## Program Specification

| Program Name: Mathematics |
| :--- |
| Program Code (as per Saudi university ranking): Math |
| Qualification Level: 6 |
| Department Mathematics |
| College: Science |
| Institution: Jazan University |
| Program Specification: New $\square$ |
| Last Review Date: $2 / 2023$ |

*Attach the previous version of the Program Specification.

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## A. Program Identification and General Information

```
1. Program's Main Location :
Main Campus
(Male & Female)
College of Science, Jazan University
```

2. Branches Offering the Program (if any):

University Collage in Aldarb
University Collage in Aldayer
3. Partnerships with other parties (if any) and the nature of each:

None
4. Professions/jobs for which students are qualified

- Teachers and Instructors.
- Strategic planning, and Administrations.
- Researchers and Data analysts.
- Lecturers, Tutors, and Employees.

5. Relevant occupational/ Professional sectors:

- Public Teaching Sector.
- Economic Sector.
- Research and IT Sectors.
- Faculties and Universities.
- Pursuing higher education in Mathematics

6. Major Tracks/Pathways (if any):

## Major track/pathway

> Credit hours

Professions/jobs
(For each track)
(For each track)
1.
2.
7. Exit Points/Awarded Degree (if any): Not Applicable
exit points/awarded degree
Credit hours

1.     - 
2.     - 
3.     - 
```
8. Total credit hours: (121 Hours)
```


## B. Mission, Objectives, and Program Learning Outcomes

## 1. Program Mission:

To produce competent graduates in mathematics and motivate scientific research to enrich and serve the surrounding society in view of KSA vision-2030.

## 2. Program Objectives:

1- Use mathematical models and methods to define, represent and solve mathematical problems.
2- Use mathematical concepts and definitions to extend and generalize them to new situations
3- Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations.
4- Develop problem solving skills that are the product of logical and critical thinking
5- Develop appropriate technology-based teaching and learning opportunities
6- Select and apply appropriate mathematical knowledge and problem-solving techniques.
7- To read and explain mathematics journal articles orally or in writing

## 3. Program Learning Outcomes*

## Knowledge and Understanding

K1 Distinguish mathematical concepts relevant to pure and applied mathematics.
K2 Identify background science, features and structure of mathematical problem.
K3 Explain notations and concepts required for the solution of Mathematical problem.

## Skills

S1 Apply theoretical, computational or practical aspect relevant to course content.
S2 Compute numerical quantities for various parameters to approximate the solution.
S3 Apply various mathematical rules, techniques and theorems in application.
S4 Solve mathematical problem using critical thinking.

## Values, Autonomy, and Responsibility

V1 Cultivate a mathematical attitude and nurture the interest.
V2 Realize the importance of responsibilities through different modes of practice, competition and related activities.
V3 Inculcating values and ethics in thought, expression and deed.

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


## C. Curriculum

## 1. Curriculum Structure

| Program Structure | Required/ <br> Elective | No. of <br> courses | Credit <br> Hours | Percentage |
| :---: | :---: | :---: | :---: | :---: |
| Institution Requirements | Required <br> Elective | 3 | 6 | $5 \%$ |
| College Requirements | Required | 7 | 24 | $20 \%$ |


|  | Elective |  | 91 | $75 \%$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Program Requirements | Required <br> Elective |  |  |  |  |
| Capstone Course/Project |  |  |  |  |  |
| Field Training/ Internship <br> Residency year <br> Others |  |  |  |  |  |
| Total |  | 41 | 121 | $100 \%$ |  |

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


## 2. Program Courses

| Level | Course Code | Course Title | Required or Elective | PreRequisite Courses | Credit Hours | Type of requirements (Institution, College, or Program) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Level 1 | 101 Islm | Islamic Culture 1 | R | -- | 2 | Institution |
|  | 104 Engl | English Language 1 | R | --- | 3 | College |
|  | 101 Math | General Mathematics | R | --- | 3 | College |
| Level 2 | 105 Engl | English Language 2 | R | --- | 3 | College |
|  | 101 Bio | General Biology | R | --- | 3 | College |
|  | 101 Phys | General Physics | R | --- | 3 | College |
| Level 3 | 106 Engl | English Language 3 | R | --- | 3 | College |
|  | 102 Islm | Islamic Culture 2 | R | --- | 2 | Institution |
|  | 211 Math | Calculus (1) | R | 101 Math | 3 | Department |
|  | 101 Chem | General Chemistry | R | --- | 4 | College |
| Level 4 | 221 Math | Basis of Mathematics | R | 101 Math | 3 | Department |
|  | 241 Math | Analytic Geometry | R |  | 3 | Department |
|  | 251 Stat | Mathematical statistics | R | 101 Math | 3 | Department |
|  | 102 Arab | Arabic Editing | R | --- | 2 | Institution |
| Level 5 | 212 Math | Calculus (2) | R | 211 Math | 3 | Department |
|  | 222 Math | Abstract algebra (1) | R | 221 Math | 3 | Department |
|  | 261 Math | Static | R |  | 3 | Department |
|  | 281 Comp | Algorithmic and programming | R | --- | 2 | Department |
| $\begin{gathered} \text { Level } \\ 6 \end{gathered}$ | Math 323 | Abstract algebra (2) | R | 222 Math | 3 | Department |
|  | Stat 352 | Probability theory | R | 251 Stat | 3 | Department |
|  | Math 362 | Dynamics | R | 212 Math | 3 | Department |
| Level 7 | Math 313 | Calculus (3) | R | 212 Math | 3 | Department |
|  | Math 316 | Numerical Analysis (1) | R | 212 Math | 3 | Department |
|  | Math 331 | Differential Equations(1) | R | 212 Math | 3 | Department |
| $\begin{gathered} \text { Level } \\ 8 \end{gathered}$ |  | Linear Algebra | R | 323 Math | 3 | Department |
|  | $\text { Math } 332$ | Differential Equations (2) | R | 331 Math | 3 | Department |
|  | Math 363 | Analytical Mechanics | R | 362 Math | 3 | Department |
| Level 9 | Math 314 | Complex Analysis | R | 313 Math | 3 | Department |
|  | Math 315 | Real Analysis(1) | R | 213 Math | 3 | Department |
|  | Math 425 | Discrete Mathematic | R | 221 Math | 3 | Department |
| Level 10 | Math 417 | Real Analysis(2) | R | 315 Math | 2 | Department |
|  | Math 433 | Mathematical Methods | R | 313 Math | 3 | Department |
|  | Math 434 | Partial Differential Equations | R | 332 Math | 3 | Department |
|  | Stat 453 | Applied statistics | R | 251 Stat | 3 | Department |

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| Level | Course Code | Course Title | Required or Elective | PreRequisite Courses | Credit Hours | Type of requirements (Institution, College, or Program) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Level 11 | Math 442 | Topology | R | 315 Math | 3 | Department |
|  | Math 472 | Mathematical modeling | R | 332 Math | 3 | Department |
|  | Math 473 | Operation research | R | 324 Math | 3 | Department |
| Level 12 | Math 418 | Functional Analysis | R | 417 Math | 2 | Department |
|  | Math 419 | Numerical Analysis (2) | R | 434 Math | 3 | Department |
|  | Math 443 | Differential Geometry | R | 331 Math | 3 | Department |
|  | Math 464 | Fluid Mechanics | R | 434 Math | 3 | Department |

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


## 3. Course Specifications:

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

```
Course Description & Specifications Jazan University
```


## 4. Program learning Outcomes Mapping Matrix:

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

| Course code \& No. | Program Learning Outcomes |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Knowledge and understanding |  |  | Skills |  |  |  | Values, <br> Autonomy, and Responsibility |  |  |
|  | K1 | K2 | K3 | S1 | S2 | S3 | S4 | V1 | V2 | V3 |
| 101 Islm |  |  |  |  |  |  |  |  |  |  |
| 101 Bio |  |  |  |  |  |  |  |  |  |  |
| 101 Phys |  |  |  |  |  |  |  |  |  |  |
| 101Chem |  |  |  |  |  |  |  |  |  |  |
| 102 Arab |  |  |  |  |  |  |  |  |  |  |
| 102 Islm |  |  |  |  |  |  |  |  |  |  |
| 104 Engl |  |  |  |  |  |  |  |  |  |  |
| 105 Engl |  |  |  |  |  |  |  |  |  |  |
| 106 Engl |  |  |  |  |  |  |  |  |  |  |
| 281 Comp |  |  |  |  |  |  |  |  |  |  |
| 101 Math | 1 |  | 1 |  | 1 |  |  |  |  |  |
| 211 Math |  | 1 | 1 | I | 1 |  |  |  |  |  |
| 212 Math | 1 | 1 |  |  |  |  | 1 | 1 |  |  |
| 221 Math | I |  |  | 1 |  |  | 1 |  | 1 |  |

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| Course code \& No. | Program Learning Outcomes |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Knowledge and understanding |  |  | Skills |  |  |  | Values, <br> Autonomy, and Responsibility |  |  |
|  | K1 | K2 | K3 | S1 | S2 | S3 | S4 | V1 | V2 | V3 |
| 222 Math |  | I |  |  | I | 1 |  |  |  |  |
| 241 Math |  |  | 1 | 1 |  |  | 1 |  |  | 1 |
| 251 Stat | 1 |  | 1 |  | 1 |  | 1 |  |  |  |
| 261 Math |  | 1 |  | 1 |  | 1 |  |  | 1 |  |
| 313 Math |  |  | P | P | P |  |  | P |  |  |
| 314 Math | P |  |  | P |  |  | P |  |  | P |
| 315 Math |  | P |  |  | P | P |  |  | P |  |
| 316 Math |  |  | P | P | P |  |  | P |  |  |
| 323 Math |  | P |  | P |  | P | P |  |  |  |
| 324 Math | P |  |  | P |  | P |  |  | P |  |
| 331 Math |  |  | P |  | P |  | P |  |  | P |
| 332 Math |  | P |  |  | P | P |  | P |  |  |
| 352 Stat | P |  | P | P | P |  |  |  |  |  |
| 362 Math | P |  |  | P |  |  | P |  |  | P |
| 363 Math |  |  | P |  | P | P |  |  | P |  |
| 417 Math |  | M |  | P |  | M |  | M |  |  |
| 418 Math | M |  |  |  | M |  | M |  |  | P |
| 419 Math |  |  | M | M |  | P | M |  | M |  |
| 425 Math |  | M |  |  | P | M |  | M |  |  |
| 433 Math |  |  | M | P |  |  | M | M |  |  |
| 434 Math | M |  |  |  | M |  | M |  | P |  |
| 442 Math |  | M |  | M |  | P |  |  |  | M |
| 443 Math | M |  |  |  | M |  |  |  | M |  |
| 453 Stat |  |  | M | M |  |  | P |  |  | P |
| 464 Math | M |  |  |  | M | M |  | M |  |  |
| 472 Math |  | M |  | M |  |  | M |  | P |  |
| 473 Math | M |  |  |  | P |  | M |  |  | M |

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

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

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Describe teaching and learning strategies, including curricular and extra-curricular activities, to achieve the program learning outcomes in all areas.

| Code | Program Learning Outcomes | Assessment Methods |
| :---: | :---: | :---: |
| Knowledge and Understanding |  |  |
| K1 | Distinguish mathematical concepts relevant to pure and applied mathematics. | Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments |
| K2 | Identify background science, features and structure of mathematical problem. | Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments |
| K3 | Explain notations and concepts required for the solution of Mathematical problem. | Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments |
| Skills |  |  |
| S1 | Apply theoretical, computational or practical aspect relevant to course Content. | Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments |
| S2 | Compute numerical quantities for various parameters to approximate the solution. | Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments |
| S3 | Apply various mathematical rules, techniques and theorems in Application. | Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments |
| S4 | Solve mathematical problem using critical thinking. | Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments |
| Values, Autonomy, and Responsibility |  |  |
| V1 | Cultivate a mathematical attitude and nurture the interest. | Assignments, Discussion |
| V2 | Realize the importance of responsibilities through different modes of practice, competition and related activities. | Assignments, Discussion |
| V3 | Inculcating values and ethics in thought, expression and deed. | Assignments, Discussion |

## 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 twice in the bachelor program's cycle and once in other degrees).

The tools used will be direct and indirect methods of measurements:

## Direct measures:

The direct assessment of the outcomes usually relies on the coursework and uses a variety of tools that include combinations of the final exam, midterm tests, quizzes, homework, assignments, presentations, etc. The assessment tools do however vary from course to course.

A set of common rubrics will be used for both grading and assessment at the program level. In some cases, student overall grades in courses may be used through impeded questions in Quiz, Midterm exam or Final Exam. The intent by using rubrics to help students understand departmental expectation, to gauge student progress over time, and to provide a basis for faculty discussions concerning possible areas for program improvement. In most cases, these rubric lines will be incorporated into a course specific rubric that contains additional elements specific to the course learning outcomes and expectations. The student grades are used in knowledge domains.

## Indirect Measures

- On a periodic basis, the department will solicit feedback on graduate skills from alumni and their employers using either surveys or focus groups. These mechanisms may allow the department to reevaluate the target student outcomes to match changing needs in the Mathematics community. The department expects that all numerical responses on this survey will be a 3 or higher and that written responses will be generally positive, yet constructive in improving department programs.
- The department will ask for feedback from graduating students using surveys or focus groups to evaluate their perception of whether the degree has adequately prepared them for their chosen career. This may include job placement and graduate/professional school admission rates. The department expects that all numerical responses on this survey will be a 3 or higher and that written responses will be generally positive, yet constructive in improving department programs.
- The department will periodically hold a focus group with existing Mathematics majors and Mathematics club members. This will provide an opportunity to identify emerging problems quickly before they show up in tracked data. The department expects that student responses will be generally positive, yet constructive in improving department programs.
- The department will periodically collect feedback from faculty and instructors on their perceptions of student strengths and weaknesses.


## D. Student Admission and Support:

## 1. Student Admission Requirements

Deanship of Admission and Registration centrally administer this section, however the college of science and Mathematics Department may put some requirements approved by their councils. The Deanship of Admission and Registration upon recommendations from college councils shall prepare a presentation of the mechanisms of giving priorities to the students applied for admission to be submitted to the university council or to the competent authority.
app_terms.pdf (jazanu.edu.sa)

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admission_brochures.pdf (jazanu.edu.sa)
dalel-2023.pdf (jazanu.edu.sa)
app_completion.pdf (jazanu.edu.sa)

## 2. Guidance and Orientation Programs for New Students <br> (Include only the exceptional needs offered to the students of the program that differ from those provided at the institutional level).

The orientation program for new students is held annually for new enrolled students. There are

- College Orientation: Dean Meeting with new enrolled students.
- Department Orientation: Head of Department Meeting with new enrolled students and staff.
- Student Counseling Orientation: Student Counseling Committee Meeting with students.

The Orientation programs are designed to help students be acquainted with the following:

- Vision, mission and objectives of the department, college and university.
- University and college regulations and code of conduct.
- Tips on leading a successful college life in line with their potential career goals.
- Department and college facilities and places.
- Plan of study review course.
- Methods of evaluation.
- Wellness, self-care.
- Faculty expectations.
- Certification and licensure information.


## 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).

- Student Academic Counselling Committee is in charge of student counselling.
- Each Faculty is assigned a group of students for counselling.
- Faculty will be available for student counselling at specific office hours during on daily basis.
- Faculty should make a file for each student in his counselling group where student contact information, a copy of student timetable, a copy of student academic record are kept and updated every semester.


## 4. Special Support <br> (Low achievers, disabled, gifted, and talented students).

## Low achievers:

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- Teachers assign those students more assignments, help them during office hours and give them opportunities as and when needed.
- If any students remain with low GPA on request and appeal they are given an opportunity to study a subject from or out of the study plan.


## Disable:

- The department, along with the college administrators, tries to create the relevant conditions for the study of students and applicants with special needs without reducing the requirements for their study performance and in accordance with the principles of equal treatment.
- During an exam, an applicant with special needs shall be, at his request and based on the evaluation of his special needs, determined a form of the exam and method of taking it, taking regard of his special needs.


## Gifted and talented:

- There is a Talented Students Committee in the department who are working with the students providing them opportunities in participating in competitions, workshops, department activities, career orientations etc.


## E. Faculty and Administrative Staff:

1. Needed Teaching and Administrative Staff

| Academic Rank | Specialty |  | Special <br> Requirements <br> / Skills (if any) | Required <br> Numbers |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | General | Specific | M | F | T |  |  |
| Professor | $\mathbf{4}$ | None | None | $\mathbf{2}$ | $\mathbf{2}$ | $\mathbf{5}$ |  |
| Associate Professor | $\mathbf{1 1}$ | None | None | $\mathbf{1 3}$ | $\mathbf{5}$ | $\mathbf{1 8}$ |  |
| Assistant Professor | $\mathbf{4 1}$ | None | None | $\mathbf{2 2}$ | $\mathbf{8}$ | $\mathbf{3 0}$ |  |
| Lecturer | $\mathbf{3 1}$ | None | None | $\mathbf{1 1}$ | $\mathbf{3 3}$ | $\mathbf{4 4}$ |  |
| Teaching Assistant | $\mathbf{1 2}$ | None | None | $\mathbf{3}$ | $\mathbf{0}$ | $\mathbf{3}$ |  |
| Technicians and <br> Laboratory Assistant |  |  |  |  |  |  |  |
| Administrative and <br> Supportive Staff | $\mathbf{4}$ | None | None | $\mathbf{1}$ | $\mathbf{3}$ | $\mathbf{4}$ |  |
| Others (specify) |  |  |  |  |  |  |  |

## F. Learning Resources, Facilities, and Equipment:

## 1. Learning Resources

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

- A copy of learning resources for each course is kept in the Course File in the Program QA Unit.
- A list of learning resources is kept in the Program QA Unit.
- The list of learning resources is annually updated by teaching Faculty and gets approval by Program Board.
- Student assessment of quality of library services carried out by College QA Unit.
- The updated list of learning resources is then raised to College of Science Deanship and hence to Deanship for Library Affairs.


## 2. Facilities and Equipment

(Library, laboratories, classrooms, etc.)

- Selected teaching Faculty members are selected every year to attend the Jazan University Book fair to recommend acquisition of new titles.
- Selected senior faculty are in charge of annual evaluation of the adequacy of learning resources.

3. Procedures to ensure a healthy and safe learning environment
(According to the nature of the program)
College of science is committed to providing a safe and healthy campus environment. Among its highest priorities are the health and safety of all faculty, staff, and students, the visiting public, and members of the neighboring community in order to implement environmental and occupational health and safety programs and to ensure compliance with all relevant governmental laws and regulations. A variety of health care services to students, faculty, staff and community members.

- The Campus Health Clinic is located inside the main campus and a small room over the medical support inside the College of Science building.
- Smoking is prohibited in any University facility and on any University grounds.
- First aids boxes are located in almost all rooms.
- The purpose of the Chemical Safety Program is to ensure the proper handling of hazardous chemicals, as well as hazardous waste management and disposal. Exposure to hazardous chemicals is kept at a minimum by using the appropriate Personal Protective Equipment and by performing experiments in a certified chemical fume hood.
- Fire prevention guidelines are listed in all places
- Emergency Exit doors in all parts with sufficient Signboards in all places. Safety and safety instructions are announced at the laboratories and the places where students gather.


## G. Program Quality Assurance:

1. Program Quality Assurance System

Provide a link to quality assurance manual.
Microsoft Word - Department QMS.docx (jazanu.edu.sa)

## 2. Procedures to Monitor Quality of Courses Taught by other Departments

Program QA Committee is continuously communicate with the department that are responsible for the courses offered such as Computer Science Department in terms of course specifications, course reports, and their suggestion for improvement plans for Mathematics Program Students.

## 3. Procedures Used to Ensure the Consistency between Main Campus and Branches (including male and female sections).

In sections for male and female students the leaders of both sections participate in institutional governance and be fully involved in strategic planning, decision making, and senior administration with effective and continuing communication between sections. Strategic planning ensures equitable distribution of resources and facilities to meet the requirements of program delivery, research, and associated services in each section and quality evaluations consider performance at each section as well as for the institution as a whole.

- Male and female sections are represented in the membership of relevant committees and councils and participate fully in decision making through processes that are consistent with bylaws and regulations of the Higher Council of Education.
- Main campus and branches are represented in the membership of relevant quality assurance and accreditation committees and councils and participate fully in decision making through processes that are consistent with bylaws and regulations of the Higher Council of Education.
- An effective communication between members from each section on these committees and councils was established, and individuals in the different sections carrying out related activities were fully involved in planning, evaluations and decision making.
- Planning processes and mechanisms for performance evaluation lead to comparable standards in each section while taking account of differing needs.
- Quality indicators, evaluations and reports show results for both sections and branches indicating similarities and differences as well as overall performance.


## 4. Assessment Plan for Program Learning Outcomes (PLOs),

The Mathematics program uses different tools and processes to assess and evaluate the extent to which its PLOs are being attained. These processes are used to gather the data, which is necessary for the assessments. Evaluation, in the form of interpreting the data, is then carried out in order 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 of the program follow the following three steps:

1. Assessment tools of the PLOs (i.e., collecting data) can be direct or indirect. Direct assessment of PLOs usually relies on the course work, whereas indirect assessments of PLOs are usually obtained by using surveys. This step includes designing forms of surveys and appropriate questions for the specific and applicable data.
2. The collected data is analyzed and compared to a pre-set performance indicator, which constitutes the evaluation processes.

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3. Checking the degree to which the data evaluation results meet the pre-set targets will be the force for the continuous improvement processes.

## Course mapping to PLOs:

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 program learning outcomes that are most probably be covered by the course. It is important to mention here that each of the course 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 with that of the PLO. We should also emphasize that the capstone courses are exceptions to the abovementioned mapping scheme and can have as many PLOs as needed; in fact, we mapped the capstone courses to practically all PLOs.
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 course.

## Program Learning Outcomes:

In order to assess and evaluate the extent to which the PLOs are being attained, the 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 while the direct assessment results are obtained from student coursework-based evaluations.
In its planning for the present and for future expanded assessment processes, the program faculty have suggested and adopted the ambitious assessment process of Figure-1.


Figure-1 Program Learning Outcomes Assessment

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Table-1describes how the Program Learning Outcomes are assessed. It contains the method of assessment, data sources with which these assessment processes are carried out, and how the data is collected.

Table-1 Program Learning Outcomes Assessment Tools

| Method of Assessment | Data Sources | How collected | Performed by | Collected By | Evaluated By |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Direct <br> Assessment <br> Method | Course <br> Assessment <br> Report based <br> on student <br> marks |  | Faculty Members | Quality and Accreditation Committee |  |
| Indirect Assessment Method | Course survey Evaluation |  |  | Quality and Accreditation Committee |  |
|  | Program Evaluation survey |  | Students |  |  |
|  | Alumni Survey |  | Alumni |  |  |
|  | Employer Survey |  | Employer |  |  |

## Direct Assessment:

The direct assessment of the outcomes usually relies on the coursework and uses a variety of tools that include combinations of final exam, midterm tests, quizzes, homework, laboratory works, assignments, practical, projects, presentations, etc. The assessment tools do however vary from course to course.

## Indirect Assessment:

For our indirect assessment, different surveys are conducted.
Course evaluation survey is conducted towards the end of a course. In this regard, formal written surveys targeting the program learning outcomes are solicited from students at the end of the Mathematics courses.
Program Evaluation survey is filled in by the graduates at the end of their graduation semester. The graduate survey contains questions that directly target every one of the Program Learning Outcomes.
An Alumni survey and employer survey is filled in by the alumni's and employers respectively that directly target every one of the Program Learning Outcomes.

## 5. Program Evaluation Matrix

| Evaluation <br> Areas/Aspects | Evaluation <br> Sources/References | Evaluation Methods | Evaluation Time |
| :--- | :--- | :--- | :--- |
| Leadership | Graduates, Alumni, <br> Employer | Surveys | End of year |
| Teaching \& Learning | Student Feedback | Student Questionnaire | End of semester <br> Learning Resources |
| Students/Faculties | Surveys |  |  |
| Scientific Research | Impact | No. of ISI <br> publications / <br> faculty / year | End of year |


| Evaluation <br> Areas/Aspects | Evaluation <br> Sources/References | Evaluation Methods | Evaluation Time |
| :--- | :--- | :--- | :--- |
|  |  | No. of Citations / <br> faculty / year |  |
| Partnerships | Employers | -Questionnaire | End of year |
| Graduates | Alumni | Questionnaire | End of year |
| External Stakeholders | Employers | Stakeholder <br> Questionnaire | End of year |
| 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.) |  |  |  |

## 6. Program KPIs*

The period to achieve the target (5) year(s).

| No. | KPIs Code | KPIs | Targeted Level | Measurement Methods | Measurement Time |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | $\begin{aligned} & \text { KPI- } \\ & \text { P-01 } \end{aligned}$ | Percentage of achieved target level of KPI of program operational plan | 80\% | Number of key performance indicators for the goals of the strategic plan that achieved the annual target level/ total number of key performance indicators targeted in the same year) * 100 | End of Academic Year |
| 2 | $\begin{aligned} & \text { KPI- } \\ & \text { P-02 } \end{aligned}$ | Students' Evaluation of quality of learning in program | 4 | Total scores of responses to the last item in the program evaluation survey "I feel generally satisfied with the quality of my educational experience at the University" / Number of respondents to the item. | End of Semester |
| 3 | $\begin{aligned} & \text { KPI- } \\ & \text { P-03 } \end{aligned}$ | Students' evaluation of the quality of their courses | 5 | Total scores of responses to the last paragraph of the course evaluation questionnaire Overall, I am satisfied with the quality of this course. / Number of respondents to the item. | End of Semester |
| 4 | $\begin{aligned} & \text { KPI- } \\ & \text { P-04 } \end{aligned}$ | Completion Rate | 80 | (Number of students who graduated / Number of students admitted to the same cohort) * 100 | End of Academic Year |
| 5 | $\begin{aligned} & \text { KPI- } \\ & \text { P-05 } \end{aligned}$ | First-Year Students Retention Rate | 4.5 | (Number of students who successfully completed the first year / Number of students accepted from the batch) * 100 | End of Semester |


| No. | KPIs Code | KPls | Targeted Level | Measurement Methods | Measurement Time |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 6 | $\begin{aligned} & \text { KPI- } \\ & \text { P-06 } \end{aligned}$ | Students' performance in the professional and/or national examinations (if any) | - | Percentage of students or graduates who succeed in professional exams (Islamic and Arabic sciences, humanities and education, engineering and computer <br> sciences, science and mathematics, health sciences) | End of Semester |
| 7 | $\begin{aligned} & \text { KPI- } \\ & \text { P-07 } \end{aligned}$ | Proportion of graduates who employed or enrolled in further study | 75\% | graduates who employed or enrolled in postgraduate studies during the first year of their graduation / Total number of graduates in the same year) $* 100$ | End of Semester |
| 8 | $\begin{aligned} & \text { KPI- } \\ & \text { P-08 } \end{aligned}$ | Average Number of students in the class | 25 | Average number of students in the program sections. | End of Semester |
| 9 | $\begin{aligned} & \text { KPI- } \\ & \text { P-09 } \end{aligned}$ | Employers' evaluation of the program graduates proficiency | 4 | Total scores of responses to the last item in the employers 'evaluation survey for Graduates' performance. (I am generally satisfied with the performance of a graduate of Jazan University and would recommend employing graduates from this institution again "/ number of respondents to the item. | End of Academic Year |
| 10 | $\begin{aligned} & \text { KPI- } \\ & \text { P-10 } \end{aligned}$ | Student satisfaction with the services | 4 | Total scores of responses to item 22 in the student experience survey. <br> "I feel satisfied with other services (restaurants, transportation, sports facilities, etc. / Number of respondents to the item). | End of Academic Year |
| 11 | $\begin{aligned} & \text { KPI- } \\ & \text { P-11 } \end{aligned}$ | Ratio of students to teaching staff | 15:1 | (Number of students / numbers of full-time faculty or equivalent) * 100) | End of Semester |
| 12 | $\begin{aligned} & \text { KPI- } \\ & \text { P-12 } \end{aligned}$ | Percentage of teaching staff distribution | 75\% | Percentage distribution of faculty members in terms of: <br> 1. Sex <br> 1. Branches <br> 2. Academic rank | End of Academic Year |
| 13 | $\begin{aligned} & \text { KPI- } \\ & \text { P-13 } \end{aligned}$ | Proportion of teaching staff leaving the program | 5\% | (Number of teaching staff who leave the program annually for reasons other than reaching retirement age / total number) * 100 | End of Academic Year |
| 14 | $\begin{aligned} & \text { KPI- } \\ & \text { P-14 } \end{aligned}$ | Percentage of publication of faculty members | 75\% | The percentage of faculty members who published at least one research during | End of Academic Year |

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Education \& Training Evaluation Commission

| No. | $\begin{aligned} & \text { KPIs } \\ & \text { Code } \end{aligned}$ | KPls | Targeted Level | Measurement Methods | Measurement Time |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | the year from the total number of faculty members |  |
| 15 | $\begin{aligned} & \text { KPI- } \\ & \text { P-15 } \end{aligned}$ | Average research per faculty member | 1:1 | Total number of refereed and / or published research to the number of full-time faculty members or equivalent during the year. | End of Academic Year |
| 16 | $\begin{aligned} & \text { KPI- } \\ & \text { P-16 } \end{aligned}$ | Average of citations in refereed journals | 10:1 | Number of times faculty publications were cited / total number of published papers | End of Academic Year |
|  | $\begin{aligned} & \text { KPI- } \\ & \text { P-17 } \end{aligned}$ | Satisfaction of beneficiaries with learning resources | 4 | Average scores of responses in the program evaluation survey on the item "The library resources were appropriate and available whenever I needed them." / Number of respondents to the item. | End of Academic Year |

## H. Specification Approval Data:

| COUNCIL /COMMITTEE | Board Of Mathematics Department |
| :--- | :--- |
| REFERENCE NO. | $\mathbf{2 3 0 6}$ |
| DATE | $\mathbf{0 7 / 0 9 / 1 4 4 4}$ A. H.; 29/03/2023 A. D. |

