should fulfil the followings:

- The applicant should have a B.Sc. degree in mathematics from an official local university or a recognized international university with a GPA equals or equivalent to 3.75 out of 5.
- The applicant should pass the entry exam set by the Mathematics Graduate Committee (MGC).
- The applicant should get a TOEFL score at least 400 or equivalent scores in other recognized international English tests.
- An applicant who was admitted for this program with his(her) B.Sc. in mathematics from a college other than the College of Science may be required to finish successfully some complementary undergraduate courses before registering any course of the master program.
- The complementary undergraduate courses mentioned in (d) are determined for each student by the Mathematics Graduate Committee and should be taken within three academic trimesters from his(her) enrolment in the program and being dealt on that according to article (18) of (UGSP).
- Students who are enrolled in another recognized mathematics master program having at least a GPA equal or equivalent to 3.75 out of 5 may be transferred to the program upon establishing all related conditions mentioned above and upon fulfilling the requirements mentioned in article (30) of (UGSP).
- Applicants who got a B.Sc. in a scientific major other than mathematics will be dealt case by case and an appropriate decision for them will be made.

Students who are enrolled in another graduate program in Al-Imam University or in another recognized master program other than mathematics will be dealt case by case and an appropriate decision for them will be made according to article (31) of (UGSP).

2. Guidance and Orientation Programs for New Students:

(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

None

3. Student Counseling Services:

(Academic, professional, psychological and social)

(Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level)

- The lecturer for each course allocates 6 office hours per week advertised on his /her own timetable, and reserved as part of his/her teaching schedule to help the students on any academic problems/difficulties.
- The student is able to get individual consultation and academic advice appointment with teaching staff via e-mail or phone calls.
- A list of teaching staff members with their room numbers, their phone numbers and their e-mail addresses are given in the MSc Mathematics Handbook and Department website.
- Each admitted student in the program has an academic advisor who can help him (her) to select courses and locate resources.
- Master Academic Advisors are assigned to admit students by MGC upon starting the program to guide and help him (her) throughout his (her) academic program.
- The Master Academic Advisor is trained to know all degree requirements from beginning to end, and can assist him (her) in planning courses in an appropriate sequence.
- In the second year, the student should take the Research Project course (MAT 6299) and chooses a research supervisor who will assist and guide him (her) in the compulsory research project.

On the other hand, a departmental advisor can provide information, advice and support in relation to accommodation, emotional difficulties, assessment of needs and provision of support related to disability, student funding, general welfare, student discipline and complains and part-time work.

4. Special Support:

(Low achievers, disabled, and talented students).

Student with special needs or disabilities may be allowed to take only four courses (instead of six courses) in an academic year upon the consent of (MGC) and the supervisor.

E. Faculty and Administrative Staff:

1. Needed Teaching and Administrative Staff:

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professor	Mathematics	Pure/Applied	None	10	5	15
Associate Professor	Mathematics	Pure/Applied	None	10	5	15
Assistant Professor	Mathematics	Pure/Applied	None	5	5	10
Technicians and Laboratory Assistants	None			0	0	0
Administrative and Supportive Staff	None			0	0	0
Others (specify)	None			0	0	0

F. Learning Resources, Facilities, and Equipment:

1. Learning Resources:

Learning resources required by the program (textbooks, references, e-learning resources, web-based resources, etc.)

For the planning and acquisition of learning resources the MGC proceeds as follows:
STEP 1: For each course the MGC assigned a faculty members committee to do the followings: Course description (preliminary syllabus),
Recommend Lists of Required Textbooks, Essential References Materials (Journals, Reports, etc.), Recommended Textbooks and Reference Material (Journals, Reports, etc.), Electronic Materials (eg. Web Sites, social media, Blackboard, etc.), and other learning material such as computer-based programs/CD, professional standards or regulations and software.
STEP 2: MGC collects learning resources of all courses and submits the required lists to the Head of the department to get the approbation of the department council.
STEP 3: After the department council approbation the Department Head asks the College Dean to provide the Required lists of Learning Resources through the University Central Library and/or the IT Deanship.

2. Facilities and Equipment:

(Library, laboratories, classrooms, etc.)

For the planning and acquisition resources for library, laboratories, and classrooms the MGC proceeds as follows:
STEP 1: Evaluation of the locals assigned for graduated programs: Library (equipped with textbooks and references provided by the Central Library), Laboratories (equipped with appropriate computers and software), and classrooms.

STEP 2: In the shortage case of supplies the MGC will report that to the Department Head in order to ask the College Dean to provide such supplies through the University Central Library and/or the IT Deanship.

3. Procedures to ensure a healthy and safe learning environment:

(According to the nature of the program)

N.A.

G. Program Quality Assurance:

1. Program Quality Assurance System:

Provide a link to the quality assurance manual.

https://imamuedusa-my.sharepoint.com/:b:/g/personal/alakhalil_cloud_imamu_edu_sa/EZA2RBjov-dFj1uzGyvHQN8BxmRp20mCEwZ1oWr8wJsbvQ?e=MhYenb

Program review and its development is periodically assessed through the following processes:

- Courses reports are submitted to the program manager every trimester.
- Appropriate teaching staff committee is in the charge of assessment and modification.
- Prepare and monitor the annual program report.
- Conduct and analyze surveys opinion of the students about the courses and the program.
- Conduct and analyze surveys opinion of the employers about the program.
- Program manager reviews the proposals submitted by the previous committees and makes appropriate decision after approbation of the department council.
- Monitor a global review for the development of the program periodically each five years if necessary.

All the previous processes follow the Teaching\Learning Quality Assurance Process Diagram:

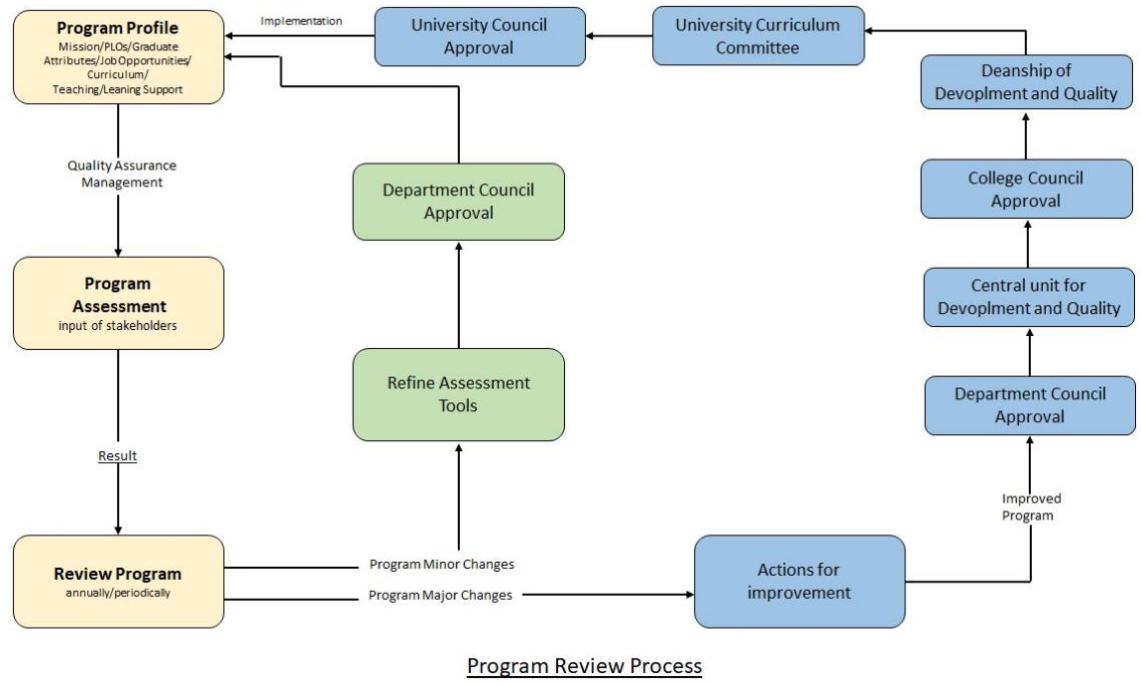

Figure 2 - Teaching\Learning Quality Assurance Process Diagram

2. Program Quality Monitoring Procedures:

- At the end of each trimester the course instructor should complete a course report, including a summary of student questionnaire responses appraising progress and identifying changes (course contents and/or textbooks and/or references) that need to be made if necessary. In the case where changes are recommended the MGC report that to the Department Head in order to take actions.
- Students are asked at the end of this course to fill in an anonymous questionnaire on their assessment of the course. The forms will be analyzed, and the summary of results will be reported to the Department Head for evaluation and then to take actions.

3. Procedures to Monitor Quality of Courses Taught by other Departments:

N.A.

4. Procedures adopted to ensure consistency between the program's sections (male and female sections, if any).

- **The students of both campuses are taught at the same time, in the same section, and by the same teacher.**

Furthermore, they have the same exams, homeworks, and required reports

5. Assessment Plan for Program Learning Outcomes (PLOs):

First, it "Mastered" level of performance with be a node of assessment of opportunity. The Mechanism, for demonstrating achievement of the learning outcomes, is an ongoing process which consists seven phases:

Phase 1. **Data-collection Methodology: Direct and Indirect (listed in Section C.6. above)**
Phase 2. Benefits and Drawbacks of Data-collection Methods
Phase 3. Evaluate the Choice of Data-collection Method
Phase 4. **Collect data**
Phase 5. **Interpret evidence**
Phase 6. **Report the resulting information and document the analysis.**
Phase 7. **Identify Areas for Improvement and Enhancement.**

At each stage (cycle of assessment), we use the resulting information in form of report into account to document, analyze, and improve the all components of the program based on the appropriate key performance indicators (KPIs). As follows a table summing the long run plan for assessing each track and All PLOs.

PLOs	Stage 1 (one year)	Stage 2 (one year)
K1	✓	✓
K2	✓	✓
S1	✓	✓
S2	✓	✓
S3		✓
S4		✓
V1		✓
V2		✓
V3		✓

6. Program Evaluation Matrix:

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
leadership	dean	evaluation report	end of academic year
effectiveness of teaching & assessment	program leader, faculty, independent reviewers, students	surveys, interviews, visits	end of the trimester, during the trimester
learning resources	employers, faculty, graduates, students	surveys, interviews	end of the trimester, during the trimester

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, services, partnerships, etc.)
Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others.
Evaluation Methods (e.g., Surveys, interviews, visits, etc.)
Evaluation Time (e.g., beginning of semesters, end of the academic year, etc.)

7. Program KPIs:*

The period to achieve the target (____) year(s).

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-PG-1	Percentage of achieved indicators of the program operational plan objectives	85%	Surveys, Department data	Yearly starting from the first promotion
2	KPI-PG-2	Students' Evaluation of quality of learning experience in the program	4.60	surveys	Twice per year
3	KPI- PG-3	Students' evaluation of the quality of the courses	4.50	surveys	Twice per year
4	KPI-PG-4	Students' evaluation of the quality of scientific supervision	4.60	surveys	Yearly starting from the first promotion
5	KPI-PG-5	Average time for students' graduation	3 years	Graduation data	Yearly starting from the first promotion
6	KPI-PG-6	Rate of students dropping out of the program	0.3	Graduation data	Yearly starting from the first promotion
7	KPI-PG-7	Graduates' employability	90%	Graduation Unit	Yearly starting from the first promotion
8	KPI-PG-8	Employers' evaluation of the program graduates'	4.80	surveys	Yearly starting from the first promotion
9	KPI-PG-9	Students' satisfaction with the provided services	4.60	surveys	Yearly
10	KPI-PG-10	Ratio of students to faculty members	14.1	Department data	Yearly
12	KPI-PG-12	Proportion of faculty members leaving the program	0.1	Department data	Yearly

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
13	KPI-PG-13	Satisfaction of beneficiaries with learning resources	4.60	surveys	Yearly
14	KPI-PG-14	Satisfaction of beneficiaries with research facilities and equipment	4.60	surveys	Yearly
15	KPI-PG-15	Percentage of publications of faculty members	80%	Department data	Yearly
16	KPI-PG-16	Rate of published research per faculty member	2.00-4.00	Department data	Yearly
17	KPI-PG-17	Citations rate in refereed journals per faculty member	60	Department data	Yearly
18	KPI-PG-18	Percentage of students' publication	30%	Department data	Yearly starting from the first promotion
19	KPI-PG-19	Number of patents, innovative products, and awards of excellence	1.00	Department data	Yearly

*including KPIs required by NCAAA

H. Specification Approval Data:

Council / Committee	**MATHEMATICS AND STATISTICS DEPARTMENT COUNCIL**
Reference No.	**8/1446**
Date	**05/04/1446 (08/10/2024)**