



Program Specification

(Postgraduate Programs)

Program Name: **Master of Science in Mathematics**

Program Code (as per the Saudi Standard Classification of Educational Levels and Specializations):

According to Educational Levels: 747

According to Specializations: 054101

Qualification Level: **Level 7**

Department: **Mathematics**

College: **Science**

Institution: **Jouf University**

Program Specification: **New** ☐ **updated*** ☒

Last Review Date: **September 2024**

*Attach the previous version of the Program Specification.

Table of Contents

A. Program Identification and General Information:	3
B. Mission, Goals, and Program Learning Outcomes.....	4
C. Curriculum:.....	5
D. Thesis and Its Requirements (if any):	12
H. Student Admission and Support:	17
E. Faculty and Administrative Staff:	20
F. Learning Resources, Facilities, and Equipment:.....	20
G. Program Quality Assurance:	22
H. Specification Approval Data:	33





A. Program Identification and General Information:

1. Program's Main Location:

Main Campus "Male section" at College of Science, Sakaka, JR, KSA.

Main Campus "Female section" – at College of Science, Sakaka, Laqaet, JR, KSA

2. Branches Offering the Program (if any):

None

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:

Graduates with a Master of Science in Mathematics possess a diverse skill set that equips them for a wide range of professions across various industries. According to the Saudi Standard Classification of Occupations, a graduate from the program is qualified to work in the following professions mentioned below.

- Research Scientist: Conducting research in academic, government, or private sector organizations to advance scientific knowledge.
- Data Scientist/Data Analyst: Analyzing complex data sets to derive insights and make data-driven decisions.
- Financial Analyst: Evaluating financial data, trends, and investment opportunities using mathematical and statistical techniques.
- Mathematics Teacher: Educating students at various levels in private and public sectors.
- Consultant: Providing expert advice and solutions to businesses based on data analysis and mathematical modeling.
- Operations Research Analyst: Using mathematical and analytical methods to solve complex business problems and optimize processes.

7. Relevant occupational/ Professional sectors:

Graduates with a Master of Science in Mathematics can find relevant opportunities in a wide array of occupational and professional sectors. Some of the sectors where their skills and expertise are highly sought after include:

- Finance and Banking: Working in quantitative analysis, financial modeling, and algorithmic trading.
- Government and Public Sector: Contributing to policy analysis, program evaluation, economic forecasting, and data-driven decision-making.
- Healthcare and Pharmaceuticals: Utilizing statistical analysis for clinical trials, health data analysis, epidemiology, and health policy research.
- Education: Teaching mathematics at various levels, developing curriculum, and conducting research in mathematics education.



- Research and Development: Conducting research in academia, industry, or government agencies in fields such as physics, engineering, computer science, and more.
- Manufacturing and Engineering: Using mathematical modeling and optimization techniques to improve processes and solve engineering problems.
- Marketing and Market Research: Analyzing consumer data, market trends, and conducting surveys to support marketing strategies.

8. Major Tracks/Pathways (if any): NA

9. Total credit hours: (.....39.....)

B. Mission, Goals, and Program Learning Outcomes

1. Program Mission:

Providing the community with qualified cadres with advanced knowledge and skills that enhance their abilities to conduct research in mathematics through a stimulating research environment to achieve distinguished education, and community services.

2. Program Goals:

- To provide students with advanced mathematical knowledge that enhances their skills in specialized areas of mathematics.
- To develop and continuously improve the educational and research environment in the program.
- To prepare skilled and well-prepared cadres of mathematicians capable of carrying out scientific research in focused areas of mathematics and working in advanced positions.
- To engage students and faculty in community initiatives and partnerships.

3. Program Learning Outcomes: *

Knowledge and Understanding:

- | | |
|----|--|
| K1 | Demonstrate advanced and specialized knowledge of concepts and principles in mathematics at the graduate and specialized levels. |
|----|--|

Skills:

- | | |
|----|---|
| S1 | Apply specialized theories, principles, and concepts to solve problems and prove statements in complex and advanced contexts. |
| S2 | Analyze specialized theories and problems to draw inferences, generalizations, explanations, and reach conclusions in unanticipated situations. |
| S3 | Evaluate solutions for problems in complex scenarios and challenges using analytical and computational techniques and digital technologies. |
| S4 | Conduct independent and joint research projects in specific areas of mathematics. |
| S5 | Communicate advanced mathematical ideas and research results effectively in written and oral forms. |

Values, Autonomy, and Responsibility:

- | | |
|----|---|
| V1 | Plan for self-learning and professional development with the ability to monitor progress and take actions for adjustment. |
| V2 | Commitment to professional and academic values when dealing with various issues. |



V3

Work effectively on a team to establish goals, plan tasks, meet objectives and take responsibility as a team member and a leader.

* Add a table for each track (if any)

C. Curriculum:

1. Curriculum Structure:

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Course	Required	11	26	66.667
	Elective	2	4	10.256
Graduation Project (if any)				
Thesis (if any)			9	23.077
Field Experience (if any)				
Others (.....)				
Total		13	39	100%

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

2. Program Courses:

Every student registered for an M.Sc. degree in mathematics have to follow the following study plan.

Level	Course Code		Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	MATH 600		Ethics and Editing Scientific Research	Required	-----	2(2,0,0)	Department
	MATH 610		Abstract Algebra	Required	-----	2(2,0,0)	Department
	MATH 620		Functional Analysis	Required	-----	2(2,0,0)	Department
	MATH 630		Theory of Differential Equations	Required	-----	2(2,0,0)	Department
	MATH 640		Numerical Analysis	Required		2(2,0,0)	Department
Level 2	Students select one course from them.	MATH 643	Stochastic Processes	Elective	MATH 630	2(1,1,0)	Department
		MATH 632	Mathematical Biology	Elective	MATH 630	2(1,1,0)	Department
	MATH 631		Partial Differential Equations 1	Required	MATH 600 & MATH 630	3(3,0,0)	Department
	MATH 641		Numerical Linear Algebra	Required	MATH 640	3(2,1,0)	Department
	MATH 642		Optimization Methods	Required	MATH 640	2(2,0,0)	Department
Level 3	Students select one	MATH 636	Partial Differential Equations 2	Elective	MATH 631	2(2,0,0)	Department



Level	Course Code		Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	course from them.	MATH 646	Stochastic Differential Equations	Elective	MATH 643	2(2,0,0)	Department
	MATH 635		Principles of Optimal Control	Required	MATH 631	3(2,1,0)	Department
	MATH 645		Advanced Scientific Computation	Required	MATH 641	3(2,1,0)	Department
	MATH 697		Selected Topics in Mathematics*	Required	MATH 631& MATH 641	2(2,0,0)	Department
Level 4	MATH 699		Thesis**	Required	**	9(9,0,0)	Department

*Needs department approval for assigning the course description.

** In order to register the thesis, one must pass 50% of the courses with a cumulative grade of no less than very good.





3. Course Specifications:

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

[Link for Course specification, Master of Science in Mathematics Program](#)

4. Program learning Outcomes Mapping Matrix:

Align the program learning outcomes with program courses according to the following desired levels of performance (/ = Introduced P = Practiced M = Mastered).

Course code & No.	Program Learning Outcomes								
	Knowledge and understanding	Skills					Values, Autonomy, and Responsibility		
	K1	S1	S2	S3	S4	S5	V1	V2	V3
MATH 600	I		I		I	I		I	
MATH 610	I	I	I		I	I	I		
MATH 620	I	I	I		I	I	I		
MATH 630	I	I	I		I				I
MATH 640	I	I	I	I			I		
MATH 643	P	P	P	P		P		P	
MATH 632	P	P	P	P		P		P	
MATH 631	P	P	P		P	P			P
MATH 641	P	P	P	P		P		P	
MATH 642	P	P	P	P		P			P
MATH 636	M	M	M		P	M	M		
MATH 646	M	M	M		P	M	M		
MATH 635	M	M	M	M	M				M
MATH 645	M	M	M	M		M	M		M
MATH 697	M	M	M	M	M	M	M	M	M
Thesis (MATH 699)	M	M	M	M	M	M	M	M	M

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

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

Domain of learning	Teaching and learning strategies
Knowledge and understanding	
PLO1(K1): Demonstrate advanced and specialized knowledge of concepts and principles in mathematics at the graduate and specialized levels.	1. Advanced lectures on specialized topics in mathematics. 2. Debate and Depth class Discussion 3. Research Seminars and Workshops. 4. Research projects 5. Flipped Teaching
Skills	
PLO2(S1): Apply specialized theories, principles, and concepts to solve problems and prove statements in complex and advanced contexts.	1. Complex problem-solving tasks and decision making, 2. Hands-on projects, 3. Research-Based Learning 4. Joint research.
PLO3(S2): Analyze specialized theories and problems to draw inferences, generalizations, explanations, and reach conclusions in unanticipated situations.	Engage students in critical analysis of advanced mathematical theories and problems through 1. Case studies, 2. Research discussions.
PLO4(S3): Evaluate solutions for problems in complex scenarios and challenges using analytical and computational techniques and digital technologies.	1. Computational problem-solving and research projects. 2. Interactive Learning Activities. 3. Laboratory and practical learning.
PLO5(S4): Conduct independent and joint research projects in specific areas of mathematics.	1. Independent and joint research projects, 2. Research Seminars and Workshops 3. Workshops to develop research skills and collaboration abilities. 4. Survey-Based Learning from literature reviews 5. Research-based learning from refereed published articles.

PLO6(S5): Communicate advanced mathematical ideas and research results effectively in written and oral forms.	1. Mathematical Presentation Skills Training 2. Incorporate presentations, 3. Academic writing Training & workshops 4. Peer feedback sessions to enhance communication skills in conveying complex mathematical ideas. 5. Research Seminars.
Values	
PLO7(V1): Plan for self-learning and professional development with the ability to monitor progress and take actions for adjustment.	Foster a culture of continuous learning, self-reflection, and professional development in students through 1. Self-directed learning 2. Online Learning Resources 3. Independent Study Opportunities 4. Mentorship and Peer Support and Supervision 5. workshops, and career counseling 6. Portfolio Development
PLO8(V2): Commitment to professional and academic values when dealing with various issues.	Foster ethical awareness and responsibility in students through. 1. Integration of Ethics and ethical dilemmas in Coursework. 2. Case studies on scientific values, and ethical issues 3. Ethics guide lines from the AMS and SAMS. 4. Peer Discussions on Ethics.
PLO9(V3): Work effectively on a team to establish goals, plan tasks, meet objectives and take responsibility as a team member and a leader.	1. Working in groups on Mathematical Project. 2. Team Problem-Solving Sessions 3. Research Seminars and Workshops. 4. Independent and joint research projects.



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).

Domain of learning

Assessment Methods

Knowledge and understanding

PLO1(K1): Demonstrate advanced and specialized knowledge of concepts and principles in mathematics at the graduate and specialized levels.

Direct assessment

1. Timed, written examination papers
2. Progress reports, (Using rubrics)
3. Thesis evaluation final report, (Using rubrics)
4. Presentations, (Using rubrics)

Indirect assessment:

1. Program Evaluation Survey (PLOs section),
2. Alumni survey,
3. Employer Survey

Skills

PLO2(S1): Apply specialized theories, principles, and concepts to solve problems and prove statements in complex and advanced contexts.

Direct assessment

1. Timed, written examination papers
2. Take-away papers
3. Progress reports, (Using rubrics)
4. Thesis evaluation final report, (Using rubrics)
5. Presentations, (Using rubrics)

Indirect assessment:

1. Program Evaluation Survey (PLOs section),
2. Alumni survey,
3. Employer Survey

PLO3(S2): Analyze specialized theories and problems to draw inferences, generalizations, explanations, and reach conclusions in unanticipated situations.

Direct assessment

1. Timed, written examination papers
2. Take-away papers
3. Progress reports, (Using rubrics)
4. Thesis evaluation final report, (Using rubrics)
5. Presentations, (Using rubrics)

Indirect assessment:

1. Program Evaluation Survey (PLOs section),
2. Alumni survey,
3. Employer Survey

PLO4(S3): Evaluate solutions for problems in complex scenarios and challenges using analytical and computational

Direct assessment

1. Timed, computer-based examinations.
2. Lab based - assignments,
3. Take-away Lab-based assignments.
6. Progress reports, (Using rubrics)
7. Thesis evaluation final report, (Using rubrics)
8. Presentations, (Using rubrics)



techniques and digital technologies.	Indirect assessment: 1. Program Evaluation Survey (PLOs section), 2. Alumni survey, 3. Employer Survey
PLO5(S4): Conduct independent and joint research projects in specific areas of mathematics.	Direct assessment 6. Progress reports, (Using rubrics) 7. Thesis evaluation final report, (Using rubrics) 8. Presentations, (Using rubrics) Indirect assessment: 1. Research Reports. 2. Research publications Indirect assessment: 1. Program Evaluation Survey (PLOs section), 2. Alumni survey, 3. Employer Survey
PLO6(S5): Communicate advanced mathematical ideas and research results effectively in written and oral forms.	Direct assessment 1. Research papers, 2. Presentations, 3. Reports 4. Thesis Oral Defense, 5. Peer reviews that demonstrate effective communication of advanced mathematical concepts in written and oral forms. Indirect assessment: 1. Alumni survey, 2. Employer Survey, 3. Program Evaluation Survey (PLOs section).
Values	
PLO7(V1): Plan for self-learning and professional development with the ability to monitor progress and take actions for adjustment.	Direct assessment 1. Professional Development Portfolio: Students are asked to compile a portfolio showcasing their participation in workshops, conferences, seminars, and other professional development activities. Then the professors assess how these experiences contribute to their adaptability and lifelong learning. 2. Continuing Education Projects: Professors Assign tasks that require students to advanced topics in mathematics beyond the curriculum. Then the professors evaluate students' ability to adapt to new information and apply it in their academic work. 3. Thesis Integration: Professors assess how students apply their accumulated knowledge and skills to their thesis work. Then professors evaluate their adaptability in addressing research questions, revising methodologies, and incorporating feedback to improve their final output. Indirect assessment: 1. Alumni survey, 2. Employer Survey, 3. Program Evaluation Survey (PLOs section).



PLO8(V2): Commitment to professional and academic values when dealing with various issues.	Direct assessment 1. Reports of case studies 2. Research plagiarism report 3. Thesis plagiarism report Indirect assessment: 1. Alumni survey, 2. Employer Survey, 3. Program Evaluation Survey (PLOs section).
PLO9(V3): Work effectively on a team to establish goals, plan tasks, meet objectives and take responsibility as a team member and a leader.	Direct assessment 1. Presentations, 2. Reports 4. Thesis Oral Defense Indirect assessment: 1. Alumni survey, 2. Employer Survey, 3. Program Evaluation Survey (PLOs section).

D. Thesis and Its Requirements (if any):

1. Registration of the thesis:

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

Choosing the topic of the thesis
▪ The student selects the topic of the thesis and drafts a research plan proposal (with the assistance of the academic advisor) in accordance with the university's objectives and the scientific department's specialization approved upon acceptance into the graduate program. ▪ The student must submit the research plan proposal to their academic advisor for presentation to the Department Council before the end of the semester following the completion of 50% of the courses, with a grade not lower than 3.5 out of 5. ▪ The topics of the master's thesis should be characterized by novelty and originality. ▪ The research plan proposal for a thesis must include the title in both Arabic and English, along with information about the research, its problem, objectives, significance, proposed implementation plan, timeframe for completion, and key references in the thesis subject.
Student communication with the supervisor and the scientific department
▪ The graduate student should communicate with the supervisor (or supervisors) of the thesis continuously in regular meetings, ensuring that scientific communication occurs at least once every two weeks in a scheduled manner. ▪ Committed to attending courses and lectures recommended by the supervisor. ▪ The graduate student must present several scientific seminars in the scientific department that follows him during the stage of the scientific thesis, according to the following: a) Upon completion of the research plan proposal and before presenting it to the Department Council, the student presents in this seminar the rationale of the research, its importance, its



purpose, the method of implementation, and how the research idea differs from previous work in the field and the expected benefits of its implementation.

b) When the graduate student submits his final scientific thesis, he presents a seminar on his thesis attended by the supervisor/supervisors, faculty members, and graduate students in the department.

- The supervisor should assist the student in setting a timetable for the stages of the scientific thesis (research and investigation, thesis delivery, etc.) and the expected time period for its completion.
- The student must write a report every semester on the progress made and the planned activities through the thesis follow-up system.

Student Responsibilities and Duties

- To adhere to the research plan agreed upon and approved by the councils of the scientific department, the college, and the Deanship of Graduate Studies.
- To be characterized by seriousness and attention to everything that is scientifically requested of him without delay or default.
- Adhere to the instructions and directions provided by the supervisor directly.
- The student must prepare well for his research tools and develop his skills in them and is fully responsible for managing and carrying out research activities and the various tasks necessary to accomplish his mission.
- Discuss ways to solve the problems or difficulties facing the research with the main supervisor directly when they occur.
- The student is responsible for informing the scientific department of the timetable of the research plan and the stages that were implemented and following up the procedure of changing the supervisor or the subject of the thesis systematically in the event of an emergency to the main supervisor.
- Commitment to the ethics of scientific research to thank the personalities who provided him with scientific assistance or those who cooperated with him directly or indirectly or with financial support.
- The student must make all the amendments requested by the discussion committee within the time limit and meet with the approval of the committee's rapporteur, under the supervision of the main supervisor.

Intellectual Property Rights

- In the case of publishing research derived from scientific theses, the following must be taken into account:
 - a) The right of the student to publish provided coordination with the supervisor(s) of the thesis.
 - b) The thesis supervisor must, at the time of publication, mention the student's name and the assistant supervisor.
 - c) The names of the research authors (student and supervisors) shall be arranged according to their agreement and coordination.
 - d) Mention the name of Jouf University as an affiliation for the students as well as supervisors from within the university.



▪ In the case of publishing the scientific thesis or part of it in the form of a book, the following must be taken into account:

- a) Adherence to the Scientific Research Regulations in this regard.
- b) The authors of the book are the student and the thesis supervisor.

In the case of obtaining a patent from the scientific thesis, it must be ensured that the patent resulting from the thesis is registered in the name of both the student and the supervisor/supervisors of the thesis while preserving Jouf University's rights under the laws and regulations governing this matter.

2. Scientific Supervision:

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

The supervision

- The scientific theses are supervised by professors and associate professors who are faculty members of the university.
- An assistant professor may supervise master's theses if they have two research papers published or accepted for publication in refereed scientific journals in their field of specialization.
- It is permissible for supervisors with experience and competence in the field of thesis research, whether from within or outside the faculty, to supervise or assist in supervising scientific theses based on the recommendation of the Department Council and the approval of the College Council.
- A supervisor, either individually or jointly with others, has the right to supervise a maximum of seven scientific theses at one time. The Standing Committee may grant exceptions based on the recommendation of the Department and College Councils under the controls approved by the University Council, based on the proposal of the Standing Committee.

Responsibilities and duties of the scientific supervisor

- Educating the student about his tasks, duties, rights, the importance of scientific research, and the commitment to ethics, and emphasizing priorities and methods.
- Reviewing the university's regulations and rules related to scientific theses to ensure that the student is fully aware of them.
- The supervisor should commit to supervising the student after completing all official procedures for registering the thesis.
- Ensuring that the research topic is serious, original, and fully compliant with the regulations of the Kingdom and the university.
- Directing the student to follow the procedures for writing the thesis according to the guide for writing scientific theses at Jouf University.
- Assisting the student as much as possible to improve educational achievement and providing necessary training, hardware, and computer programs.
- Providing advice and assistance to the student in reaching individuals or organizations that can help him academically to avoid difficulties during thesis preparation.



- The supervisor must submit a report on the student's progress before the end of each semester, from the appointment until the last semester, where the student discusses the thesis and the supervisor explains the progress.
- The supervisor must review the written report from the student each semester submitted through the scientific thesis follow-up system, approve it, make observations, and then approve it.
- Directing the student to verify the accuracy and original references used in the research to ensure its validity.
- Guiding the student to publish parts of the thesis as research articles in prestigious scientific journals or participate in conferences and research activities.
- Evaluating the scientific thesis upon receiving the draft, providing feedback within three months, and informing the student of any necessary amendments.
- Preparing the student for the thesis defense through an experimental presentation on the research and its results to enhance performance.
- Proposing the thesis discussion and evaluation committee, approved by the Council of Higher Studies based on department and college recommendations.
- Managing administrative procedures related to the discussion committee and coordinating the discussion date.
- Following up on required corrections by the committee members and ensuring completion as the rapporteur of the discussion committee.

Responsibilities and duties of the Assistant Supervisor

- Attend meetings between the main supervisor and the student as needed, not less than once per semester.
- Maintain a copy of the approved research plan endorsed by the scientific and college department councils and the graduate studies, as well as a copy of the timetable for the thesis completion schedule.
- Assist the main supervisor in overseeing the student as per the schedule and propose any necessary resources (such as training, computer hardware and software, etc.) to facilitate thesis completion.

In case of an emergency affecting the main supervisor (illness, death, contract termination, retirement, etc.), the assistant supervisor should:

- Assume the main supervision of the student until a replacement head supervisor is appointed by the Scientific Department Council.
- If not meeting the statutory requirements for main supervision or having a different specialization from the thesis, oversee the relevant stages and assist in the appointment of a new main supervisor or changing the thesis subject, potentially continuing as an assistant supervisor to the new main supervisor.

3. Thesis Defense/Examination:

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



Formation of the Discussion Committee

- The Department Council shall propose the members of the discussion committee and may also propose one or two reserve members.
- The College Council recommends forming the committee based on the department's input. If it decides to change all or some of the committee members, the matter is referred back to the Department Council.

Conditions of the Master's Defense Committee

- The number of its members should be odd, and the supervisor should be its rapporteur.
- The number of committee members should not be less than three among the faculty members, and the supervisor and assistant supervisor (if any) shall not represent a majority.
- The conditions of supervision of theses should apply to the committee members.
- Take its decisions with the approval of at least two-thirds of the members.

Report of the Discussion Committee

- The report of the defense committee shall be in accordance with the form prepared by the Deanship of Graduate Studies.
- The committee may unanimously recommend printing the thesis at the expense of the university based on convincing justifications, provided that it meets the university's publishing standards.
- The period for completing the deficiencies in the thesis shall not exceed one year, and the supervisor shall follow up on the student's work as much as possible.

Procedure for lifting the result of the discussion.

- The head of the concerned department submits the defense committee report to the Dean of Graduate Studies within a period not exceeding three weeks from the date of the defense.
- The Deanship of Graduate Studies will then implement the necessary procedures based on the recommendations in the defense report.

Degree Awarding

- The Dean of Graduate Studies submits the recommendation to grant the degree to the University Council for decision-making.
- The colleges provide the Deanship of Graduate Studies with the names of the students expected to graduate and prepare them each semester.
- The Deanship of Graduate Studies prepares the final reports for granting the degree after completing the graduation requirements at each stage, including determining the honors degree, and returns them to the concerned colleges.
- The degree is awarded by a decision of the University Council based on the recommendation of the Council of the Deanship of Graduate Studies and the approval of the President of the University.
- The Deanship of Graduate Studies prepares official documents and certificates and issues them for graduates.

H. Student Admission and Support:

1. Student Admission Requirements:

General conditions for admission to postgraduate studies: Admission to postgraduate studies requires the following:

- The applicant must be a Saudi or have an official scholarship for postgraduate studies if he is a non-Saudi.
- The applicant must have a university degree from a Saudi university or another recognized university.
- To be of good conduct and medically fit.
- To submit two scientific recommendations from professors who have previously taught him.
- The student's average should not be less than good at the bachelor's level.
- Employer's consent to study if he is an employee.

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).

New student orientation programs are designed to welcome and guide students in answering all their expected questions. Prior to the beginning of classes, students are given an overview of the complete realm the program, from academics to social activities, through a period of days referred to as orientation. Typically, a staff member or team coordinates the orientation programs within the. There are 3 main objectives should be present in the orientation programs:

1. Providing students with full information about the department, its members, and ways to contact them, and Students' rights and responsibilities
2. Arranging a meeting with the program coordinator and the faculty to answer students' requests.
3. Arranging a tour with students to see the department Labs and Classrooms.

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)

A meeting is hold at the beginning of each semester headed by the program coordinator, in which the faculty and the head of department shall participate, to announce and demonstrate the rights and duties of the entered new students.

Academic Counseling

Students are supported academically through their academic advisor, who deals with them through the academic advisor's work document.

- 1-Preparing a special file (paper or electronic) for each student who has been assigned the task of supervising them.
- 2- Holding meetings with the guiding group students at the beginning of the semester and throughout the school year, and informing them of the guiding hours.
- 3- Introducing the guided students to the university's systems and regulations
- 4-Urging the guided students to commit to conducting all registration, deletion, addition, withdrawal, etc. according to their announced dates from the Deanship of Admission and Registration on the electronic portal.





- 5-Ensuring that the student registers the curricula for the required number of hours according to his cumulative average and his study plan.
- 6- Inform students who are guided by the decisions that have previous requirements in the study plan.
- 7- Introduce the guided students to the university calendar, and ensure that they received their schedules on the electronic portal.
- 8- Urging guided students to attend lectures, adhere to university systems and regulations, and list into their problems and suggestions.
- 9- Helping students to adapt to and choose majoring case the student need sit, especially new ones, and work to overcome obstacles and problems facing them. Responding to student inquiries via blackboard, or other social media.
- 10- In the event that the student receives a GPA of less than 3.75, he will be warned for the first time, and the guide must explain to the student what this is, its reason, and its consequences.
- 11- Attention to struggling students, intensifying communication with the man during them to improve their academic conditions, and help them solve their problems in their academic progress.
- 12- Organizing an orientation meeting at the beginning of each semester of each year to introduce the student, the new curriculum, The College, its system, its nature and its departments. The expected Jobs for the department.
- 13- Organizing courses, training sessions, workshops and lectures to teach students some skills and to prepare the students of the college for Exams.
- 14- Helping students solve their psychological and social problems that directly affect Academic achievement.
- 15- Coordinating with the College Guidance Unit and perform assigned tasks.
- 16- Early guidance for students to register their courses of next semester and to prevent conflicts and problems and avoid them in the last semester.
- 17- Address the problems of students who fail and guide them appropriately.
- 18- Activation of the E-Counseling.

Career Counseling

Provide post graduate students with information on the area so graduates work, and how to prepare for the start of career (career counseling), and

- 1) Helping students to discover their tendencies and abilities and to acquire the skills to search for a job that suits their qualifications and to make appropriate decisions for their future.
- 2) Preparing students to join the labor market by providing them with the required skills such as writing a proper resume-preparing for job interviews.
- 3) Directing students to how to develop their skills and ability during the university period to suit the labor market and the Kingdom's vision2030.
- 4) Continuous communication with graduates who have been hired, follow-up evaluation of their job performance and benefit from their experiences.

Psychological Counseling

- 1) Help the student to recognize their abilities and benefit from it to solve their problems and market height decisions.
- 2) Applying psychological tests and clinical interviews for diagnosis and psychotherapy through psychological sessions and converting some cases that need psychiatric treatment.
- 3) Supporting the student or store psychological balanced unto the occurrence of social and cultural





changes, scientific and technological advances and means of communication It has changed many values and trends.

4) Counseling and psychological support to control the fear, anxiety and frustration that dominates the student due to the transition from one stage to another, and then the transition from study to work.

5) Helping the student to understand himself to be able to choose the appropriate career for them and their scientific and practical abilities so that the student succeeds in his work and achieves satisfaction and proper compatibility.

6) Contributing to solving problems resulting from family change, such as housing, marriage and family planning problems, in addition to solving work problems.

Social Counseling:

- 1) Follow-up of students who have failed to study due to social conditions.
- 2) Enable students to adapt and overcome social problems by providing social counseling services.
- 3) Study cases of students who are eligible for financial aid.
- 4) Enabling the student to build social relationships with colleagues and faculty members.
- 5) Enhancing the university student's role in community service.
- 6) Enhancing students with special needs at the university to achieve the principles of self-independence and social equality.

Promote the principles of religion and patriotism.

4. Special Support:

(Low achievers, disabled, and talented students).

Based on the system of care for the disabled issued by the Royal Decree No. (M / 37) dated 23/9/1421 AH, and in the belief of Jouf University that education is a legitimate right for all spectrums of society, male and female alike, has been formed a unit with special needs, as one of the units of the Deanship Students' Affairs is concerned with overcoming all the difficulties and challenges faced by the university students.

Low achievers

- College evaluating that profiles academic achievement of students and monitor their performance during the year.
- Early during the year, academic affairs committee prepares a list with names of students who are faltering and whose performance is below standard.
- The list is forwarded to the assigned academic advisor who initiates a remediation process.
- Academic advisors meet with students and provide immediate feedback.
- Recommendations for additional assistance of special cases are forwarded to the Dean of college.
- The system permits that failing students are given a second chance and are allowed to re-sit the exam.
- The college council requests that a departmental investigation and action-oriented review is triggered if the scores for a particular exam fall below college benchmark.

Disabled

- The college launches periodical awareness campaign to support people with special needs.
- Urged the employees of the college not to use the facilities and equipment meant for people with special needs. Besides, the availability of facilities for people with special needs in all buildings of the college and parking.

Gifted and talented



-Rewarding of gifted, talented and outstanding students via factual, moral reward or facilities to participate in extra-curricular and recreational activities.

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		Pure Mathematics	-----	1	1	2
		Applied Mathematics	-----	1	1	2
Associate Professor		Pure Mathematics	-----	2	2	4
		Applied Mathematics		3	1	4
Assistant Professor		Pure Mathematics	-----	2	1	3
		Applied Mathematics		6	2	8
Technicians and Laboratory Assistants		Computer Science	-----	1	1	2
Administrative and Supportive Staff		Administration	-----	1	1	2
Others (specify)		-----	-----	----	----	----

F. Learning Resources, Facilities, and Equipment:

1. Learning Resources:

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

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

Learning resources include hard and /or electronic copies of the text books, reference books, journals and educational materials provided by the teaching staff members or uploaded on Blackboard application. Teaching staff responsible for the program and for courses regularly provide guidance on the material requirements to support learning and teaching through their course reports.

Every year students take part in course and program evaluation survey on a range of issues including resource material usage, allocation and service adequacy. The survey results help to compare, monitor trends and set targets.

The teaching staff members were periodically asked to give the requirement for the learning resources, which gets approved by the course coordinator after discussing with the course team, the inputs from the student survey also taken into consideration.

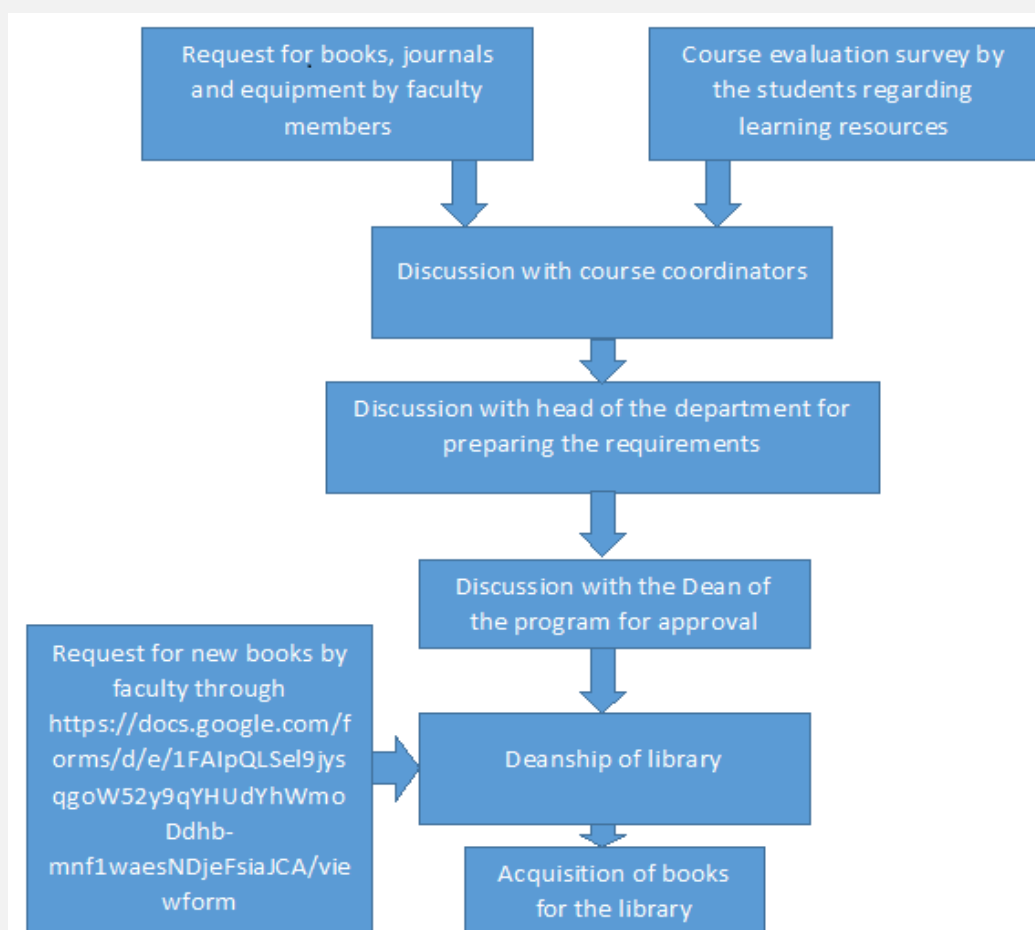
Users are informed about acquisition of new materials, equipment, subscription to new database through college notice board and announcement in the blackboard.

The staff and student can visit the university website link

<https://www.ju.edu.sa/en/administrations/deanships/deanship-of-library-affairs/library-services/>,

to access the library catalogue, updated information about the learning resources.

The process of acquisition is given in the following figure.



The process for providing and quality assurance of learning resources.

2. Facilities and Equipment:

(Library, laboratories, classrooms, etc.)

University has central library holds over 23000 book titles in both Arabic and English, in addition to numerous journal subscriptions, government publications, dissertations, databases, and manuscripts with a fully automated retrieval and storage system. The library catering the needs of the faculty and student. There is facility to access Saudi digital library (<https://sdl.edu.sa/SDLPortal/ar/Publishers.aspx>) by the students and staff at any time.

College of Science (main campus) has 1 building, 32 classrooms, 17 laboratories, 1 computer lab. For Mathematics program five class rooms for the male and ten for female are available (other faculty



classrooms also available if needed). All the classrooms were equipped with overhead projectors and smart boards, having sitting capacity of 30 to 50 students for each class room.

Faculty and staff members generally follow the procedures to acquire resources, which typically start by submitting their requests in appropriate forms through their department heads.

Carry out the model of the suitability of equipment, laboratories and halls for the educational process through a technical committee

- The main tasks for the Laboratory and Equipment Committee in the program are:

1. Investigate the necessary equipment and learning resources required within the program.
2. Monitoring the periodic maintenance of the equipment, and replace the damaged especially by the end of each semester.
3. Providing the essential furnishings as well as teaching materials and learning resources to the classrooms and computer laboratories.
4. Follow-up the department's equipment and laboratories periodically, and ensuring an easy access to learning resources when students need them.

List of books and references needed by faculty members in the program and coordinate with the Central University Library to provide them according to the requirements of the department.

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

(According to the nature of the program)

The University requires laboratory supervisors and research project leaders to take responsibilities to control risk. Laboratory worker has responsibility to observe the basic safety rules that have been established help to create a safe and healthy working environment.

Safety Guideline has been constructed to provide practical guidance to persons-in-charge and other laboratory users on how to implement health and safety measures as required under the safety policies.

1. Departmental Laboratory and Equipment Committee are formed at the beginning of each academic year.
2. The above-mentioned committees meet regularly as required for discussing health and safety matters as well as environmental protection issues in computer labs, and for promoting the awareness of those issues among staff and students within the department.
3. This committee is responsible for releasing a booklet in each laboratory for maintain safety and health issues
4. Departmental head should revise all course plans and confirm that the first topic in each practical course will cover safety issues carefully.
5. According to the University's Laboratory Safety Management Policy, the Head of Department should also appoint a staff member to be in charge of each individual laboratory. The person-in charge should:
 - inspect the laboratory to identify and evaluate workplace hazards and unsafe work practices
 - inform users of the computer labs about health and safety matters
 - establish and maintain good health and safety practices
 - follow established guidelines and assist others to meet safety requirements

report promptly on all accidents/incidents and maintain an up-to-date record of documents as required by legislation and by the University

G. Program Quality Assurance:

1. Program Quality Assurance System:

Provide a link to the quality assurance manual.

[Quality Assurance Manual for the Master of Science in Mathematics Program](#)

2. Program Quality Monitoring Procedures:





The program quality Monitoring Procedures are following the principles of quality cycle (Deming quality cycle, namely Plan, do, check, act) as illustrated in the following table

Item	Points	Used Tools	Elements	Responsible	Timing
Quality Evaluation	Course level	Course Report	▪ Student's results ▪ CES ▪ CLOs assessment ▪ Effectiveness of teaching	Course Coordinators	End of the course
	Program Level	APR	▪ Course Reports of ▪ 12-Types surveys ▪ Indicators ▪ Statistical Data	Program Quality Committee and Advisory Committee	Annually
Quality Planning	Course level	Improvement actions	Based on course report	Course Coordinators	End of the course
	Program Level	Program wide action plan	Based on APR	Program Quality Committee	Annually
Quality implementation	Course level, program level and all functions are committed to implement the approved action plans				
Quality re-check	Course	Next course report	Evaluate results of action plans	Course Coordinators	End of the course
	Program level	Audit committee & Analysis, Evaluation and Continuous Improvement Committee	Evaluate results of action plans	Program Quality Committee and Audit Committee	Annually

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

- 1- The course specifications that are taught through other specific departments are accordance with the program specification, and taking correlation of these programs' specification with the mission and goals of the program.
- 2- Program management is provided with courses reports taught through other scientific departments. Improvements and additions to course specification can be made based on feedback from the course report in each semester.
- 3- Review the results of the evaluation of the courses of students and respond to their observations.
- 4- Presenting the results of the evaluation of the decisions of the students and faculty members to the plans committee to develop the curricula so as to help the quality of learning outcomes





- 5- Reviewing the courses periodically to ensure continuity of relevance to the needs of students in the programs offered through the Quality, Development and Academic Accreditation Unit in the faculty where they are reviewed in the light of the mission and objectives of the department, assessment of the course (s) through students (questionnaires) to provide feedback
- 6- Meetings with students enrolled in the course / courses concerned.
- 7- Make reference comparisons with similar courses in a similar program in other colleges.

4. Procedures Used to Ensure the Consistency between within the main campus

(including male and female sections).

Many measures and arrangements are in place to ensure consistency between male and female sections regarding teaching/learning activities, extracurricular activities, facilities and resources, examinations and quality measures, these measures are in two types planning and actions as follow;

Planning (positions):

- Assigning a vice dean for female section to coordinate with male section in the daily operations to ensure consistency between both sections regarding learning resources, facilities and teaching staff.
- Assigning a Female staff member as an assistant for phase coordinators to ensure equity between both sections.
- Assigning a female staff member to be assistant for course coordinator for each course to ensure implementation of all learning & teaching activities as equal as possible with involvement of all female staff in course committee which is headed by course coordinator to ensure full coordination and involvement in course planning, implementation and reporting from both sections' perspective.
- Assigning a Female staff member to be assistant of program quality coordinator in female section to ensure that all evaluations, surveys, reports are considering both sections separately and collectively.
- Female staff members are represented in all course committee to ensure the same course contents, implementation, assessment and evaluations in both sections.
- The policy controlling equity between both sections is established, well known and followed.

Actions:

Some action and percussions are taken to maximize the consistency between female and male sections as follow;

- The same course contents, teaching strategies and assessment methods.
- Identical time tables for both sections.
- Simultaneous examinations in both sections.
- Separate course reports for each section to ensure evaluation of course quality for both sections and combined one.
- Male staff are teaching female section students.
- Analysis of program indicators stressing any differences between male and female sections.
- Program statistical data stressed male and female results and combined one.
- learning resources and facilities are almost at the same level in both sections including the



average number of students enrolled per class, teaching aids, laboratories, internet coverage, library and extracurricular activities.

- Male and female students result in examinations are reflected in separate course reports and combined one to explore any differences in courses completion rate, grade distributions and trend over time in either section as well as the combined one.

- Other course evaluations including achievement of courses and program learning outcomes, courses and program evaluation surveys and course reporting, all these evaluations expressed the female and male as well as combined results with supposed improvements based on evaluations, and consequently a separate course portfolio for both male and female sections as well as a combined one for each course are there.

- Courses and program evaluations and types of surveys are conducted for both sections simultaneously using the same methods, analysis, interpretations and improvement actions.

- Male and female students' representatives are involved in relevant committees,

- Results and analysis of program KPIs are usually done for both sections and for combined one based on the availability of data with suggested section wise improvement when required.

- Female staff were represented in almost all quality related committees including self-study committee /standards committees, internal audit, student assessment and other committees to ensure equity between sections.

The overall staff satisfaction with the equity between male and female sections is always measured through annual staff survey.



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

The Mechanism and procedures for Assessment and Evaluation Process:

The mathematics program uses different tools and processes to assess and evaluate the extent to which its Graduate Attributes (GAs) and corresponding PLOs are being attained. These processes depend mainly on gathering data (direct and indirect) which is necessary for the assessments. Evaluation, in the form of interpreting the data, is then carried out to determine how well the outcomes are being attained. The results of both the assessment and evaluation processes are finally utilized for the continuous improvement of the program. The steps used for the assessment, evaluation, and feedback to the continuous improvement can be summarized as below.

Step 1: Collecting data for assessing the learning outcomes corresponding to Graduate attributes. These assessment tools can be direct or indirect. **Direct assessment** of PLOs relies on students' attainment in the course work using where an excel sheet was prepared along with Rubrics for grading students' level of attainments. whereas **indirect assessments** of PLOs are usually obtained by using surveys, interviews, Exit and focus group interviews that are designed by an analysis, evaluation and continuous improvements committee in the department and include appropriate questions oriented directly to the extent of satisfaction with Graduate attributes and PLOs. **It is worth mentioning** that there are other surveys that are used for program performance indicators (KPIs) in the teaching and learning section. The result analysis of these surveys is also taking into consideration while planning for improvements as a whole.

Step 2: Constituting the evaluation processes by analyzing the collected data and comparing it to a pre-set target performance indicator and analyzed data from previous evaluations through trend analysis for detecting weakness areas, and be ready for justifying and going to next step.

Step 3: According to the extent to which the data evaluation results meet the pre-set targets, the action plan for the continuous improvement processes will be proposed, discussing it in the department council. The approved form of the action plan will be submitted for implementation and follow-up.

The three steps mentioned above are doing on course levels and program level as well. In what follows, we introduce a brief description for these steps on course and program levels.

Mechanism and procedures on Course level:

To set the stage for the assessment process, the material covered in each course, together with its expected course learning outcomes (CLOs), are used to identify the certain number of programs learning outcomes that are most probably be covered by the course. It is important to mention here that each of the CLOs should be

associated with one of the chosen PLOs. Thus, the PLO with a single CLO implies that this CLO statement may be identical to that of the PLO. We should also emphasize that the capstone courses are exceptions to the above-mentioned mapping scheme and can have as many PLOs as needed.

To this end, each course has identified some specific number of measurable Course Learning Outcomes (CLOs) and these CLOs are mapped to the chosen different PLOs. This process of course-PLO mapping is carried out for each Department/College course in the Bachelor Mathematics program. It is also important to mention here that we have chosen not to map university requirements. These do automatically satisfy the program learning outcomes. The



mappings are made by each course team (involving course coordinator(s) and instructors for the course) in consultation with the Program Quality Assurance Committee. It is worth mentioning that, within every course in the curriculum, there is direct and indirect assessment. The indirect assessment includes two surveys; the first one is the course evaluation survey and the second is a survey concerning the progress of students' skills and abilities in the CLOs.

Mechanism and procedures on Program level (PLOs)

To assess and evaluate the extent to which the PLOs are being attained and hence the corresponding graduate attributes, Mathematics Program uses various processes. These processes are defined to keep data gathering efficient and effective, and the evaluation pertinent to the process of continuous improvement. To achieve these goals, two types of assessments, **direct** and **indirect** are performed. The indirect assessment is performed using surveys, Exit, focus group interviews and results from the program KPI in teaching and learning section, while the direct assessment results are obtained from student course work-based evaluations.

Program Learning Outcomes Assessment Plan

Activity 1 (●) :Data collection

Activity 2 (■) :Evaluate collected data, and report findings, and propose actions.

Activity 3(▲): Implementation of proposed actions

	First Year: 1444 H, 2022-2023 G		Second Year: 1445 H, 2023-2024 G	
Program Learning Outcomes (PLOs)	First semester	Second semester	First semester	Second semester
PLO1(K1): Demonstrate advanced and specialized knowledge of concepts and principles in mathematics at the graduate and specialized levels.	● ■	▲	● ■	
PLO2(S1): Apply specialized theories, principles, and concepts to solve problems and prove statements in complex and advanced contexts.	● ■	▲	● ■	
PLO3(S2): Analyze specialized theories and problems to draw inferences, generalizations, explanations, and reach conclusions in unanticipated situations.	● ■	▲	● ■	
PLO4(S3): Evaluate solutions for problems in complex scenarios and challenges using analytical and computational techniques and digital technologies.		● ■	▲	● ■
PLO5(S4): Conduct independent and joint research projects in specific areas of mathematics.		● ■	▲	● ■
PLO6(S5): Communicate advanced mathematical ideas and research results effectively in written and oral forms.		● ■	▲	● ■



PLO7(V1): Plan for self-learning and professional development with the ability to monitor progress and take actions for adjustment.	● ■	▲	● ■	
PLO8(V2): Commitment to professional and academic values when dealing with various issues.		● ■	▲	● ■
PLO9(V3): Work effectively on a team to establish goals, plan tasks, meet objectives and take responsibility as a team member and a leader.		● ■	▲	● ■

Remarks:

1. Learning outcomes are measured at the program level and assessed according to the assessment plan above, using direct and indirect methods.
2. Reviewing the regular students' evaluations of the courses and academic program.
3. Review the evaluations of other students for the academic curriculum.
4. Reviewing employers' evaluations of graduates' performance.
5. Seek the opinion of an external auditor of the program to identify strengths and weaknesses, make recommendations, and develop plans to implement these recommendations with completion rates.
6. Distribute questionnaires to top employers and other relevant social segments to gather their views on the performance level of graduates.
7. Organize regular meetings with employers and the target community of the program.
8. Gather input from employers and civil servants present in the program advisory committee.
9. Calculate performance indicators of learning outcomes annually.
10. Based on the results of measuring learning outcomes and performance indicators, prepare an improvement and development plan to be implemented in the following year and include a report of this plan in the program report for the following year.

Indirect Method of Assessment			
Data Sources	How collected	Performed by	Evaluated By
Program Evaluation Survey (PLOs section)	Electronic Copy	Students in second year (last year)	Analysis, Evaluation and Continuous Improvement committee
Alumni survey		Alumni	
Employer survey		Employers	
Exit & focus groups Interviews for Students who have applied for graduation			
Besides, there are result analysis from surveys that are used in Program Performance Indicators			
Course Evaluation Survey	Electronic Copy	All students in all courses	
Program Evaluation survey		Students in second year (last year)	
Student Experience Survey		All students in levels 3-4.	

Mechanism and procedures for Continuous Improvement



The program objectives set a guideline for program learning outcomes and graduate attributes, curriculum development, and teaching procedure. To ensure achievement of the program learning outcomes and Graduate attributes, a variety of assessment tools as discussed above are being used. The level of assessment and evaluation process is conducted at the end of every semester, and the results of this assessment process are used to improve the educational process to achieve the targeted program learning outcomes and graduate attributes. The process is summarized below in Infographic-4 which depicts the assessment and evaluation process and hence closing the loop. Note that evaluation is made at two different levels, course-level and program level. The outcome of the evaluation is utilized as feedback for improvement and incorporated into planning to enhance the overall attainment of Program Learning Outcomes and hence the corresponding Graduate attributes.

Developing frameworks and instruments for Assessment and Evaluation Process:

At the start of every semester (Fall/Spring), each course team (including course coordinator and instructors) arranges a course coordination meeting. In these meetings, previous semester's end-of-semester reports (submitted by each instructor and coordinator of the course) are discussed and appropriate changes are made in the course, including for example adjustments in the teaching strategies and assessment plan.

Course-level Evaluation/Improvement processes:

At the end of each semester, the faculty member is expected to assess the achievement of course learning outcomes (CLOs) as mentioned in the course specifications. Then, he should prepare a course assessment report where he reports outcomes achievement obtained. If the assessment reveals any weaknesses in a specific course learning outcome, then he should carefully analyze the results to identify the reason(s) of that weakness and propose corrective action(s) that can be implemented during the next semester to improve that specific outcome achievement. The impact of the proposed corrective actions on the outcome achievement shall be assessed at the end of the next semester. On the other hand, if the faculty member reveals any strengths in specific student outcomes, he can specify the reason(s) and suggest action(s) to maintain that strength(s). These reports also take into account the feedback of students acquired through Course Evaluation surveys and the overall delivery of the course. In the subsequent semester, the suggested corrective measures are implemented which are the driving force for the continuous improvement process.

1. After that, the Coordinator of the Quality Academic Accreditation at the Mathematics department collects the course portfolios and reports and the Assessment Analysis.
2. The Internal Review committee reviews the course reports that include any suggestions and improvement suggested by the faculty members. Also, the committee checks whether the actions for continuous improvement co-relate with the measurement of outcome or not, whether the actions suggested are appropriate and achievable or not, whether the actions suggested in the previous year have been implemented or not.
3. This process is held regularly at the end of each semester.
4. The members of the Assessment and Evaluation Committee meet to discuss comments and feedback from the students' attainment of courses outcomes and analysis of relevant surveys. The committee discusses areas of strength, areas for improvement, and decides action plans for improvement.
5. Discussing proposed action plans in the Department Council for more improvements and then submitting it.

Program-level Evaluation/Improvement Process:

The Department council not only takes the course-level reports into account, but also sheds light on the overall strengths and weaknesses of the program performance indicators (KPIs) and recommends the necessary actions to rectify such weaknesses. For this purpose, a similar process to the course-level evaluation one is implemented on program level and regular meetings are held by the council members to review and plan for the following semesters according to the program assessment plan. During such meetings, the council also reviews feedback obtained from constituents and any other initiatives at the university, stakeholder or national level.

6. Program Evaluation Matrix:

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Effectiveness of teaching and assessment methods	Students	Course Evaluation Survey (CES)	End of each course
Effectiveness Learning Resources and facilities	Students	Students Experience Evaluation Survey	End of Academic Year
	Students	Students Program Evaluation Survey	End of Academic Year
Effectiveness of Leadership	Faculty	Faculty Program Evaluation Survey	End of Academic Year
	Administrative	Administrative program Evaluation Survey	End of Academic Year
Achievement of PLOs and GAs	Students	Report progress on the PLOs and GAs assessment plan	End of Academic Year
	Alumni	Alumni surveys	End of Academic Year
	Employers	Employers Surveys	End of Academic Year
Achievement of program goals	All stakeholders in the program	Report progress on the program operational plan.	End of Academic Year
		Annual KPIs report	End of Academic Year
		Annual Program Report	End of Academic Year
The overall quality of all component of the program	All stakeholders in the program	Students Program Evaluation Survey	End of Academic Year
		Faculty Program Evaluation Survey	End of Academic Year
		Administrative program Evaluation Survey	End of Academic Year
		Meetings with Program Advisory panel	2-3 time (meetings)/year
	Independent Opinion (External Review)	Reports by the external reviewer	Every 2 years
	Program stakeholders	Self-study Report (SSR)	Every 4-5 years
	Program stakeholders	Self-evaluation Scales (SES)	Every 4-5 years

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 (2) years and updated according to results.

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-PG-1	Students' Evaluation of Quality of learning experience in the Program.	4.3	Average of overall rating of final year students for the quality of learning experience in the program.	End of the academic year.
2	KPI-PG-2	Students' evaluation of the quality of the courses	4.4	Average students' overall rating of the quality of courses in an annual survey.	End of the academic year.
3	KPI-PG-3	Students' evaluation of the quality of academic supervision.	4.3	Average students' overall rating of the quality of scientific supervision in an annual survey.	End of the academic year.
4	KPI-PG-4	Average time for students' graduation	4	Average time (in semesters) spent by students to graduate from the program.	End of the academic year.
5	KPI-PG-5	Rate of students dropping out of the program.	0	Percentage of students who did not complete the program to the total number of students in the same cohort.	End of the academic year.
6	KPI-PG-6	Employers' evaluation of the program graduates' competency.	4.3	Average of the overall rating of employers for the competency of the program graduates in an annual survey.	End of the academic year.
7	KPI-PG-7	Students' satisfaction with services provided.	4.3	Average of students' satisfaction rate with the various services provided by the program (food, transportation, sports facilities, academic advising, ...) on a five point scale in an annual survey.	End of the academic year.
8	KPI-PG-8	Ratio of students to faculty members.	3:1	The ratio of the total number of students to the total number of full-time and full time equivalent faculty members participating in the program.	End of the academic year.
9	KPI-PG-9	Percentage of publications of faculty members.	94%	Percentage of faculty members participating in the program with at least one research publication during the year to total faculty members in the program.	End of the academic year.
10	KPI-PG-10	Rate of published research per faculty member.	5:1	The average number of refereed and/or published research per each faculty member participating in the program during the year. (Total number of refereed	End of the academic year.



No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
				and/or published research to the total number of faculty members during the year).	
11	KPI-PG-11	Citations rate in refereed journals per faculty member.	27:1	The average number of citations in refereed journals from published research (total number of citations in refereed journals from published research for faculty members to the total published research).	End of the academic year.
12	KPI-PG-12	Percentage of students' publication.	20%	Percentage of students who: a. published their research in refereed journals. b. presented papers at conferences. to the total number of students in the program during the year.	End of the academic year.
13	KPI-PG-13	Number of patents, innovative products, and awards of excellence.	2	Number of: a. Patents and innovative products b. National and international excellence awards obtained annually by the students and staff of the program.	End of the academic year.
14	KPI-PG-14 Additional KPI	Percentage of faculty members' participation in community service	75%	The number of faculty who participated in community service divided by the total number of faculty in the program is provided by the Community Service Committee.	End of the academic year
15	KPI-PG-15 Additional KPI	The number of funded research projects in the program annually.	15	The total number of the funded project in the academic year, and it is provided by the Postgraduate Affairs & Scientific Research Committee.	End of the academic year
16	KPI-PG-16 Additional KPI	Employers' satisfaction with the program's mission and goals achievement rate.	4.3	The average value of all aspects in the survey entitled "Employer Satisfaction Survey on Program Mission & Goals" is calculated on a five-point scale in an annual survey and is provided by the Graduate Affairs Committee.	End of the academic year

*including KPIs required by NCAAA

H. Specification Approval Data:

Council / Committee	Department Meeting Minutes
Reference No.	3/43/6617, 1/1445 (revised), 1/1446 (revised)
Date	23/01/1443 AH-31/8/2021 G, 6/02/1445 H, 22/08/2023 13/08/2024 9/02/1446 (Revised)

