هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

# Program Specifications
# (Postgraduate Degree)

| |
|---|
| **Program Name: Professional Master of Artificial Intelligence** |
| **Qualification Level: Seven** |
| **Department: Computer Science** |
| **College: Computer Science and Information Systems** |
| **Institution: Najran University** |

# Content

## A. Program Identification and General Information

**1. Program Main Location:**

Main Campus, Najran University, Najran, Saudi Arabia, P.O. BOX 1988

**2. Branches Offering the Program:**

The program is offered at Najran University (Najran) in two campuses, male and female.

**Branch/Location 1:**

Male Campus, Najran University, Najran, Saudi Arabia, P.O. Box 1988

**Branch/Location 2:**

Female Campus, Najran University, Najran, Saudi Arabia, P.O. Box 1988

**3. Reasons for Establishing the Program:**

(Economic, social, cultural, and technological reasons, and national needs and development, etc.)

The Department of Computer Science is establishing the program of Professional Master of Artificial Intelligence (PMAI) according to the needs of the job market in Najran as well as in the KSA considering the economic expansion in Najran and KSA with highly needs of Artificial Intelligence specialists.

The program of Professional Master of Artificial Intelligence (PMAI) plays an important role in the field of computer and information technology to participate in building a strong local industry market, to keep up to date of technological developments, and to meet the requirements of higher education in our country.

The program is considered one of the modern and renewable specialties. It plays an important in building modern societies with strong economies and can help in advancing the country rank placing it among the industrialized and technical countries of the 21st century. Furthermore, it is one of the most innovative and fast-changing scientific fields that assists professionals to be familiar with ever changing technical information.

Acting diligently based on motivations mentioned above, the program seeks to place the College among the leading colleges in Najran University and in the Kingdom of Saudi Arabia. Doing so can only be achieved by its active contribution in providing graduates with high academic capabilities in the fields of Artificial Intelligence. The program of Professional Master of Applied Artificial Intelligence works to equip its graduates with adequate and appropriate information that help them pursue distinguished positions in organization related to specialization. They also continue developing their knowledge to keep up with developments in the field as well as in the fields of research, professional development and interpersonal skills that support the priorities of the Kingdom in terms of scientific, industrial and economic fields as well as raising the artistic level of the technical community in the field of informatics.

**4. System of Study**

☐ Coursework & Thesis ☒ Coursework

**5. Mode of Study**

☒ On Campus ☒ Distance Education ☐ Others

**6. Educational and Research Partnerships** ( if any)

- Partnership Arrangement: N/A

- Type of Partnership: N/A
- Duration of Partnership: N/A

**7. Total Credit Hours for Completing the Program: (42 )**

**8. Learning Hours: (1680 )**

42 Credit Hours * 40 Learning Hours/ Credit Hour = 1680 Learning Hours

**9. Professional Occupations/Jobs:**

The students of the program are well prepared for the following list of professions or occupations:

1) Machine Learning Engineer
2) Data Scientist
3) Artificial Intelligence Architect
4) Business Intelligence Developer
5) Big Data Engineer
6) Research Scientist
7) Teaching profession
8) Software Engineer

**10. Major Tracks/Pathways (Not Applicable):**

| Major Track/Pathway | Credit Hours (For each track) | Professional Occupations/Jobs (For each track) |
|---|---|---|
| **1.** | | |
| **2.** | | |
| **3.** | | |
| **4.** | | |

**11. Intermediate Exit Points/Awarded Degree (Not Applicable):**

| Intermediate Exit Points/Awarded Degree | Credit Hours |
|---|---|
| 1. | |
| 2. | |
| 3. | |

## B. Mission, Goals, and Learning Outcomes

**1. Program Mission:**

Offering an advanced professional artificial intelligence master's program that enables students to master technical and personal skills and provide them with practical, applied and research experiences to solve difficult problems in data-rich fields

**2. Program Goals:**

The program of Professional Master of Artificial Intelligence (PMAI) is intended to provide graduates that's able to:

1. Teaching students technical skills for artificial intelligence to develop smart software.
2. Providing the latest information and the latest developments to the student in the field of artificial intelligence.
3. Develop student abilities to develop and teach intelligent systems such as robots.
4. Teaching students the basics of artificial intelligence and its applications in various fields.

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

**3.1 Relationship between MS in AI mission with the mission of Najran University**

*The mission of Najran University is:*

*"Offering teaching and learning that address the needs of society and the labor market; effective contribution to sustainable development through conducting applied research and optimal use of modern technologies; and establishing partnerships at the local, regional and global levels"*

The vision and mission of NU are posted on its web site at:
http://portal.nu.edu.sa/web/guest/university-mission;jsessionid=E902D22907AE694DB176460BE4F05506.s2

The mission of the university (Najran University) focuses mainly on 3 elements as follows:

1. Distinctive education that meets the needs of society and the labor market.
2. Contribute effectively to the sustainable development through applied research, the optimal use of modern technologies.
3. The active partnership at the local, regional and global levels.

The mission of the program of Professional Master of Artificial Intelligence

To offer a career-focused and cutting-edge Artificial Intelligence learning experience that enables students to master the technical skills, practical expertise, and soft skills necessary to solve challenging problems in data-rich domains.

The vision and mission of the program are posted on its web site at:
https://cscis.nu.edu.sa/about-is-department

This mission of program focus mainly on 2 elements as follows:

1. To offer a career-focused and cutting-edge Artificial Intelligence learning experience.
2. To equip students with the technical skills, practical expertise, and soft skills necessary to solve challenging problems in data-rich domains.

The mission of program is consistent and supports the mission of the institution. The following matrix shows the alignment between the mission of the program and the mission of the institution:

| **The Mission of the PM of AI Program is:** | **Main Elements of the Mission of Najran University** | | |
|---|---|---|---|
| | Distinctive education that meets the needs of society and the labor market | Contribute effectively to the sustainable development through applied research, the optimal use of modern technologies | The active partnership at the local, regional and global levels |
| To offer a career-focused and cutting-edge Artificial Intelligence learning experience | X | | X |

| | | | |
|---|---|---|---|
| To equip students with the technical skills, practical expertise, and soft skills necessary to solve complex problems. | | X | X |

**3.2 Relationship between the program of PM of AI goals with the goals/strategic objectives of Najran University**

Najran University have following 12 goals;

1. Achieving academic programs that can compete internationally within the framework of Islamic values.
2. Graduating distinguished students with great efficiency for the future.
3. Promoting the competencies and efficiency of the teaching staff.
4. Enhancing and investing in university facilities as well as utilizing new technologies.
5. Improving learning resources in line with the universal standards.
6. Providing excellent services and support for students.
7. Developing the financial and administrative systems according to the total quality standards.
8. Securing a prosperous professional future for the alumni.
9. Developing academic research policy to support sustainable development.
10. Improving Post-graduate programs.
11. Continuous and effective commitment to community service.
12. Establishing a framework for national, regional and global cooperation and partnership.

The strategic objectives of NU are posted on its web site at:
https://www.nu.edu.sa/en/university-mission

The program of Professional Master of Artificial Intelligence (PMAI) is intended to provide graduates that's able to:

1. Fulfill the Kingdom of Saudi Arabia's need for qualified specialists in the fields of Artificial Intelligence.
2. Connect the university to the labor market in the industrial, technical and academic fields.
3. Prepare Artificial Intelligence professionals with the ability to analyze and design intelligent systems.

The goals of program are consistent and supports the four goals/strategic objective among 12 goals of the institution. The following matrix shows the alignment between the goals of the MS program and the goals/strategic objectives of the institution.

| **Goals/Strategic** | |
|---|---|

| Objectives of Najran University | Fulfill the Kingdom of Saudi Arabia's need for qualified specialists in the fields of Artificial Intelligence. | Connect the university to the labor market in the industrial, technical and academic fields. | Prepare Artificial Intelligence professionals with the ability to analyze and design intelligent systems. |
|---|---|---|---|
| Achieving academic programs that can compete internationally within the framework of Islamic values. | | | X |
| Graduating distinguished students with great efficiency for the future. | X | X | X |
| Promoting the competencies and efficiency of the teaching staff. | | | |
| Enhancing and investing in university facilities as well as utilizing new technologies. | | | |
| Improving learning resources in line with the universal standards. | | | |
| Providing excellent services and support for students. | | X | |
| Developing the financial and administrative systems according to the total quality standards | | | |
| Securing a prosperous professional future for the alumni. | | X | X |
| Developing academic research policy to support sustainable development. | X | | |

| | | | |
|---|---|---|---|
| Improving Post-graduate programs. | | | X |
| Continuous and effective commitment to community service. | X | | |
| Establishing a framework for national, regional and global cooperation and partnership. | | | |

**4. Graduate Attributes:**

1. Knowledgeable
2. Scientifically Aware
3. Problem Solver
4. Effective Communicator
5. Researcher
6. Effective Team Player
7. Responsible & Ethically Driven

**5.Program Learning Outcomes***

| | |
|---|---|
| **Knowledge**: | |
| **K1** | An ability to describe concepts, facts and theories of Artificial Intelligence |
| **K2** | An ability to explain security, privacy and social issues related to Artificial Intelligence practices. |
| **Skills** | |
| **S1** | An ability to analyze a complex Artificial Intelligence problem and to apply principles of computing and Artificial Intelligence disciplines to identify solutions. |
| **S2** | An ability to design, implement and evaluate Artificial Intelligence-based solution to meet a given set of requirements in the context of the program's discipline. |
| **S3** | An ability to analyze the local and global impact of Artificial Intelligence on individuals, organizations and society. |
| **S4** | An ability to apply scientific research and current techniques, skills, and tools necessary for Artificial Intelligence practice. |
| **Competence** | |
| **C1** | An ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline. |
| **C2** | An ability to communicate effectively in a variety of professional contexts. |

| | |
|---|---|
| **C3** | An ability to make informed judgments in the practice of artificial intelligence in accordance with legal and ethical principles |

* Add a table for each track or Exit Points/Awarded Degree (if any)

# C. Curriculum

## 1. Study Plan Structure

| Program Structure | | No. of Courses | Credit Hours | Percentage |
|---|---|---|---|---|
| **Course** | Required | **13** | **38** | **90.5** |
| | Elective | | | |
| **Graduation Project** (Research Project) | | **1** | **4** | **9.5** |
| **Thesis** (if any) | | | | |
| **Field Experience** (if any) | | | | |
| **Others** (.....) | | | | |
| **Total** | | **14** | **42** | **100** |

* Add a table for each track (if any)

## 2. Program Courses:

| Level | Course Code | Course Title | Required or Elective | Pre-Requisite Courses | Credit Hours |
|---|---|---|---|---|---|
| **Level 1** | 501PMAI-3 | Advanced Algorithm Design and Analysis | | | 3 |
| | 502PMAI-3 | Advanced Software Engineering | | | 3 |
| | 503PMAI-3 | Advanced Programming Languages | | | 3 |
| | 597PMAI-3 | Research Methodology | | | 3 |
| **Level 2** | 504PMAI-3 | Advanced Artificial Intelligence | | | 3 |
| | 515PMAI-3 | Human-Computer Interaction | | | 3 |
| | 598PMAI-2 | Research Seminar | | | 2 |
| | 505PMAI-3 | Machine Learning | | | 3 |
| **Level 3** | 507PMAI-3 | Data Mining | | | 3 |
| | 506PMAI-3 | Deep Learning | | | 3 |
| | 511PMAI-3 | Natural Language Processing | | | 3 |
| | 512PMAI-3 | Computer Vision | | | 3 |
| **Level 4** | 599PMAI-4 | Research Project | | | 4 |
| | 513PMAI-3 | Biomedical Informatics | | | 3 |

* Include additional levels if needed
** Add a table for each track (if any)

## 3. Course Specifications

Insert hyperlink for all course specifications using NCAAA template

https://nejranuniversity-my.sharepoint.com/:w:/g/personal/yasiri_nu_edu_sa/ERU7uAvoh1xDiPFCHwmk6xUBsvLx2KlqMY_JiBy6FkGXyQ?e=FKUWai

## 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 )**

| Course code & No. | Program Learning Outcomes | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Knowledge | | | | Skills | | | | Values | | |
| | K.1 | K.2 | K.3 | --- | S.1 | S.2 | S.3 | S.4 | C.1 | C.2 | C.3 |
| 501PMAI-3 Advanced Algorithm Design and Analysis | I | I | | | I | I | | I | | I | |
| 502PMAI-3 Advanced Software Engineering | I | I | | | I | | | | I | I | I |
| 503PMAI-3 Advanced Programming Languages | I | I | | | I | I | I | | | | |
| 597PMAI-3 Research Methodology | P | P | | | P | P | P | P | P | P | P |
| 504PMAI-3 Advanced Artificial Intelligence | P | P | | | P | P | | P | | P | |
| 598PMAI-2 Research Seminar | | | | | P | | | P | | P | |
| 505PMAI-3 Machine Learning | P | P | | | M | P | | P | | M | |
| 507PMAI-3 Data Mining | P | P | | | M | M | | M | | P | |
| 506PMAI-3 Deep Learning | P | P | | | M | M | | P | | P | |
| 599PMAI-4 Research Project | | | | | M | | M | M | M | M | M |
| 511PMAI-3 Natural Language Processing | M | M | | | M | M | M | | | | |
| 512PMAI-3 Computer Vision | M | M | | | M | M | M | M | | | |
| 513PMAI-Biomedical Informatics | M | M | | | M | M | M | | | | |
| 515PMAI-3 Human-Computer Interaction | M | M | | | M | M | M | M | | M | |

* Add a table for each track (if any)

## 5. Teaching and Learning Strategies to Achieve Program Learning Outcomes

| | NQF Learning Domains and Learning Outcomes | Teaching Strategies | Extracurricular Activities | Assessment Methods |
|---|---|---|---|---|
| **1.0** | **Knowledge and Understanding** | | | |
| 1.1 | An ability to describe concepts, facts and theories of Artificial Intelligence. | Lecture, Small group discussion. | Reading groups | **Direct Methods:** Course Learning Outcomes assessment, Performance Indicators with a set of rubrics<br><br>**Indirect Methods:** Exit Survey (Each Semester) Current Student Survey (Each Semester) |
| 1.2 | An ability to explain security, privacy and social issues related to Artificial Intelligence practices. | Lecture, Small group discussion. | Reading groups, Informal debates Cyber security Lab & Club seminars and training workshops | **Direct Methods:** Course Learning Outcomes assessment (Each Semester), Performance Indicators with a set of rubrics (once every assessment cycle)<br><br>**Indirect Methods:** Exit Survey (Each Semester) Current Student Survey (Each Semester) PAC Meeting and Discussions (Once a Year) Alumni Survey Employer Survey |
| **2.0** | **Skills** | | | |
| 2.1 | An ability to analyze a complex Artificial Intelligence problem and to apply principles of computing and Artificial Intelligence disciplines to identify solutions. | Lecture, Small group discussion, Case studies, | Reading groups, AI Lab & Club seminars and training workshops | |

| | | | | |
|---|---|---|---|---|
| 2.2 | An ability to design, implement and evaluate Artificial Intelligence-based solution to meet a given set of requirements in the context of the program's discipline. | Lecture, Cooperative Learning, Research activities, Projects | AI Lab & Club seminars and training workshops | **Direct Methods:**<br>1. Course Learning Outcomes assessment (Each Semester)<br>2. Performance Indicators with a set of rubrics (once every assessment cycle)<br><br>**Indirect Methods:**<br>1. Exit Survey (Each Semester)<br>2. Current Student Survey (Each Semester) |
| 2.3 | An ability to analyze the local and global impact of Artificial Intelligence on individuals, organizations and society | Research activities, Case studies. | Internal seminars, AI Lab & Club seminars and training workshops | 3. PAC Meeting and Discussions (Once a Year)<br>4. Alumni Survey<br>5. Employer Survey |
| 2.4 | An ability to apply scientific research and current techniques, skills, and tools necessary for Artificial Intelligence practice. | Research activities, Projects | Scientific research unit seminars and training workshops | |
| **3.0** | **Competences** | | | |
| 3.1 | An ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline. | Group work on case studies, Research activities, Projects. | becoming a postgraduate mentor, joining AI club | **Direct Methods:**<br>1. Course Learning Outcomes assessment (Each Semester) |
| 3.2 | An ability to communicate effectively in a variety of professional contexts. | Group work on case studies, Research activities, Projects. | Informal debates, Internal seminars | 2. Performance Indicators with a set of rubrics (once every assessment cycle)<br><br>**Indirect Methods:**<br>1. Exit Survey (Each Semester)<br><br>2. Current Student Survey (Each Semester)<br><br>3. PAC Meeting and Discussions (Once a Year) |
| 3.3 | An ability to make informed judgments in the practice of artificial intelligence in accordance with legal and ethical principles | Group work on case studies, Research activities, Projects. | Informal debates, AI club activities | |

| | | | | |
|---|---|---|---|---|
| | | | | 4. Alumni Survey<br>5. Employer Survey |

**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.

***Formative Assessment.***

- Formative assessments are on-going assessments, reviews, and observations in a classroom and or within an academic year or pre-determined time.
- We should use formative assessment to improve instructional methods and student feedback throughout the teaching and learning process.
- The goal of formative assessment is to *monitor student learning* to provide ongoing feedback that can be used by instructors to improve their teaching and by students to enhance their learning.
- Example of formative assessment is quizzes, assignments, midterms, etc. It will be used in level 1 to 2.

***Summative Assessment.***

- Summative assessments are typically used to evaluate the effectiveness of instructional programs and services at the end of an academic year or at a pre-determined time.
- The goal of summative assessments is to make a judgment of student competency after an instructional phase is complete.
- The goal of summative assessment is to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark.
- Example of summative assessment is final exams, nationwide Tests, and it will be done from levels 3 and 4.

## D. Thesis and Its Requirements (**Not Applicable**)

**1. Registration of the thesis:**

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

**2. Scientific Supervision:**

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

**3.Thesis Defense/Examination:**

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

## D. Student Admission and Support:

**1. Student Admission and Transfer Requirements, and Courses Equivalency**

Student admission for the program of PM in Artificial Intelligence is performed electronically through EDUGATE [https://edugate.nu.edu.sa/nu/ui/home.faces], supervised by the Deanship of Admissions and Registration. Students who want to be admitted in the program of MS in Artificial Intelligence, Najran University, should satisfy the following requirements:

- The applicant must be a Saudi national or must have an official scholarship to the Graduate Studies (for non-Saudis).
- The applicant must have a university degree from any recognized university and should have a degree with "good" at least.
- The applicant must have a bachelor's degree in Computer Science, or any similar degree related to Computer Science major.
- The applicant must pass all interviews conducted by the department and any additional courses must be taken if decided by the department to enrol in the program.
- The applicant must have a record of good behavior and be medically fit.
- Recommendation letters should be submitted from two of applicant's former professors or a no-objection letter from applicant's employer is required.

**2. Student Counseling Services**

(academic, career, psychological and social )

Academic Advising Unit (AAU) governs by the College of CSIS aimed to provide absolute guidance to the students through efficacious counselling regarding students' academic and personal difficulties. This service is currently internally to academic concerns. Students are formed in a group according to their student ID and each group has been assigned to an academic advisor to ensure that all students get academic counselling throughout the program. All most all faculty members of the program are playing a role as an academic advisor as a part of their job responsibilities by following the guidelines set by academic advising unit and being monitored by the coordinator of this unit. At present, separate time for student advising in academic advisors' timetable has been implemented and 4 hours have been allotted during the week for Academic advisors to schedule. Each newly enrolled student is encouraged to meet his/her academic advisor and open a student file which should be kept and maintained by academic advisor as record. This file should reflect student progress mainly concerning on student's results. Academic advisors write a summary report on each student progress and based on this progress report, at the end of each semester, academic advisors produce a subject plan for the coming semester for each advisee student. After preparing a subject plan for a student, academic advisors are accountable to forward this plan to the academic advising unit and in parallel consult with the student about the proposed subject plan the graduating/higher level (level 3,4) students depending on the student's' necessity. For our along with their expected graduation time frame (part of their program plan). Counselling on career planning take place mostly for the graduating/higher level (level 3,4) students depending on the Students' necessity. For this program, Students' academic appeals are mainly categorized by the form of 'Add/drop courses, Absent excuses, Re-checking of exams and Make up exams'. Apart from these academic appeals, other appeals are also considered by the academic advising units by an adopted mechanism. Each student is accountable to place an appeal through his/her academic advisor using case specific appeal form. All appeal forms are available on the university's website from where students can fetch. These forms are also available with academic

advisors. Academic advisors are accountable to consult with the student in detail to spot students' need and provide guidance to fill out the appeal form. During this consultation process, academic advisors are responsible to fetch necessary record from corresponding student file to support his/her opinion.

When an appeal has been finalized and submitted by the student, academic advisors are accountable to attach necessary supporting documents such as student's transcript, medical excuses, add/drop form etc with this appeal and forward this appeal to the academic advising unit through the University's correspondence tracking system (https://cts.nu.edu.sa/NajranCTS/start) for further processing. The coordinator of academic advising unit is accountable to check completeness and to verify the ground of each appeal based on university's regulations, college rules and program requirements. If an appeal complies with all requirements, it has been carrying forwarded to the decision-making authority (Dean of the college), else it has been returned to the correspondent academic advisor.

The decision-making authority provides decision on the majority appeal cases by 7 days that appear in different places/format depending on the nature of the appeal.

All the appeals are automated and hence it facilitates the Advisee student to send their appeals through the system. Successful appeal for rechecking of exam is forwarded to the college coordinator. College coordinator is accountable to form an evaluation committee and send the review request to that committee. The evaluation committee should consist of at least 3 people (i.e. Program coordinator, subject coordinator, member of that subject's knowledge group) and is accountable to provide the outcome within 3 days.

College of CSIS also developed a system to handle students' complaints. Complaints are normally categorized in forms of general complaints, blind box complaints and direct E-mail complaints. General complaints made by students have no specific allegation and normally related to class room facilities, difficulties with class schedule etc. To make this type of complaints, students have to visit their academic advisors and discuss about their issues. Academic advisors will pass the students complaints to the academic advising unit coordinator. The coordinator will review the complaint and if necessary, will pass it to the college council. College council will pass the decision to the academic advising unit's coordinator and finally the decision will reach to the academic advisor to notify the student about their complaint outcomes. Blind Box complaints are normally case specific with pointed allegation and handle with high confidentiality. There is a specific template/form for this type of complaint. The college provided a complaint and suggestion box at the ground floor of College of Computer Science and Information System building (beside Dean's office) with the specified forms. Students write down their complaints and suggestions in the suggested form and drop them in the complaint box. The box usually opened on 25$^{th}$ of each month by the complaint handling committee (in presence of at least 2 members) and passes the complaints (if any) to the college council for further actions. In Direct E-mail complaints, students from female campus are allowed to complain directly to the Dean of the college through a specified E-mail address and this kind of complaint is highly confidential and in this case Dean of the college takes the decision directly.

In the end, Student Advising and Counselling services of our program are currently internally to academic concerns. At present, we do not have facilities to provide counselling regarding students psychological/health problems, financial matters and family problems, but we transfer them to Deanship of Student Affairs.

**3. Support for Special Need Students**
(low achievers, disabled, gifted and talented)

The program of PM Artificial Intelligence supports gifted, creative, and talented, students through the advising unit and students' activities unit. They offered extracurricular activities in variety of fields to develop their abilities and skills. The MS program also will take appropriate actions to support and motivate their participation by encouraging them to participate through E-mails and announcements

in advertisements board. In the end of term, College of Computer Science and Information Systems honored its students who participating in activities and others.
Academic Advisors are responsible to deal with high and low achiever students and give them help and support. Each advisor must prepare a file for each student which contains a biography of the student during his studies at the university (student's behavior during the study, Student's activities, Student's marks and grades etc.), from where the College authority can make an assessment about the students and face their problems and find appropriate solutions.
The most important contents of the file are:

- student's personal data
- student timetable for the semester
- student's academic transcript
- student midterms marks
- student's follow up courses
- Drop/Add courses for the students
- attendance and absence sheet for students
- excuses and others supportive documents.

Advisors also study the irregular students' status to assist them to achieve the desired success and help them overcome the obstacles and problems they face and put the students on their plan.

In the College of Computer Science and Information Systems, we deem students with disabilities have equivalent right to take pleasure in both scholarly, academic and non-academic opportunities and prospects. Work together with faculties and supporting units, we endeavor to endow with a barrier-free learning environment and develop access to academic programs, campus activities and facilities for students with disabilities.
The following structures are in place to facilitate the mobility of students with disabilities:

- All Lecture Theatres and classrooms are accessible by wheelchair
- Lifts are installed with Braille, low level buttons and audio provisions
- Tactile floor markings are made for visually impaired students
- Tables designed for wheelchair access are available at the Student Canteen and Garden Cafe of Scope. Staff of all catering outlets will assist students with disabilities by all means.
- Toilets designed for students with disabilities are conveniently located
- Limited no. of rooms specially designed for students with disabilities are available in student hostels.

Moreover, Najran University has adopted a system that allows its students with special needs to register into the system called Students with Special Needs to keep up their records and provide support and educational counseling [https://help.nu.edu.sa/]. The program as a part of Najran University employs all the human and material resources available to meet the needs of all students with special needs.

## E. Teaching and Administrative Staff

### 1. Needed Teaching and Administrative Staff

| Academic Rank | Specialty | | Special Requirements / Skills ( if any ) | Required Numbers | | |
|---|---|---|---|---|---|---|
| | General | Specific | | M | F | T |
| **Professors** | Computer Science | Artificial Intelligence, Data Science, | N/A | 1 | 0 | 1 |
| **Associate Professors** | Computer Science | Artificial Intelligence | | 3 | 0 | 3 |
| **Assistant Professors** | Computer Science | Artificial Intelligence, Database, Human Computer Interaction Software Engineering Algorithms, Data Science, | Computer Science Data Science, Databases, Query Optimization, Data Mining | 8 | 4 | 12 |
| **Technicians and Laboratory Assistants** | Computer Science | N/A | N/A | 1 | 1 | 2 |
| **Administrative and Supportive Staff** | Administrative Specialty | N/A | N/A | 1 | 1 | 2 |
| **Others ( specify )** | | | | | | |

## 2. Professional Development

### 2.1 Orientation for New Teaching Staff

The orientation program consists of several meetings with the heads and coordinators of different units and committees in the college. Information presented in those meetings are intended to familiarize the new faculty with general university and college services and resources, teaching responsibilities, Information Technology center, Library and administrative staff of the university. The heads or coordinators have to fill out the corresponding section (s) in the Orientation Program Form (OPF) and submit all materials that are given to the new staff member.

To facilitate the orientation program, the Computer Science department will assign an experienced faculty member as a "Mentor" to support the new member for a period of 30 days. The Mentor is responsible to support the new staff member to complete the orientation program within four weeks of the starting date. If more than one staff members joined the college at the same time, then mentors arrange common meetings with heads/coordinators for more than one new staff members. Finally, the mentor will submit the completed Orientation Program Form to the new staff member and to the program coordinator along with all materials presented by the heads/coordinators. Then, the program heads/coordinators assign the new candidate his/her workload which is compatible with his/her duties.

### 2.2 Professional Development for Teaching Staff

For the professional development, there are different teaching and quality activities (seminars, workshops) that will be implemented either in college or Deanship of Development and Quality in the University or external activities. Faculty members will not be only involved with the professional activities of teaching and quality but also will have active participation in student advising,

supervision and conducting of research and other administrative and miscellaneous activities. They will have considerable contribution on publications and research.
In order to encourage faculty members to actively pursue research in their area of specialization, they will utilize many avenues available for funding at Najran University.
There will be a plan for community and professional services to be provided by faculty members include contributing to the university, college, and department committees. The goal is to enhance the academic programs and their outcomes, improve the welfare of the students and faculty, and increase interaction between the university and the surrounding community and industry.
For Saudi teaching staff, there is a provision for career development. Almost all Saudi teaching staff are encouraged by the Government through scholarship for higher studies.

In addition, following are some activities that can improve experience, skills and qualifications of members:

1. Workshop to improve teacher's personal skills.

2. Conferences to follow the new in computer science field.

## F. Learning Resources, Facilities, and Equipment

**1. Learning Resources.**

The university has a central library that contain more than 1500 book for computer science and information systems field that cover all the program learning outcomes and courses. Moreover, the university is part of the Saudi digital library that provide a diversity of learning resources. In addition, the college has its own digital library that has more than 16GB of learning resources. For the quality assurance of learning resources, the department conduct a yearly request of the learning resources need in this program, where the instructors can requests the books for courses they teach. In addition, there is a survey that is conducted yearly for the students and teaching staff to get the evaluation and level of satisfaction of learning resources.

**2. Facilities and Equipment**

The Computer Science Department has around 12 laboratories (7 in male section, and 5 in female section) that contain more than 250 computers with good specification and software that meets the learning outcomes requirements. Also, the department has 15 classrooms that is provided with projectors and all the required stuff for teaching.

For the medical facilities, the university has a university hospital that is provided with all needed medical facilities. Besides, the college building contains first aid boxes distrusted in different places. Also, the university campus has an emergency clinic.

Moreover, the university has a central library that contain more than 1500 book for computer science and information systems field that cover all the program learning outcomes and courses, that is open from 8 a.m. until 5 P.M. In addition, the college has its own digital library that has more than 16GB of learning resources.

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

The college has a procedure for the fire and emergency response with exit doors and guidance. There are first aid kits available and hanged all over the college. Moreover, the college has fire alarm and protection systems. All the laboratories provided with safety guidelines.

## G. Program Management and Regulations

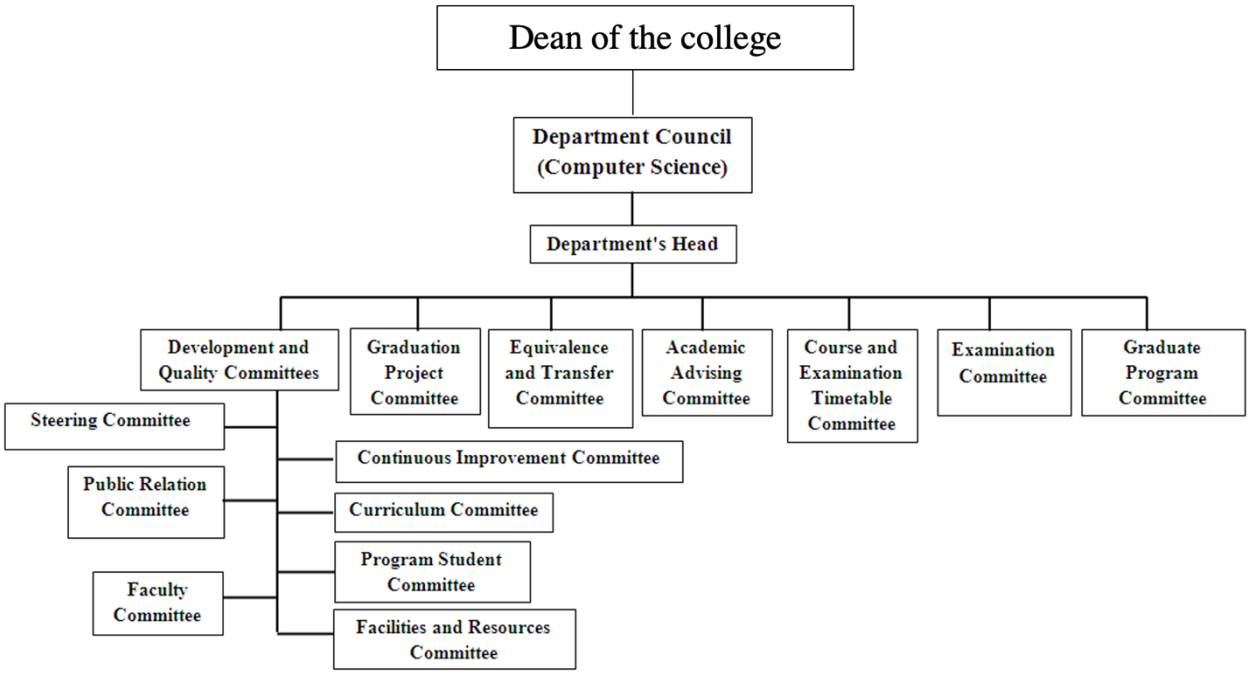
**1. Program Management**

**1.1 Program Structure**

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

The PM program is governed by specialized councils (College Council, Department Council) with defined tasks and authorities. The program is represented by specific boards (College Council, Department Council) with characterized professionals and specialists. There is qualified staff to take necessary decision for the internal and external matters of the college. These councils conduct meetings at least once a month to solve departmental/college issues including student and faculty).

The program authority has the suitable educational and administrative experience to accomplish its main goal and objectives. The figure below shows the department organizational chart that shows all councils, units, committees of the department.




**1.2 Stakeholders' Involvement**

The main stakeholders of the program of PM in Artificial Intelligence are defined as follows:

- **Computer Science Faculty:** The faculty members at both campuses (male and female) are involved in establishing the program mission, objectives, outcomes, curricula, etc. Also, they

are mainly involved on regular basis in the assessment and evaluation processes of the quality of the program.

- **Current Students:** The current students are those students who are currently enrolled in the program. They must be aware of the program educational objectives and outcomes of the program to realize whether the program adequately prepares them for future employment or not. Therefore, current students play a very important role through several kinds of surveys (online course survey, exit survey, current student survey) and meetings in the development of the PEOs and the improvement of the curricula, outcomes and educational practices.
- **Program Advisory Committee (PAC):** The Program Advisory Committee (PAC) members represent employers of our students and other employers (public and private sectors), faculty members from other universities, and representative (Head or coordinator of the program) of the MS Program, interested industrial organizations engaged in computer science areas and allied fields. The members of PAC play an essential role in establishing the PEOs, outcomes and curricula. In addition, they give the most recent challenges that the labor market face with respect to PM in CS graduates. The PM program will have very well-organized Program Advisory Committee (PAC), involved individuals from experts and specialists in the program specialization, to add to its assessment, advancement, and execution improvement. This advisory committee has clear vision, goals and defined tasks. PAC members meet yearly to guide the program about the main activities regarding the program mission, objectives, learning outcomes, and curriculum.

**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.)

**Student admission**

Student admission for the program of PM of Artificial Intelligence is performed electronically through EDUGATE [https://edugate.nu.edu.sa/nu/ui/home.faces], supervised by the Deanship of Admissions and Registration. Students who want to be admitted in the program of MS in Information Systems, Najran University, should satisfy the following requirements:

- The applicant must be a Saudi national or must have an official scholarship to the Graduate Studies (for non-Saudis).
- The applicant must have a university degree from any recognized university and should have a degree with “good” at least.
- The applicant must have a bachelor’s degree in Computer Science, or any similar degree related to Computer Science major.

- The applicant must pass all interviews conducted by the department and any additional courses must be taken if decided by the department to enrol in the program.
- The applicant must have a record of good behavior and be medically fit.
- Recommendation letters should be submitted from two of applicant's former professors or a no-objection letter from applicant's employer is required.

**Rules and Regulations for Registration of Courses**

The student is automatically registered at the beginning of each semester for a number of units according to his academic standing. Students are eligible for up to 12 units as maximum.

**Dropping and Adding of a Course**

The Processes of dropping and adding are performed by the student electronically in the first week of the semester through accessing the academic system of the University Deanship of Admission and Registration:

https://edugate.nu.edu.sa/nu/init

No student is allowed to register a course without passing its pre-requisite course.

Students, who pass all courses without failures, are registered in the courses of the subsequent level beginning gradually after the lower levels according to the study plans approved.

Students, who fail in some courses, are registered in courses that ensure their minimum study load in each semester taking into account the following points:

No clash in the course study schedule.

Satisfying the previous requirements of the course or courses to be registered.

**Withdrawal Rules**

The student has the right to withdraw from an academic semester within the withdrawal period announced in the academic calendar for the current semester. No withdrawal is allowed during the last five weeks before the final examination. The student may get chance for the final examination if the college council accepted the student's excuse.

**Class Attendance**

For academic accomplishment at the college of computer science and information systems students should attend at least 75% of the lectures, tutorials, and practical and laboratory lessons in regular courses. Students failing to meet this requirement in any of his registered courses will be prohibited from attending the final examination of those courses and will have F grades that are zero grades for those courses.

**Student Assessment**

Student assessment is the process of judgment of students' skills and knowledge at course and program levels**.** Effective assessment helps to improve student**'**s learning. Towards meeting the objectives of teaching and learning and improving the quality of teaching and learning it's vital to ensure effective assessment procedure throughout the program. The college of computer science and information systems (CSIS) at Najran University (NU) is therefore confidently assessing all students' activities at program and course levels. Faculty members of PM of Artificial Intelligence hence use a range of assessment measures including quizzes, assignments, projects, student portfolios, mid-terms and final examinations in order to obtain a clear picture of what students have learned; utilizing this variety of methods also avoids the potential weaknesses and give the chance for further improvement. These results are analyzed and an on-going process of improvement implemented in terms of student learning outcomes (SOs) at program level and course learning outcomes (CLOs) at course level. The CLOs and SOs are assessed and evaluated regularly to improve the quality of MS program. More specifically, faculty collects data from various sources (courses, surveys, etc.) and prepares them for evaluation. Then, the department evaluates the collected data and presents results to various stakeholders for approval. The approved improvements will then be implemented to ensure a systematic quality assurance system. By the end of each semester of the academic year, the department curriculum committee prepared a list of actions to be implemented at the course level, program level, other levels with assigned deadline and responsible people. In the next section (Continuous Improvement), we will explain in more details about approved list of actions taken or to be taken in order to improve the level of achievements of SOs. Our goal is to ensure that the average achievement of each one of the SOs is 65% in this assessment method (CLOs Assessment).

The program uses the following procedures to deal with situations where standards of student achievement are inadequate or inconsistently assessed. This is the paramount for the success of the students as well as the whole program of the IS department:

1. By the end of each semester, each instructor has to submit a course report for the corresponding course. The course report contains the achievements of each one of course learning outcomes (CLOs) based on students' performances and surveys. Moreover, if a CLO (students did not achieve the standard) is not achieved, the instructor has to prepare action to be taken in order to improve the achievement levels of students. The course report may also contain recommendations about the assessment methods used in the course.

2. The Curriculum Committee (CC) receives and reviews the course reports. CC approves recommendations/actions to be implemented at various levels in the program (course level, program level and level other than the program, etc.). Note that the approved recommendations are based on the course reports.

3. Student learning outcomes at the program level are assessed by using a set of rubrics. SO assessment groups collect all data and evaluate each one of the SOs. If a SO is not achieved, then an improvement plan must be prepared. Note that the improvement plan might contain actions related to all aspects of the program such as data collection, evaluation of data, facilities and resources, faculty members, etc.

Both direct and indirect assessment methods are used to measure students' performance. Direct assessment methods include quizzes, assignments, exams, etc.; indirect assessment methods include surveys, questionnaires including course survey, students' online survey, current students' survey, exit survey, alumni survey, etc. These exams and survey's results enable faculty to determine where skills and knowledge deficiencies of the students exist and most frequently develop.

**Examination and Grading Systems**

Examination assessment or evaluation system is based on the theoretical and practical exams and homework, exercises, projects and any other scientific activities. Full marks for each course of the curricula for computer science are equal to 100 (hundred) points and is divided into two main sections, namely: course work and final examination.

Course work grade: The 50 (fifty) points are assigned for grading course work. Methods of grading include two midterm exam, class tests, quizzes, homework, assignments, exercises, mini projects, report writing, presentation of projects, lab report and lab exams, and any other scientific activities. Grades are distributed on different parts by course teacher depending on the nature of the course.

2. Final exam grade:

The total points for final exam are 50 points. The method of grading for the final exam includes a theoretical exam.

The pass mark in each course is 60%.

**Exam evaluation system at the college is mentioned on the following tables:**

Course (Without lab)

| **Assessment Process** | **Class test** | **Assignment/Project** | **Midterms** | **Final** | **Total** |
|---|---|---|---|---|---|
| **Maximum points** | 10% | 10% | 30% | 50% | 100% |

Course (With lab)

| **Assessment Process** | **Class test** | **Midterms** | **Lab** | **Final** | **Total** |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| **Maximum points** | 06% | 24% | 20% | 50% | 100% |

**The Grading system of Najran University:**

| Letter of Grade | Mark (%) | Average Point |
|---|---|---|
| A+ | 95 – 100 | 5.00 |
| A | 90 – 94 | 4.75 |
| B+ | 85 – 89 | 4.50 |
| B | 80 – 84 | 4.00 |
| C+ | 75 – 79 | 3.50 |
| C | 70 – 74 | 3.00 |
| D+ | 65 – 69 | 2.50 |
| D | 60-64 | 2.00 |
| F | Below 60 | 1.00 |

## H. Program Quality Assurance

**1. Program Quality Assurance System**

Provide online link to quality assurance manual

Quality assurance manual is available in the following link:

https://nejranuniversity-my.sharepoint.com/:w:/g/personal/yasiri_nu_edu_sa/ESZdW22cZ31Mj8JOCqkPDhsBOgMN4M5m2KnCEiAdxCBmfQ?e=bkirEW

## 2. Program Quality Monitoring Procedures

The program of PM in Artificial Intelligence will use Deming Cycle methodology (Plan-Do-Check-Act (PDCA)) for continually Improving the program. PM program uses four phases as set of procedures to manage the program quality assurance which are:

Plan: Establish plans, objectives and processes required to deliver the desired results. Whereas CS program has a set of plans such as program specification, course specification, operational plan, quality plan, research plan, assessment plan and etc...

Do: implement the mentioned above plans.

Check: the data and results gathered from the do phase are evaluated. Data are compared to the expected outcomes to see any similarities and differences. The testing process is also evaluated to see if there were any changes from the original test created during the planning phase.

The program has set methods to check the quality of the program such as:

1. Program Learning Outcome assessment.
2. Program KPIs assessment.
3. Course Reports
4. Program Annual report
5. Students overall evaluation on the quality of their learning experiences at the institution.
6. Proportion of courses in which student evaluations were conducted during the year.
7. Internal auditor evaluation of program's quality related activities
8. Overall satisfaction of faculty, staff, and students on the quality related activities
9. Independent Opinion
10. Accreditation agencies

Act: Create improvement pans based on the check phase and implement this plan (close the loop). Where teaching and other staff involved in the program must be committed to improving both their own performance and the quality of the program as a whole. Central importance must be attached to student learning outcomes with each course contributing to the achievement of overall program objectives and mission.

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

In compliance with annual plan of the program of PMS in AI developed and well-defined mechanism to arrangements and monitor quality of course taught by other department through a dedicated unit in the faculty called the unit coordination of external courses. The main task of this unit can be summarize as the following tables.

| | **Task** | **Responsible** |
|---|---|---|
| **1** | Check and review the Course syllabus according to CLO of the collage | external courses Coordinator + Course instructor |
| **2** | Review the quality of course | Department Chair + Course instructor |

| | | |
|---|---|---|
| **2** | Follow up the course file according to the college format. | Course instructor. |
| **4** | Follow up and Receive the course files. | external courses Coordinator |
| **5** | Revision of the course file | Course Coordinator |
| **6** | Approve the Checklist | Department Chair |
| **7** | Archive the files. | Coordinator external courses |
| **8** | Take students opinions about level of benefit from the course | |
| **9** | Feedback from the student about course instructor | |

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

**Consistency between male and female sections:**

- Determine Course Coordinator for each course which follows the progress of the course, Mid exams, and final exam structure and question with CLOs in the male and female section.
- The same Syllabus taught in the male and female section of each course.
- In the courses containing a practical aspect applies the same Manual lab in both sections
- The NCAAA standards committees contain members from the male and female staff and conduct regularly meeting and contacting.
- Meetings are conducted for both sections to discuss matters related to quality assurance of work or to clarify the mechanisms followed. Also Determine one-hour (as for example Monday 11: 00 Am -12: 00 Pm) weekly for a Meeting if needed in the timetable for each faculty member in both sections.
- Sometimes a workshop is held in both sections as parallel if there are some works that require explanation, clarification, and application with some practical examples.
- All staff members (Male and Female) are involved in at least one committee to evaluate all aspects of the program. These committees are responsible for all activities regarding planning, monitoring and reviewing.

**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**

The PM program learning outcomes (PLOs) or student outcomes (SOs) are assessed by using both direct and indirect assessment methods. Here we present the plan to assess the PLOs/SOs from the two direct assessment methods including:

1. Assessment of student learning outcomes using course learning outcomes (CLOs):

The idea behind this method is that all courses are mapped to the appropriate student outcomes by relating CLOs of all courses to SOs. Mapping courses to SOs ensures that all SOs are addressed by several courses at different levels in the program. In addition, this will help us to know if student outcomes have not been met at a particular course. The assessment of SOs using CLOs assessment each semester supports us to maintain a semester-based continuous improvement by using the achievements of CLOs. The expected performance is 65% for each SO. Note that courses that are related to a specific SO have equal contribution.

2. Assessment of student learning outcomes using performance indicators (PIs), Embedded Questions and Rubrics:

This is our overall assessment method to evaluate the attainment of SOs. A set of Performance Indicators were developed for each one of the SOs. PIs are then aligned to the curriculum to facilitate the collection of data. Data are then evaluated by using a set of rubrics. In this method, we collect data and evaluate each SO once in a complete assessment cycle (2 years).

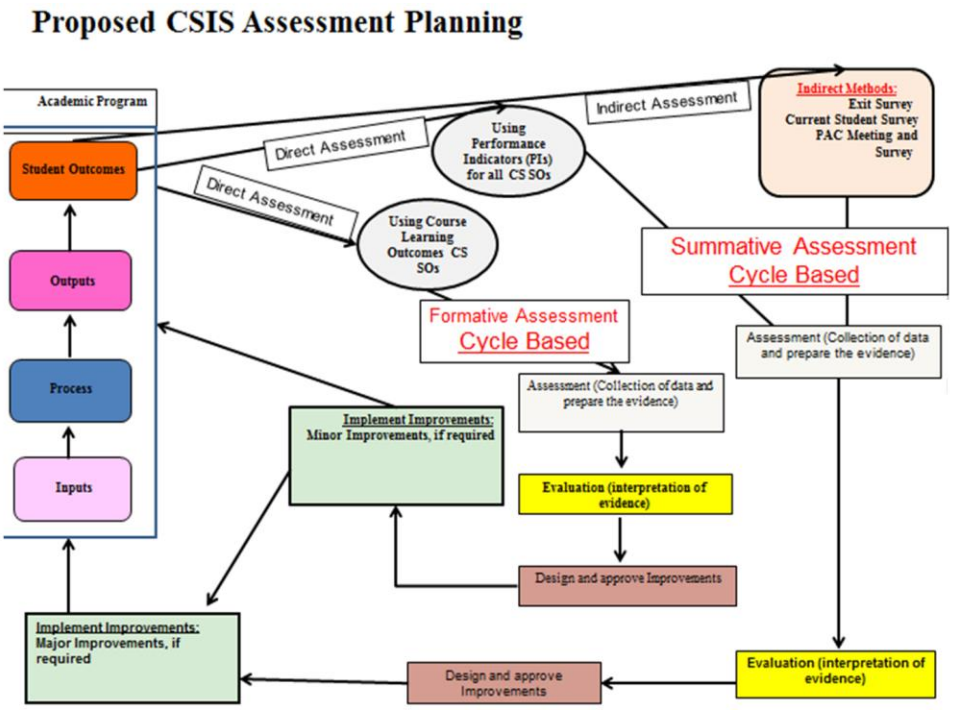
- Assessment plan is shown in Figure 1.
  - ✓ **Assessment Types**
    - We are using direct assessment and it will be achieved through performance indicators (PIs) for all CS SOs and using course learning outcomes (CLO). Direct assessment will used for the direct examination or observation of student knowledge, skills and/or behaviours. e.g. Exams, Presentation, etc.
    - Indirect assessment will be done through indirect methods, e.g. exit surveys, current student survey and meeting and survey with program advisory committee.
  - ✓ **Assessment Methods**

The formative and summative assessment methods which will be used in updated assessment plan for year 2020 – 2024 are:

- ***Formative Assessment.***
  - Formative assessments are on-going assessments, reviews, and observations in a classroom and or within an academic year or pre-determined time.
  - We should use formative assessment to improve instructional methods and student feedback throughout the teaching and learning process.
  - The goal of formative assessment is to *monitor student learning* to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning.
  - Example of formative assessment is quizzes, assignments, midterms, etc. It will be used in level 1 to 2.

- ***Summative Assessment.***
  - Summative assessments are typically used to evaluate the effectiveness of instructional programs and services at the end of an academic year or at a pre-determined time.
  - The goal of summative assessments is to make a judgment of student competency after an instructional phase is complete.
  - The goal of summative assessment is to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark.
  - Example of summative assessment is final exams, nationwide Tests and it will be done from levels 3 and 4.

Figure 1: CSIS Assessment Plan for 2022 – 2024




It has been discussed that in the department mode five groups which will be responsible for assessment of SOs for the program of PM in CS. These four groups are shown in the following Table.

Table: SO Assessment groups for PMAI

| Group No. | Coordinators | Members | Student Outcomes |
|---|---|---|---|
| **Group 1** | Dr. Yousef | Mr. Adlan | K1<br>S4 |
| **Group 2** | Dr. Saeed | Mr. Akram | S1<br>C2 |
| **Group 3** | Dr. Samar | Ms. Ahood | C1<br>S3 |
| **Group 4** | Dr. Anwar | Mr. Ibrahim | S2<br>K2<br>C3 |

## 7. Evaluation of Program Quality Matrix

| Evaluation Areas/Aspects | Evaluation Sources/References | Evaluation Methods | Evaluation Time |
|---|---|---|---|
| Leadership | Faculty | Survey | End of academic year |
| Effectiveness of teaching & assessment | Students, Faculty | Survey | End of semester |
| Learning Outcome | Students | Exams, Survey | End of semester |
| Learning resources | Students, Faculty | Survey | End of semester |

## 8. Program KPIs*

The period to achieve the target ( 1) year.

| No | KPIs Code | KPIs | Target | Measurement Methods | Measurement Time |
|---|---|---|---|---|---|
| 1 | KPI-PG-1 | Percentage of achieved indicators of the program operational plan objectives | 90% | Data regarding the achievement rate of all the indicators as in the program operational plan should be collected and the overall achievement percentage should be calculated. | End of the academic year |
| 2 | KPI-PG-2 | Students' Evaluation of quality of learning experience in the program | 85% | Exit survey should be conducted among the final year students to assess the quality of learning experiences. The percentage of students who strongly agree or agree to the statements in the survey is to be calculated | End of the academic year |
| 3 | KPI-PG-3 | Students' evaluation of the quality of the courses | 85% | Online Course Survey should be conducted to the students towards the end of the semester to assess their registered courses. The percentage of respondents who strongly agree or agree is to be calculated from the survey | End of each semester |
| 4 | KPI-PG-4 | Students' evaluation of the quality of scientific supervision | 85% | Online Survey should be conducted to the students towards the end of the semester to assess their quality of scientific supervision. The percentage of respondents who strongly agree or agree is to be calculated from the survey | End of the academic year |
| 5 | KPI-PG-5 | Average time for students' graduation | 80% | Data regarding the number of students | End of academic year |

| No | KPIs Code | KPIs | Target | Measurement Methods | Measurement Time |
|---|---|---|---|---|---|
| | | | | who registered in the 1nd semester of the year 2020-21 and number of students who completed the graduation in the end of the year 2022-2023 should be collected. The percentage of number of students who completed the graduation in the end of the year 2022-2023 has to be calculated. | |
| **6** | KPI-PG-6 | Rate of students dropping out of the program | 10% | Data regarding the number of students who did not complete the program to the total number of students in the same cohort. The Percentage of students has to be calculated. | End of academic year |
| **7** | KPI-PG-7 | Graduates' employability | 80% | Data regarding the employment status of the students who graduated in the year from the alumni unit of the college is to be collected. | End of the academic year |
| **8** | KPI-PG-8 | Employers' evaluation of the program graduates' competency | 85% | Employer survey should be conducted to assess the proficiency of the graduates. The percentage of employers who strongly agree or agree to the statements in the survey is to be calculated | End of the academic year |
| **9** | KPI-PG-9 | Students' satisfaction with the provided services | 85% | A survey should be conducted among the students to assess their satisfaction level with the offered services. The percentage of students who strongly agree or agree to the statements in the survey is to be calculated | End of the academic year |
| **10** | KPI-PG-10 | Ratio of students to faculty members | 1:10 Theoretical and Practical courses | Data is to be collected regarding the number of faculty members and the number of students assigned for each theory and practical courses. The | End of the academic year |

| No | KPIs Code | KPIs | Target | Measurement Methods | Measurement Time |
|---|---|---|---|---|---|
| | | | | ratio between the number of teachers and the students assigned for each theory and practical courses is to be calculated. | |
| 11 | KPI-PG-11 | Percentage of faculty members' distribution based on academic ranking | Prof=5%Associate Prof= 10%Asstt. Prof= 85% | Data is to be collected regarding the number of teaching staff based on the gender (male/female), based on the branches, based on academic rankings (professor, associate prof., asst prof) and the percentage has to be calculated out of the total teaching staff | Start of the academic year |
| 12 | KPI-PG-12 | Proportion of faculty members leaving the program | 5% | Data should be collected from the HoD regarding the number of teaching staff leaving the institution for reasons other than age retirement and the total number of teaching staff in the department. Percentage of number of teaching staff leaving the institution out of the total number of teaching staff is to be calculated | End of the academic year |
| 13 | KPI-PG-13 | Satisfaction of beneficiaries with learning resources | 70% | Survey should be conducted among the students to assess the satisfaction level with the learning resources.. The percentage of students who strongly agree or agree to the statements in the survey is to be calculated | End of the academic year |
| 14 | KPI-PG-14 | Satisfaction of beneficiaries with research facilities and equipment | 70% | Survey should be conducted among the students to assess the satisfaction level with the research facilities and equipment. The percentage of students who strongly agree or agree to the statements in the survey is to be calculated | End of the academic year |

| No | KPIs Code | KPIs | Target | Measurement Methods | Measurement Time |
|---|---|---|---|---|---|
| **15** | KPI-PG-15 | Percentage of publications of faculty members | 95% | Data regarding the total number of teaching staff and number of teaching staff who have at least one research publications should be collected and thereby percentage is calculated | End of the academic year |
| **16** | KPI-PG-16 | Rate of published research per faculty member | 3:1 | Data regarding the total number of teaching staff and the total number of research publications should be collected and percentage should be calculated | End of the academic year |
| **17** | KPI-PG-17 | Citations rate in refereed journals per faculty member | 20:1 | Data regarding the total number of teaching staff who have research publications and the total number of citations in research publications should be collected and percentage should be calculated. | End of the academic year |
| **18** | KPI-PG-18 | Percentage of students' publication | **NA** | Data regarding the total number of students' publication and the total number of research publications should be collected and percentage should be calculated | End of the academic year |
| **19** | KPI-PG-19 | Number of patents, innovative products, and awards of excellence | NA | Data regarding the total number of patents, innovative products, and awards of excellence should be collected and percentage should be calculated | End of the academic year |

* including KPIs required by NCAAA

## I. Specification Approval Authority

| | |
|---|---|
| **Council / Committee** | |
| **Reference No.** | |
| **Date** | |