



Program Specification

Program Name: Mathematical Science
Qualification Level: Bachelor of Mathematical Science
Department: Mathematical Science
College: College of Science
Institution: Princess Nourah Bint Abdulrahman University



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A. Program Identification and General Information

1. Program Main Location:		
College of Science - Building 121-Main College Campus - Princess Nourah Bint Abdulrahman University – Riyadh.		
2. Branches Offering the Program:		
College of Science –Mathematical Science department.		
3. Reasons for Establishing the Program:		
(Economic, social, cultural, and technological reasons, and national needs and development, etc.)		
<ul style="list-style-type: none"> • Providing the labor market with academically qualified female employees who have the ability to apply mathematical, numerical and numeracy skills. • Providing research centers with qualified women cadres with mathematical foundations and theories in support of various science research. • Contribute to filling the need of statistics centers with female cadres who have the ability to statistical analysis and solve life problems. <p>The higher education of women in the Kingdom of Saudi Arabia received a great deal of care and attention that enabled her to take a confident step towards achieving her aspirations and showing their distinction in the field of Mathematical sciences and its applications.</p>		
4. Total Credit Hours for Completing the Program: (131 Credit Hours)		
5. Professional Occupations/Jobs:		
<ul style="list-style-type: none"> • Work (researcher - research assistant) in research centers that depend on mathematics and its branches. • Work in public and private sector institutions that require mathematical and statistical skills such as the Ministry of Finance, the Saudi Monetary Agency, banks, the General Statistics Authority, the Social Insurance Corporation, insurance companies, telecommunications companies, the Ministry of Health, the Ministry of Education, Education and Training evaluation commission. • Teaching mathematics in general education institutions. 		
6. Major Tracks/Pathways (if any):		
Major track/pathway	Credit hours (For each track)	Professional Occupations/Jobs (For each track)
1. Mathematics	131	It is illustrated above
7. Intermediate Exit Points/Awarded Degree (if any):		
Intermediate exit points/awarded degree	Credit hours	
None		

B. Mission, Goals, and Learning Outcomes

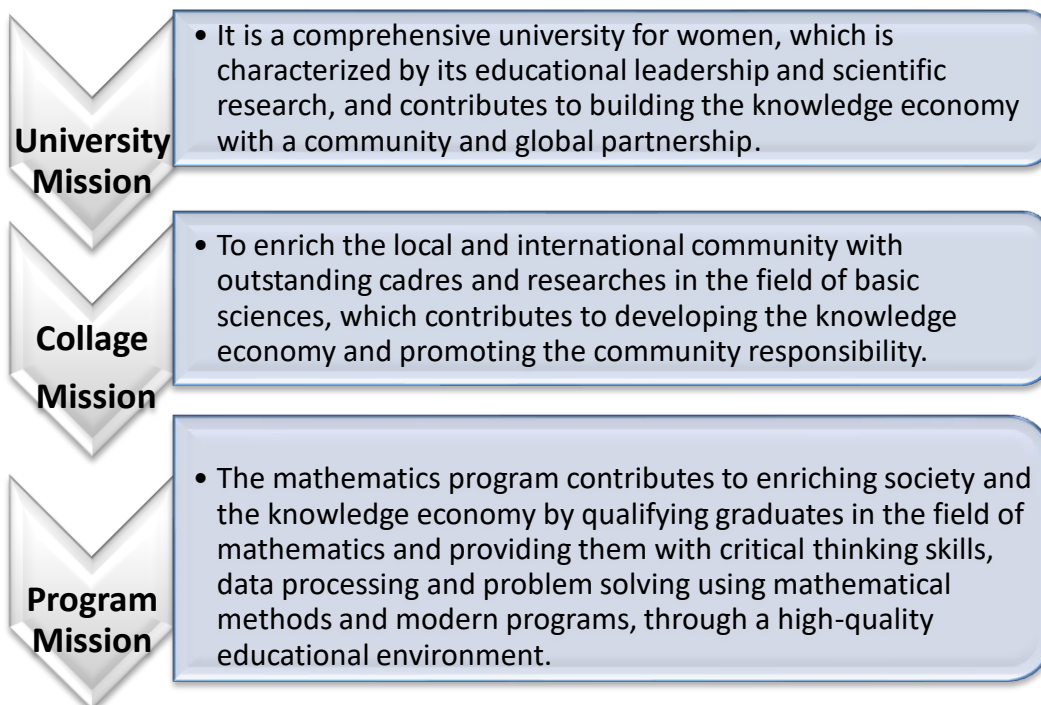
1. Program Mission:

The mathematics program contributes to enriching society and the knowledge economy by qualifying graduates in the field of mathematics and providing them with critical thinking skills, data processing and problem solving using mathematical methods and modern programs, through a high-quality educational environment.

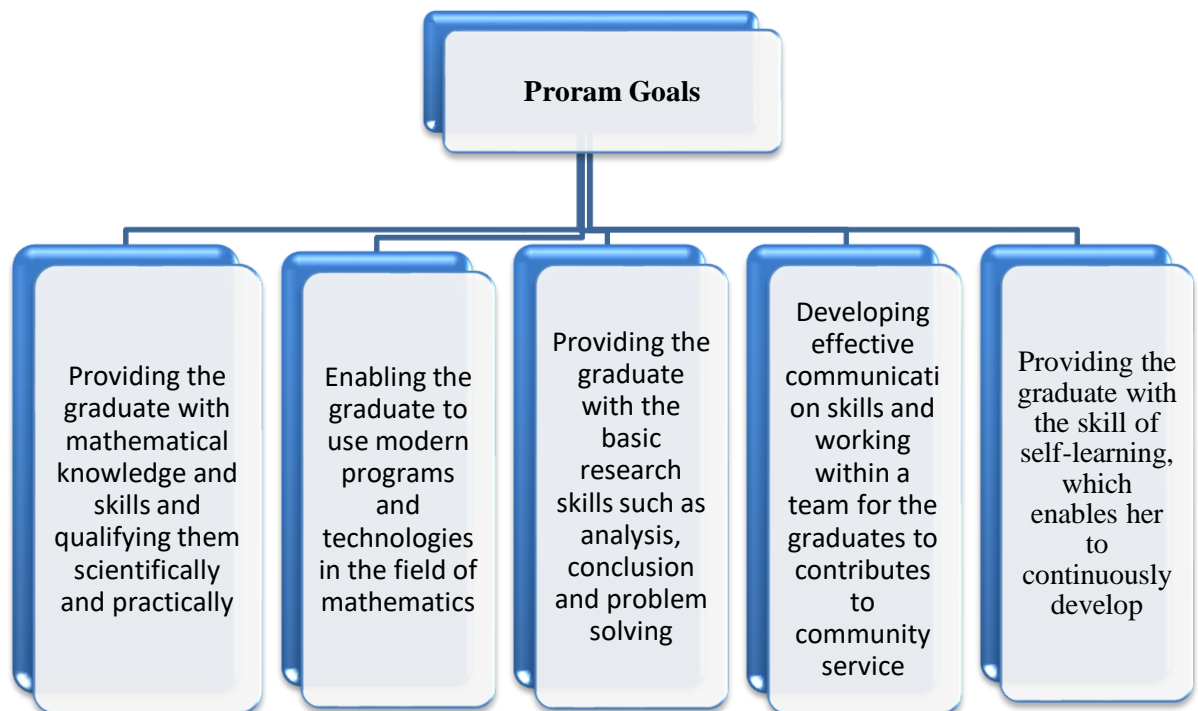
2. Program Goals:

1. Providing the graduate with mathematical knowledge and skills and qualifying them scientifically and practically.
2. Enabling the graduate to use modern programs and technologies in the field of mathematics.
3. Providing the graduate with the basic research skills such as analysis, conclusion and problem solving.
4. Developing effective communication skills and working within a team for the graduates to contribute to community service.
5. Providing the graduate with the skill of self-learning, which enables her to continuously develop.

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



University strategic goals	Collage of Science goals	The goals of the Mathematical Science department
Support the educational process	Providing distinguished and academically accredited educational programs in the fields of pure and applied sciences.	Provide graduates with knowledge and various techniques in the field of mathematical science
	Creating new educational programs to keep pace with the requirements of the times and the needs of development	Encourage graduates for continuous learning and scientific research.
Investing specialized human resources	Supporting joint research by holding local and global partnerships to enrich the knowledge economy.	Preparing distinguished graduates to work efficiently in the labor market
	Enriching the Arab library with distinguished scientific literature.	Development of communication skills and other skills among graduates
	Promote social responsibility and volunteer work in the field of basic science.	Development of the ability of graduates to make decisions and creative thinking



4. Graduate Attributes:

- The breadth and depth of knowledge of theories and professional foundations and developments in the field of specialization.
- Ability to apply knowledge in the field of specialization.
- Ability to effectively use modern technology.
- Ability to employ knowledge in research, investigation and problem solving in an innovative way to develop personal skills and self-development and continuing education in light of the variables.
- Ability to invest skills and experience gained in entrepreneurship to contribute to economic development.
- Ability to communicate effectively in both Arabic and English in the social and professional context.
- Pride in national identity, professional values and respect for other cultures.
- Initiating volunteer and community work.

5. Program learning Outcomes*

Knowledge and Understanding

K1	Describe methods for solving mathematical problems and equations
K2	Distinguish basic concepts in mathematics and statistics
K3	Recall the texts of the basic mathematics theories
K4	Describe the mathematical logic and methods of proof

Skills

S1	Build and use mathematical models to represent real-life problems
S2	Use mathematical logic in deduction and proof
S3	Choose appropriate strategies for solving mathematical problems, apply and compare them
S4	Analyze and discuss the results and mathematical procedures used orally or in writing.
S5	Use modern computer technologies and software in solving mathematical problems

Values

V1	Appropriately manage tasks and work within a team to achieve certain goals
V2	Ability to take responsibility, learn and work independently

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

C. Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	8	18	13.7%
	Elective	None	-	-
College Requirements	Required	5	15	11.4%
	Elective	1	2	1.5%
Program Requirements	Required	19	73	56%
	Elective	4	12	9.16%
Capstone Course/Project	Required	1	3	2.29%
Field Experience/ Internship	Required	-	-	-
Others	Free	3	8	6.1%
Total		41	131	100%

* Add a table for each track (if any)

2. Program Study Plan

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
Level 1	MATH101T	Calculus (1)	R	NONE	3	Department of Math
	PHY101T	General Physics (1)	R	NONE	3	College of Science
	BIO101T	General Biology	R	NONE	3	College of Science
	ENG101-1	English Language (1)	R	NONE	3	College of Arts
	CHEM101T	General Chemistry	R	NONE	3	College of Science
Level 2	MATH102T	Calculus (2)	R	MATH101T	4	Department of Math
	MATH131T	Foundations of Mathematics	R	NONE	4	Department of Math
	MATH171T	Analytic Geometry	R	NONE	4	Department of Math
	ENG102-2	English Language (2)	R	ENG101-1	3	College of Arts
	ISLS101M	Islamic Culture (1)	R	NONE	2	College of Arts
Level 3	MATH203T	Calculus (3)	R	MATH102T MATH171T	4	Department of Math
	MATH241T	Linear Algebra	R	MATH131T	4	Department of Math
	MATH161T	General Statistics	R	NONE	3	Department of Math
	ARAB101	Arabic composition	R	NONE	3	College of Arts
	CS242T	Computer Programming	R	NONE	2	Informatics Department
Level 4	MATH204T	Calculus (4)	R	MATH203T	4	Department of Math

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College or Department)
	MATH222T	Introduction to Differential Equations	R	MATH102T	4	Department of Math
	ISLS202M	Islamic Culture (2)	R	ISLS101M	2	College of Arts
	XXXXXX	Free Elective (1)	R	-	3	-
	MATHxxxT	Department Elective (1)	E	-	3	Department of Math
Level 5	MATH 342T	Number Theory	R	MATH131T	4	Department of Math
	MATH351T	Numerical Analysis	R	CS242T MATH203T MATH241T	4	Department of Math
	MATH 362T	Probability Theory	R	MATH203T MATH161T	3	Department of Math
	MATH 381T	Real Analysis (1)	R	MATH203T MATH131T	4	Department of Math
	ARAB202	Language Skills	R	NONE	2	College of Arts
Level 6	ISLS303M	Islamic Culture (3)	R	ISLS101	2	College of Arts
	MATH372T	Introduction to Topology	R	MATH 381T	4	Department of Math
	MATH382T	Real Analysis (2)	R	MATH381T	4	Department of Math
	MATHxxxT	Department Elective (1)	E	-	3	Department of Math
	XXXXXXX	College Elective	E	-	2	College of Science
	XXXXXX	Free Elective (2)	R	-	2	-
Level 7	MATH453T	Linear programming and application	R	MATH241T	3	Department of Math
	MATH443T	Group Theory	R	MATH131T	4	Department of Math
	MATH 473T	Differential Geometry	R	MATH204T MATH241T	4	Department of Math
	MATHxxxT	Department Elective (3)	E	-	3	Department of Math
	XXXXXX	Free Elective (3)	R	-	3	-
Level 8	ISLS404M	Islamic Culture (4)	R	ISLS101	2	College of Arts
	MATH444T	Fields and Rings	R	MATH443T	4	Department of Math
	MATH483T	Complex Analysis	R	MATH 381T	4	Department of Math
	MATH491T	Graduation Project	R	Ending 110 credit hours	3	Department of Math
	MATHxxxT	Department Elective (4)	E	-	3	Department of Math

* Include additional levels if needed

3. Course Specifications

Insert hyperlink for all course specifications using NCAAA template

<https://lifebox.pnu.edu.sa/webconsole/gtl.do?gid=ToSMfDjVKwhZIq4>

4. Program learning Outcomes Mapping Matrix

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

* Add a table for each track (if any)

Course code & No.	Program Learning Outcomes										
	Knowledge and understanding				Skills					Values	
	K1	K2	K3	K4	S1	S2	S3	S4	S5	V1	V2
Math 101 T	I	I	I				I			I	
Math 102 T	I		I			I	I			I	
Math 171 T		I		I		I				I	
Math 131 T		I				I		I		I	
Math 203 T		P	P				I			P	
Math 241 T		P		P			I			P	
Math 161T		I			I		I	I	I	P	
Math 204 T	P	P	P	P		P	I	P			
Math 222 T	P	P	P		P		I			P	
Math 342 T	M	P				P	P				
Math 351 T	M		P		P		P		P	P	
Math 362 T		P	P		P		P	P		P	
Math 372 T	M	P			P			P		P	
Math 381 T			P	M			P			P	
Math 382 T			P	M		P	P			P	
Math 453 T				M		M	M		M		I
Math 443 T		M	M				M			M	
Math 473T		M		M		M	M	M			
Math 444 T		M	M				M			M	
Math 483 T	M	M	M			M	M			M	
Math 491 T		M				M		M		M	M
Math 311 T		P	M				P	P			P
Math 323 T	M	P	M		M		P			P	
Math 424 T		P			M		P	P			
Math 445 T	M	P			M	M		M		P	
Math 463 T		P					P	P	P	P	
Math 432 T				P			P	P	P		P
Math 412 T		P			M				P	P	
Math 413 T		P					P			P	

<p>5. Teaching and learning strategies to achieve program learning outcomes Describe policies, teaching and learning strategies, learning experience, and learning activities, including curricular and extra-curricular activities, to achieve the program learning outcomes.</p>		
<p>Knowledge</p> <ol style="list-style-type: none"> Interactive lectures Brainstorming Discovery oriented Cooperative learning Solve problems Summarization Elaboration Concrete examples Dual coding The pause procedure The muddiest point Retrieval practice Storytelling Problem based learning Think-Pair-Share Repetition Pair work Math games Strategic questioning Real problem solving Explore-Before-Explain 	<p>Skills</p> <ol style="list-style-type: none"> Self-explanation Interactive lectures Solve problems Panel discussions Conduct research Practical training E-learning Reciprocal teaching Interleaved practice Flipped learning Project based learning Cooperative learning 	<p>Values</p> <ol style="list-style-type: none"> Self-explanation Interactive lectures Solve problems Panel discussions Conduct research Practical training E-learning Reciprocal teaching Interleaved practice Flipped learning Project based learning Cooperative learning Pair work Math games Strategic questioning Real problem solving Explore-Before-Explain
<p>6. Assessment Methods for program learning outcomes. Describe assessment methods (Direct and Indirect) that can be used to measure achievement of program learning outcomes in every domain of learning.</p>		
<p>Knowledge</p> <p>(Direct)</p> <ol style="list-style-type: none"> Written tests (Exams) Exercises and homework Class participation Scientific research Worksheets Remark Practice testing Online quizzes <p>(Indirect)</p> <p>Surveys</p>	<p>Skills</p> <p>(Direct)</p> <ol style="list-style-type: none"> Written tests (Exams) Research and articles Homework Practical activity Graduation Project Work papers, scientific reports and projects Class participation Practical tests Conducting exercises and homework by technology Preparation of research by technology Preparing presentations Reciprocal teaching <p>(Indirect)</p> <p>Surveys</p>	<p>Values</p> <p>(Direct)</p> <ol style="list-style-type: none"> Observation, research and articles Duties, reports and projects Participation in non-curricular activities in the department and faculty <p>(Indirect)</p> <p>Surveys</p>

D. Student Admission and Support:

1. Student Admission Requirements

Mathematical Science program has approved and publicly disclosed criteria and requirements for the admission and registration of students that are appropriate to the nature of the program, and are applied fairly as shown in the following links:

<https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A804afe7a-12f2-40f7-a6d5-0038be5e62c2>

<https://www.pnu.edu.sa/en/Pages/BacaloryaPrograms.aspx>

2. Guidance and Orientation Programs for New Students

Mathematics program provides comprehensive orientation for new students, ensuring their full understanding of the types of services and facilities available to them. Also, the program informs students about their rights and duties, the code of conduct, and grievance, complaints, and discipline procedures, using a variety of means; and applies them fairly as shown in the following links:

<https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Aa9f7b938-2b18-41c7-a943-cab0555aeb66>

<https://www.pnu.edu.sa/en/Pages/StudentHosting.aspx>

<https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Ad043aed5-6f25-4680-a191-7b959c5350ff>

<https://www.pnu.edu.sa/en/Deanship/studaffairs/Pages/SkillRegist.aspx>

3. Student Counseling Services

(academic, career, psychological and social)

- Students are provided with effective academic, professional, psychological, and social guidance, and counselling services through qualified and sufficient staff.
<https://www.pnu.edu.sa/en/deanship/studaffairs/pages/socialunit.aspx>
- Mechanisms are applied to identify gifted, creative, talented, and underachieving students in the program, and appropriate programs are available to care for, motivate, and support each group of them.
<https://www.pnu.edu.sa/ar/ViceRectorates/VRCSED/Documents/3172019/Support.pdf>
- Students in the program are offered extracurricular activities in variety of fields to develop their abilities and skills, and the program takes appropriate actions to support and motivate their participation.
- The students and alumni of the program are provided with additional activities for their professional development, consistent with the intended learning outcomes, and labour market developments.
- The program implements effective procedures to monitor students' progress and to verify their fulfilment of graduation requirements.

Complete process of academic advising:

- Determine an academic guide for each student
- Announcing the names of students on the offices of instructors and Member Tables
- Lists of female guides and their students at the Academic Advising Unit in the department and college
- Provide guidance tools (teaching plan, plan balancing, university calendar, study schedules, reference numbers, tree drawing)
- Early guidance
- Academic Advising Platforms
- Activating the role of academic guidance friends in the educational departments
- Do not modify the first and second level tables
- Inform the Guides of the closed groups
- Upload unresolved cases to the Deanship of Admission and Registration
- Inventory of defaulters
- Students expected to graduate
- Activating the periodic meetings of the instructors with their students
- Headquarters for Academic Advising Unit
- Submit the guidance report by the college to the Deanship

4. Special Support

(low achievers, disabled, gifted and talented)

- Mathematical science program applied mechanisms to identify gifted, creative, talented, and underachieving students in the program, and appropriate programs are available to care for, motivate, and support each group of them as shown in the following link

<https://www.pnu.edu.sa/en/Pages/Scholarships.aspx>

- The students in the program are offered extracurricular activities in variety of fields to develop their abilities and skills.
- The program implements an effective mechanism to communicate with its alumni and involve them in its events and activities, explore their views, and benefit from their expertise and support; and provides updated and comprehensive databases about them.

Effective mechanisms are applied to evaluate the adequacy and quality of services provided to normal students and special needs students and measure their satisfaction with them; and the results are used for improvement.

E. Teaching and Administrative Staff

1. Needed Teaching and Administrative Staff

The following link shows the teaching and administrative staff in the program
https://drive.google.com/drive/folders/19Y4C3udkSCuRVZsVu_e2zPMmLI-3JH0u?usp=sharing

2. Professional Development

2.1 Orientation of New Teaching Staff

Describe briefly the process used for orientation of new, visiting and part-time teaching staff

- The program provides appropriate orientation for new and adjunct teaching staff to ensure their understanding of the nature of the program, their rights, tasks, responsibilities, and workload.
 - The Deanship of Training and Development conducts various workshops for newly appointed members to develop their skills in modern teaching methods and assessment methods.
 - There are induction seminars at the beginning of the academic year to assist members to understand the nature of the program and their responsibilities towards it.
 - Recently, The Deanship of Academic Development has established a program of excellence in teaching and learning for newly appointed faculty members, and the program has been prepared based on the tasks of faculty members in
 - Teaching
 - Scientific Research
 - Community Service
 - Introducing newly appointed faculty members to the regulations, regulations, and organizational procedures in force at the university
 - Introducing university agencies, deanships and facilities
 - Solve problems directly with the concerned authorities
 - The appropriate setting to enter the university's work system
- <https://documentcloud.adobe.com/link/track?uri=urn%3Aaid%3Acsd%3AUS%3Aeff311b6-8ce9-4e6b-8e2a-405e98dad4f7>
- The program provides appropriate orientation for new and adjunct teaching staff to ensure their understanding of the nature of the program, their rights, tasks, responsibilities, and workload.
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 - The appropriate setting to enter the university's work system

<https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3Aeff311b6-8ce9-4e6b-8e2a-405e98dad4f7>

2.2 Professional Development for Teaching Staff

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

- There are workshops and training courses periodically to develop faculty members professionally
- Encourage teaching staff to attend and participate in conferences and seminars
- The teaching staff participates in professional and academic development programs in accordance with a plan that contributes to the development of their performance.
- Using the results of the courses questionnaires to improve performance of the teaching staff.

F. Learning Resources, Facilities, and Equipment

1. Learning Resources.

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

- Mathematical Science program implements clear policies and procedures that ensure the adequacy and appropriateness of learning resources and services provided to support student learning and implements effective procedures for the management of resources and reference materials needed to support teaching and learning processes.
- The library has enough various resources that are easily accessible and appropriate to the needs of the program and the number of students; are made available in adequate and appropriate times for female student section; and are updated periodically. Recently, the working hour of the central library is extended to 11 pm for all working days and make Saturday as specific day for male from 10 am - 4 pm.
- Mathematical Science program has specialized electronic resources, such as, an available digital reference in digital library and software in computer labs, and appropriate databases and electronic systems that allow beneficiaries to access the information, research materials, and scientific journals from within or outside the institution via blackboard.

2. Facilities and Equipment

(Library, laboratories, medical facilities, classrooms, etc.).

- The program has suitable classrooms (each classroom has smart and normal boards and I-podium) and facilities for its needs.

- The program has 6 laboratories (computer labs), each lab has 24 personal computers and technology equipment (smart and normal boards and i-podium), that are suitable to the specialty and sufficient to conduct research and scientific studies according to the program goals; and applies appropriate mechanisms to maintain and update them.
- All health, and general and professional safety requirements are available in the facilities, equipment, and the educational and research activities.
- The program has facilities, equipment, and services suitable for those students, teaching staff, and employee with special needs. Most of comfortable facilities are available for staff and students, such as metro, coffee machines, prayer and rest places, and health and gym services.
- The program evaluates the effectiveness and efficiency of learning resources, facilities, and equipment of all types and evaluate by using frequent questionnaires; and the results are used for improvement.

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

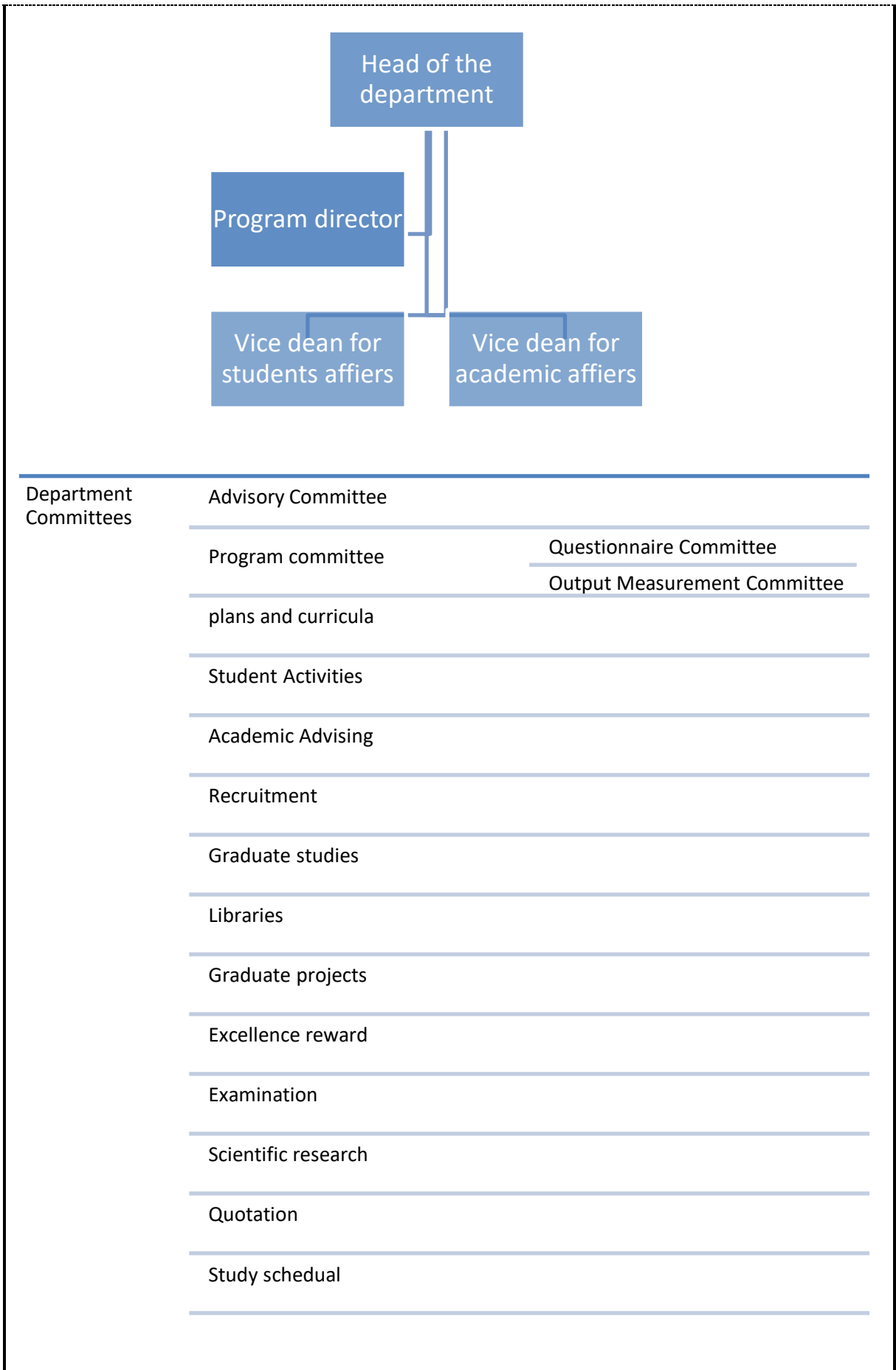
- The security and safety systems are provided to the facilities by the Safety and Security unit in the University.
- The College has emergency plans, safety signs, emergency exit signs and laboratory safety manuals.
- Preparing a fire evacuation plan periodically
- First aid kits are available.
- The College has emergency plans, safety signs, emergency exit signs and laboratory safety manuals.

G. Program Management and Regulations

1. Program Management

1.1 Program Structure

(including boards, councils, units, committees, etc.)



1.2 Stakeholders Involvement

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

Mathematical sciences program starting to be more efficient to assess its attributes and its learning outcomes using program courses.

- In selecting program courses for assessment, it is critical to start with the faculty members who are more motivated. Those members not only would help to move the process forward, but also would be beneficial in the following years of assessment to train other faculty members. Assessment methods (or tools) are classified into two categories. Direct methods and indirect methods. Assessment requires that each attribute (outcome) is assessed by one or more direct methods, but a meaningful assessment would use both direct and indirect methods. Direct methods allow the direct examination or observation of student knowledge or skills associated with the indicators. The indirect methods assess opinions or self-reports to indicate student abilities. Examples of indirect methods include exit interviews, alumni surveys, and archival records. Highlights of the assessment methods.
- The Curriculum is designed using the following processes:
 1. Determine your vision and intention for the curriculum.
 2. Outline your overarching topics.
 3. Review any current curriculum to determine what to keep and what to retire.
 4. Organize your standards based on the topics and timeline.
 5. Write the lessons to provide a comprehensive student learning experience.
 6. Create or attach a variety of assessments to the lessons.
 7. Determine what materials and resources you'll need.

The teaching and learning strategies of the program are student-centered and encourage active learning. Mathematical science program teaching and learning strategies and assessment methods vary according to its nature and level, enhance the ability to conduct research, and ensure students' acquisition of higher cognitive thinking and self-learning skills.

As a response to the beneficiary's surveys of the Mathematical sciences program from employment agencies and graduates, the program develops its goals and learning outcomes. In addition, a training unit for graduates has been established to apply the training to align the learning outcomes of the field experience activities with the learning outcomes of the program.

2. Program Regulations

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

- Admission and Registration Regulations

<https://pnu.edu.sa/en/pages/bacaloryaprograms.aspx>

<https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:eed01f7c-3c81-494b-a6c9-dd1daf3b0f60>

- Student Rights Regulations

<https://www.pnu.edu.sa/ar/Deanship/studaffairs/Pages/Housing.aspx>

H. Program Quality Assurance

1. Program Quality Assurance System

Provide online link to quality assurance manual

<https://www.ncaaa.org.sa/Pages/default.aspx>

2. Program Quality Monitoring Procedures

- Mathematical Science program management implements an effective quality assurance and management system that is consistent with the institution quality system.
- The teaching staff, employee, and students participate in planning, quality assurance, and decision-making processes.
- The program management approves key performance indicators that accurately measure the program performance and coordinates to provide regular data on them. The program analyzes the evaluation data annually (e.g., performance indicators and benchmarking data, student progress, program completion rates, student evaluations of the program, courses and services, views of graduates and employers); and results are used in planning, development, and decision-making processes.
- The program conducts a periodic, comprehensive evaluation (every three / five years) and prepares reports about the overall level of quality, with the identification of points of strength and weakness; plans for improvement; and follows up its implementation.

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

Reviewing the courses reports that are provided by another department at the end one every semester.

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

N/A- There are no other branches

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

N/A

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

Mathematical sciences program starting to be more efficient to assess its attributes and its learning outcomes using program courses. In selecting program courses for assessment, it is critical to start with the faculty members who are more motivated. Those members not only would help to move the process forward, but also would be beneficial in the following years of assessment to train other faculty members. Assessment methods Assessment methods (or tools) are classified into two categories. Direct methods and indirect methods. Assessment requires that each attribute (outcome) is assessed by one or more direct methods, but a meaningful assessment would use both direct and indirect methods. Direct methods allow

the direct examination or observation of student knowledge or skills associated with the indicators. The indirect methods assess opinions or self-reports to indicate student abilities. Examples of indirect methods include exit interviews, alumni surveys, and archival records. Highlights of the assessment methods.

7. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Effectiveness of teaching and assessment.	Students	Survey	At the end of each semester
Verifying of achievement of course learning outcomes	Program quality and accreditation unit	Learning outcomes matrix General students' level	At the end of academic year
Verifying standards of student achievement.	Independent member teaching staff	1- Check marking by an independent member teaching staff of samples of student work. 2- Exchanging periodically to mark exams or a sample of assignments with faculty members	At the end of each semester
Planning procedures for periodic review of the effectiveness of the course and planning for its development	Faculty members inside the institution, students, program and collage quality	1- Periodic review of courses by faculty members to discuss recurring problems to find the appropriate solution. 2- Given the opportunity for students to express their views on what is taught and receive proposals and study the effectiveness.	Along the academic year
Evaluation of the course file	Program quality and accreditation unit	Check and review the course file content.	At the end of each semester

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

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

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

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

8. Program KPIs*

The NCAAA KPIs at the period (1440-1442) year

You can find the KPIs analysis in the following link

<https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Ascds%3AUS%3A83bb0349-c3a6-4bed-88e7-94a40e7da50b>

The period to achieve the target (5) year.

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
1	KPI-P-01	Percentage of achieved indicators of the program operational plan objectives	75%	Direct and indirect	End of the year
2	KPI-P-02	Students' Evaluation of quality of learning experience in the program	4	indirect	End of the year
3	KPI-P-03	Students' evaluation of the quality of the courses	3.75	indirect	End of the year
4	KPI-P-04	Completion rate	45%	Direct	Every semester
5	KPI-P-05	First-year students retention rate	50%	Direct	Every semester
6	KPI-P-06	Students' performance in the professional and/or national examinations	35	Direct	Every semester
8	KPI-P-08	Average number of students in the class	33	Direct	Every semester
9	KPI-P-09	Employers' evaluation of the program graduate proficiency	4.5	Indirect	annually
10	KPI-P-10	Students' satisfaction with the offered services	3.8	Indirect	annually
11	KPI-P-11	Ratio of students to teaching staff	14:1	Indirect	Every semester
12	KPI-P-12	Percentage of teaching staff distribution: Ph.D. Holder Senior Lecturer Instructor	70% 18% 12%	Indirect	annually
13	KPI-P-13	Proportion of teaching staff leaving of the program	1%	Indirect	annually

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
14	KPI-P-14	Percentage of publications of faculty members	40%	Indirect	annually
15	KPI-P-15	Rate of published research per faculty member	0.4	Indirect	annually
16	KPI-P-16	Citations rate in refereed journals per faculty member	25	Indirect	annually
17	KPI-P-17	Satisfaction of benefiteres with the learning resources	3.61	Indirect	annually

Program KPIs

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
1	KPI_P_1.1	The level of performance of students in professional or national test	80%	Direct	Every year
2	KPI_P_1.2	The percentage of graduates' satisfaction with the learning outcomes of the program	75%	Direct and indirect	Every semester
3	KPI_P_1.3	Percentage of graduates being employed or enrolled in postgraduate programs within a year of their graduation	80%	Indirect	Every year
4	KPI_P_2.1	Number of courses and workshops in programs	5	Direct	Every year
5	KPI_P_2.2	The level of students in practical courses that need programs	95%	Direct	Every semester
6	KPI_P_2.3	Number students who attended training courses and workshops	50	Direct and indirect	Every year
7	KPI_P_2.4	Employer satisfaction rate	90%	Indirect	Every year
8	KPI_P_3.1	Number of courses, lectures or workshops in scientific research skills	5	Direct	Every year
9	KPI_P_3.2	The results of the students in the research project	90%	Direct	Every semester
10	KPI_P_3.3	The results of measuring PLOs relating to research and concluding skills	70%	Direct	Every year
11	KPI_P_4.1	The level of students in field training	85%	Direct	Every year
12	KPI_P_4.2	The results of student's assessments on communication skills and team works within graduation project	80%	Direct	Every semester
13	KPI_P_4.3	Employer satisfaction rate	90%	Indirect	Every year

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
14	KPI_P_5.1	Results of the student's assessment of this skill within the graduation project	90%	Direct	Every semester

* Including KPIs required by NCAAA

I. Specification Approval Data

Council / Committee	The Department of Mathematics
Reference No.	8
Date	7 th December 2022