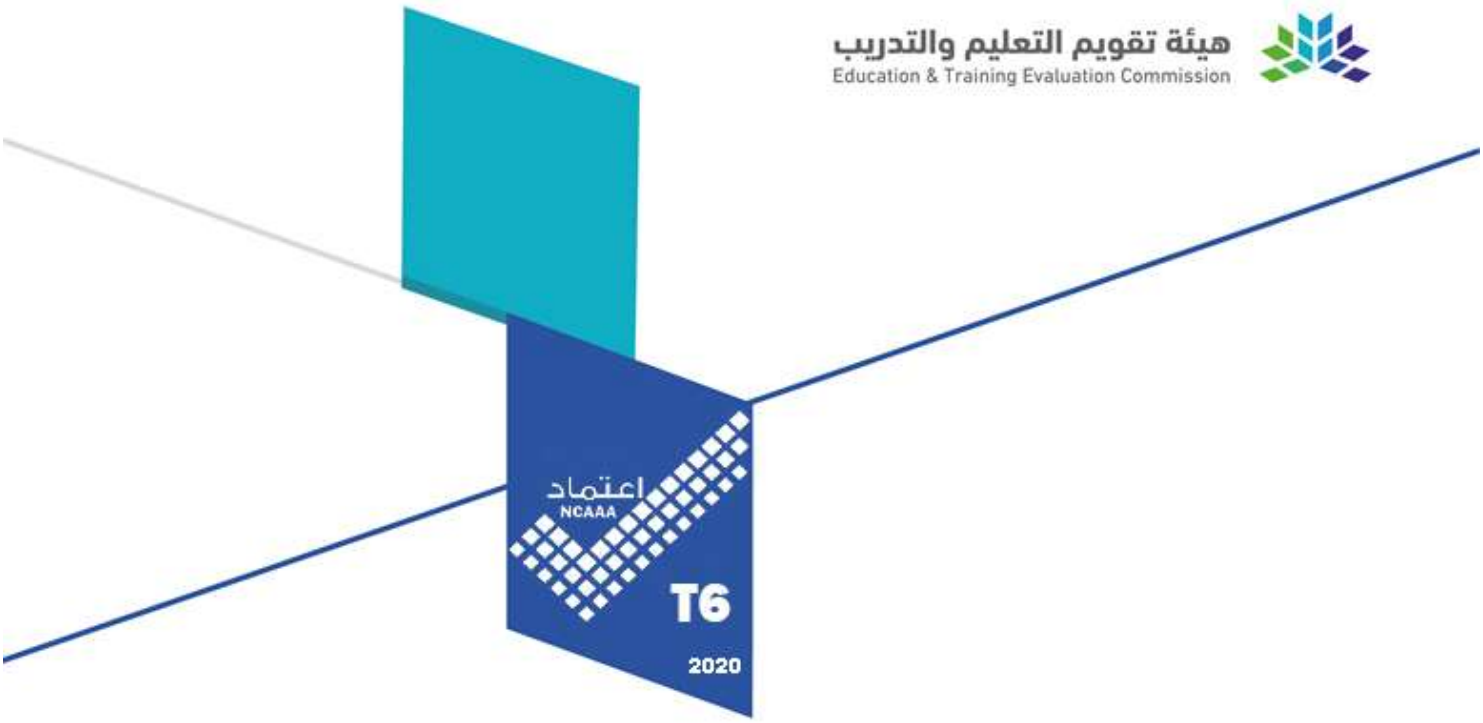
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Annual Program Report

Program Name:	**B.Sc. in Applied Mathematics**
Qualification Level:	**Level 6**
Department:	**Mathematics and Statistics**
College:	**College of Science**
Institution:	**Imam Mohammad Ibn Saud Islamic University**
Academic Year:	**2021/2022**
Main Location:	**Main campus for male section**
Branches offering the Program:	**King Abdullah for the female section**

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A. Implementation of Previous Action Plan

Considering the recommendations of previous year annual report, list the planned actions and their status.

S	Planned Actions	Responsibility of Action	Planned Completion Date	Level of Completion		If Not Completed	
				Completed	Not Completed	Reasons	Proposed Actions
1	Organize trainings for students in the final year of graduation to prepare for the national Teachers Test	Head of Dept.	May 2022	✓			Continuing
2	Providing mathematical software for their personal use	Head of Dept.	May 2022		✓	MATLAB has been provided for students	Continuing
3	Implementing the new plan of the program	Head of Dept.	Sept. 2022	✓			Continuing

B. Program Statistics

1. Students Statistics (in the year concerned)

No.	Item	Results
1	Number of students who started the program	161
2	Number of students who graduated	37
3	Number of students who completed major tracks within the program (if applicable)	
	a.	N.A.
	b	N.A.
	c.	N.A.
4	**a.** Number of students who completed the program in the minimal time	23
5	**a.** Percentage of students who completed the program in the minimal time (Completion rate)	20%
6	Number of students who completed an intermediate award specified as an early exit point (if any)	N.A.
7	Percentage of students who completed an intermediate award specified as an early exit point (if any)	N.A.

Comment on any special or unusual factors that might have affected the completion rates:

Factors affecting low completion rate are:

1. **A considerable number of students enrolled in the program have transferred to Engineering college, Computer and Information Science college, or Economic and Administration Science College.**
2. **A considerable number of students enrolled in the program have low level in Mathematics.**

2. Cohort Analysis of Current Graduate Batch

Since for the program of B.Sc. in Applied Mathematics, the students are enrolled during the first and second semesters, we will attach the cohort statistics.

Student Categories / Years		Total cohort enrollment	Withdrawn	Retained till year end	Not passed	Passed	Passing rate
Three Years Ago	M	96	57	39	25	7	18%
	F	37	5	32	0	16	50%
	Total	133	62	71	25	23	33%
Two Years Ago	M	112	45	67	26	41	61%
	F	110	10	100	35	65	65%
	Total	222	55	167	61	106	63%
Last Year	M	83	38	45	27	18	40%
	F	57	11	46	12	34	74%
	Total	140	49	91	39	52	57%
Current Year	M	74	25	49	27	22	44%
	F	87	18	69	30	39	56%
	Total	161	43	118	57	61	52%

Comments on the results:

Some students are not committed to their levels of study. This causes irregularity in their cursus.

* add more rows for further years (if needed)

** attach separate cohort analysis report for each branch

3. Analysis of Program Statistics

(including strengths, areas for improvement, and priorities for improvement)

Strengths:

Low number of students in classes.

Areas for Improvement:

Completion rate, 33%.

Retention rate, 53.4%.

Priorities for Improvement:

Improve the quality of the enrolled students to be appropriate to the intended level of study.

C. Program Learning Outcomes Assessment

1. Program Learning Outcomes Assessment Results.

#	Program Learning Outcomes	Assessment Methods (Direct and Indirect)	Performance Target	Results
Knowledge and Understanding				
K1	**Understand the fundamentals of Mathematics as a rigorous living discipline in its own right.**	**D1**	**Top 15%**	**Top 5%**
K2	**Describe and outline the development of the application of Mathematics as a language in a wide range of situations relevant to research and industry.**	**I1**	**3.5/5**	**3.6/5**

#	Program Learning Outcomes	Assessment Methods (Direct and Indirect)	Performance Target	Results
Skills				
S1	Develop critical abilities of an analytical, creative, and problem-solving nature.	D5	70%	86%
S2	Design mathematical models of real life problems.	I2	satisfied	satisfied
S3	Develop critical skills with regard to literature searching, appraising, and evaluating from a variety of sources, and synthesizing the results.	D2	100%	100%
S4	Make efficient use of computer technology and software in solving mathematical problems.	I3	Good	Good
Values				
V1	Demonstrate integrity, professional and academic ethics, participation in finding constructive solutions to some societal issues and a commitment to responsible citizenship.	I2	Very good	Very good
V2	Self-evaluate of the level of learning and performance, insist on achievement and excellence, and make logical decisions supported by evidence and arguments independently.	D2	100%	100%
V3	Lead teamwork with functional flexibility and effectiveness, and take responsibility for professional development, participating in developing the group's performance, and enhancing the quality of life.	D4	Good	Good
Comments on the Program Learning Outcome Assessment results.				
The PLOs are updated to follow the new NQF.				

* Include the results of measured learning outcomes during the year of the report according to the program plan for measuring learning outcomes

** Attach a separate report on the program learning outcomes assessment results for male and female sections and for each branch (if any)

2. Analysis of Program Learning Outcomes Assessment

(including strengths, Areas for Improvement:, and priorities for improvement)

Strengths:

- The accurate assessment of the Program Learning Outcomes helps to find and detect the point of weakness in the academic program.
- The Courses Learning Outcomes of the key courses need revising to serve the Program Learning Outcomes.

Areas for Improvement:

More attention MUST be paid to Courses Learning Outcomes, especially those key courses.

Priorities for Improvement:

Revise Courses Learning Outcomes for key courses with paying more attention while delivering these Courses Learning Outcomes to improve Program Learning Outcomes assessment.

D. Summary of Course Reports

1. Teaching of Planned Courses / Units

List the courses / units that were planned and not taught during the academic year, indicating the reasons and compensating actions.

Course	Units/Topics	Reasons	Compensating Actions
MAT 381 (144320 – Female section)	4 Credit Hours / Mathematical Methods	No students needed this course	No actions
MAT 483 (144320 – Female section)	3 Credit Hours / Topology	No students needed this course	The course will have the priority for the summer semester
MAT 485 (144320 – Female section)	4 Credit Hours / Numerical Optimization	No students needed this course	The course will have the priority for the summer semester
MAT 499 (144320 – Female section)	2 Credit Hours / Research Project	No students needed this course	No actions

2. Courses with Variations

List courses with marked variations in results that are stated in the course reports, including: (completion rate, grade distribution, student results, etc.), and giving reasons for these variations and actions taken for improvement.

The following table concerns the first semester

Course Name &Code	variation	Reasons for variation	Actions taken
MAT 101	Less than 40% pass the course.	Since Calculus courses are the filters for our program, this result seems to be natural.	None
MAT 102	Less than 30% pass the course, and none get A+.	Since Calculus courses are the filters for our program, this result seems to be natural.	None
MAT 483	Only 33% pass the course.	This course (Topology) is classified as a Pure Mathematics course and our students are more qualified in the Applied Mathematics.	None

3. Result Analysis of Course Reports

(including strengths, Areas for Improvement:, and priorities for improvement)

Strengths:

• All courses had been taught as scheduled, with nearly no variation. • The successful implementation of online learning via Blackboard, and other platforms (Zoom, ...). • The experiences added to students and teaching staff in teaching via Blackboard.
Areas for Improvement:
• Provide students with tools that help them in online learning. • Computer Labs need more attention (several courses have no appropriate labs) • Department library and study room are required • Study room for the students with supported IT preferences
Priorities for Improvement:
• Prepare Labs for better graduates. • Establish a departmental library with associated study room, both equipped with PC and printers, and connected to the internet.

E. Program Activities

1. Student Counseling and Support

Activities Implemented	Brief Description*
Orientation for freshmen students.	Introduction to their study plan; course assessment; progression; student responsibilities; student expectations; college rules and regulations.
Orientation for post first year students	Effectiveness of progression; timely graduation in accordance with the study plan, Maintenance of an appropriate level of academic achievement, and Improvement in the student's autonomous decision making skills. Provide students with at least one tour of programs' facilities and relate the function of each workshop/lab in the programs.
Two advising sessions at least	Student advisors will address all student concerns that relate to an area identified in the orientation. They must meet assigned students at least twice for each semester. Student advisors are responsible for: • Exceptional cases for the students; • Adding/Dropping course is the responsibility of the Academic Advisor ; • Major Selection is the responsibility of the Academic Advisor.
Comment on Student Counseling and Support **	
https://units.imamu.edu.sa/colleges/science/AcademicDepts/Pages/default.aspx	

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

2. Professional Development Activities for Faculty and Other Staff

Activities Implemented	Brief Description*
None	
Comment on Professional Development Activities for Faculty and Other Staff **	
Back from a pandemic period.	

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

3. Research and Innovation

Activities Implemented	Brief Description*
184 Refereed Journal Papers	Published papers during the year 2022
10 Scientific Seminars	Faculty members gave online seminars presenting results of some of their papers
Comment on Research and Innovation **	
None	

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

4. Community Partnership

Activities Implemented	Brief Description*
None	
Comment on Community Partnership **	
Back from a pandemic period.	

* including action time, number of participants, results and any other statistics.
** including performance evaluation on these activities

5. Analysis of Program Activities

(including strengths, Areas for Improvement:, and priorities for improvement)

Strengths:
Direct and indirect assessment for every LO is performed accurately and instantly.
Areas for Improvement:
• Performance evaluation for counselling is not assessed due to the pandemic. • Revise CLOs for key courses to improve the assessment values of PLOs. • Students extracurricular activities need more attention. • Labs for better-delivering courses. • Libraries and study rooms supported with IT means.
Priorities for Improvement:
• Libraries and study rooms supported by IT means. • Labs for better-delivering courses. • Students' extracurricular activities need more attention. • Revise CLOs for key courses to improve the assessment values of PLOs.

F. Program Evaluation

1. Evaluation of Courses

Course Code	Course Title	Student Evaluation (Yes-No)	Other Evaluations (specify)	Developmental Recommendations
MAT 101	Calculus (1)	Yes	No	None
MAT 102	Calculus (2)	Yes	No	None
STA 111	Introd. to Probability & Statistics	Yes	No	None
MAT 203	Calculus (3)	Yes	No	None
MAT 220	Elements of Sets & Structures	Yes	No	None
MAT 251	Math Software	Yes	No	None
MAT 222	Introd. to Number Theory	Yes	No	None
MAT 223	Linear Algebra	Yes	No	None
MAT 231	Introd. to Differential Equations	Yes	No	None
STA 211	Mathematical Statistics	Yes	No	None
MAT 311	Real Analysis	Yes	No	None
MAT 333	Numerical Analysis (1)	Yes	No	None
MAT 351	Introd. to Operations Research	Yes	No	None
MAT 354	Combinatorics and Graphs	Yes	No	None
MAT 312	Complex Variables	Yes	No	None
MAT 321	Modern Algebra	Yes	No	None
MAT 371	Financial Mathematics	Yes	No	None
MAT 381	Selected Course (1)	Yes	No	None
COM 207	Communication Skills	Yes	No	None
MAT 434	Partial Differential Equations	Yes	No	None
MAT 461	Intro. to Cryptography & Coding	Yes	No	None
MAT 483	Selected Course (2)	Yes	No	None
MAT 433	Numerical Analysis (2)	Yes	No	None
MAT 463	Modeling and Simulation	Yes	No	None
MAT 485	Selected Course (3)	Yes	No	None
MAT 499	Research Project	Yes	No	None

2. Students Evaluation of Program Quality

Evaluation Date : Program Evaluations	Number of Participants: 44 Students (7 males and 37 females)
Students Feedback	**Program Response**
Strengths: **Questions:** 1. Q7-The Program gave me a good insight into my major. 2. Q8-I expect what I have studied will benefit me in my future career. 3. Q13-The program improved my skills to work in a team. 4. Q14-The program helped me improve my performance. 5. Q15- The program helped me improve my academic achievement skills.	1. Q7-Average Score 3.59. 2. Q8-Average score 3.59 3. Q13-Average Score 3.57 4. Q14-Average Score 3.43 5. Q15-Average Score 3.57
Areas for Improvement:: **Questions:** 1. Q22-There are adequate facilities and facilities for practicing various activities. 2. Q21-Computer equipment was sufficient for my needs. 3. Q17-I am satisfied with the sources of information in the library and with their quality.	1. Q22-Average Score 2.75. 2. Q21-Average score 2.59 3. Q17-Average Score 2.75
Suggestions for improvement: 1. Libraries and study rooms supported by IT means. 2. Open labs for the students with appropriate software.	

* Attach report on the students evaluation of program quality

3. Other Evaluations None

(e.g. Evaluations by independent reviewer, program advisory committee, and stakeholders (e.g., faculty members, alumni, and employers)

Evaluation method :	Date:	Number of Participants :
Summary of Evaluator Review		**Program Response**
Strengths: • •		
Points for Improvements:: • •		
Suggestions for improvement • •		

* Attach independent reviewer's report and stakeholders' survey reports (if any)

4. Key Performance Indicators (KPIs)

List the results of the program key performance indicators (including the key performance indicators required by the National Center for Academic Accreditation and evaluation)

No	KPI	Target Benchmark	Actual Value	Internal Benchmark	Analysis	New Target Benchmark
1	Percentage of achieved indicators of the program operational plan objectives	80%	82%	92%	Good Achievement	90%
2	Students' Evaluation of quality of learning experience in the program	3.5/5	4.14/5	3.6/5	Good Achievement	4/5
3	Students' evaluation of the quality of the courses	3.5/5	3.41/5	3.55/5	Good Achievement	3.5/5
4	Completion rate	40%	20%	9%	About 45% of students leave the program	30%
5	First-year students retention rate	50%	55%	33%	Good Achievement	50%
6	Students' performance in the professional and/or national examinations	40%	48.15	30%	Good Achievement	50%
7	Graduates' employability and enrolment in postgraduate programs	40%	38% (based on obtained replies)	26.4%	Needs improvement	40%
8	Average number of students in the class	17	20	17	Good Achievement	17
9	Employers' evaluation of the program graduates proficiency	13/20	14/20	14/20	Good Achievement	14/20
10	Students' satisfaction with the offered services	3.5/5	2.96/5	2.86/5	Needs improvement	3.5/5
11	Ratio of students to teaching staff	14	21	22	Good Achievement	18
12	Percentage of teaching staff distribution	15% Prof. 25% Assoc. Prof. 50% Assis. Prof. 10% Other	15% Prof. 25% Assoc. Prof. 50% Assis. Prof. 10% Other	15% Prof. 18% Assoc. Prof. 30% Assis. Prof. 37% Other	Good Achievement	15% Prof. 25% Assoc. Prof. 50% Assis. Prof. 10% Other
13	Proportion of teaching staff leaving the program	1%	1%	0%	Good Achievement	1%
14	Percentage of publications of faculty members	70%	35%	61%	Weakness in the female section	50%

No	KPI	Target Benchmark	Actual Value	Internal Benchmark	Analysis	New Target Benchmark
15	Rate of published research per faculty member	1.00-2.00	2.00	1.74	Weakness in the female section	2.5
16	Citations rate in refereed journals per faculty member	60	26	50	Weakness in the female section	60
17	Satisfaction of beneficiaries with the learning resources	2.6/5	2.74/5	2.5/5	Good Achievement	2.9/5

Comments on the Program KPIs and Benchmarks results :

Weakness of some research statistics due to weakness in the female section.
A committee should be created for KPIs evaluation and surveys.

5. Analysis of Program Evaluation

(including strengths, Areas for Improvement:, and priorities for improvement)

Strengths:

- **Proportion of courses in which student evaluations were conducted during the year.**
- **Ratio of students to teaching staff.**
- **Average rating of students for courses**
- **The adequacy of academic and career counselling.**
- **Teaching staff leaving the Department for reasons other than age retirement.**
- **Teaching staff participating in professional development activities.**
- **Teaching staff with at least one refereed publication.**
- **Papers published in referred journals or reports presented at academic conferences.**

Areas for Improvement:

- **Graduation Rate**
- **Retention Rate; Percentage of students entering programs who successfully complete first year.**
- **The adequacy of IT.**
- **A committee should be created for KPIs evaluation and surveys.**
- **Establish Alumni Unit to follow and monitor graduates and stakeholders**
- **Create departmental and central libraries, and provide study rooms for students equipped with computers and printers**
- **Finish the English language website of the Department.**
- **Encourage teaching and other staff actively engaged in community service activities**

Priorities for Improvement:

- **Establish Alumni Unit to follow and monitor graduates and stakeholders**
- **A committee should be created for KPIs evaluation and surveys**
- **Encourage teaching and other staff actively engaged in community service activities**

G. Difficulties and Challenges Faced Program Management

Difficulties and Challenges	Implications on the Program	Actions Taken
Lack of faculty members.	Faculty members from outside the college are not aware of the goals and mission of the Department.	Appoint faculty members for the college, and transfer the goals and mission of the college to them.
There are no departmental libraries for students and study rooms.	The student cannot find and increase his information.	Create departmental and central libraries, and provide study rooms for students equipped with computers and printers.
There is not enough publicity about the Department.	The weak turnout at the college, which causes the acceptance of students who are not qualified to accommodate technical courses, and thus the level of graduates.	Make adequate publicity for the Department, inform the community about it, and is a technical Department.

*Internal and external difficulties and challenges

H. Program Improvement Plan

No.	Priorities for Improvement	Actions	Action Responsibility	Date		Achievement Indicators	Target Benchmark
				Start	End		
1	Improving the ranking of our students in the Professional Licensing Test For Teachers	Organize trainings for students in the final year of graduation to prepare for the national Teachers Test	Head of Dept.	Jan. 2023	May 2023	Ranking of our students in the National Teachers Test	Top 5%
2	Improving Mathematics Computer skills for our students	Providing mathematical software for their personal use	Head of Dept.	Sept. 2022	May 2023	Percentage of software licenses for students	100%
3	Updating the Bachelor program	Implementing the new plan of the program	Head of Dept.	Sept. 2022	Sept. 2023	Starting first and second levels of the new plan	Yes

I. Report Approving Authority

Council / Committee	DEPARTMENT COUNCIL	COLLEGE COUNCIL
Reference No.	21/1444	20/1444
Date	27/07/1444 (19/02/2023)	28/07/1444 (20/02/2023)

J. Attachments:

- A separate cohort analysis report for male and female sections and for each branch
- A report on the program learning outcomes assessment results for male and female sections and for each branch (if any)

- **A report on the students evaluation of program quality**
- **Independent reviewer's report and other survey reports (if any)**