Program Specification

Diploma

Program:	**Mining and Quarrying**
Program Code (as per Saudi university ranking):	*Enter Program Code.*
Qualification Level:	Intermediate Diploma
Department:	Diploma Department
College:	Applied College
Institution:	Umm AL-Qura University
Program Specification:	New ☒ updated* ☐
Last Review Date:	April 15, 2025

*Attach the previous version of the Program Specification.

Table of Contents

A. Program Identification and General Information

1. Program's Main Location :

University Campus

2. Branches Offering the Program (if any):

N/A

3. Partnerships with other parties (if any) and the nature of each:

N/A

4. Professions/jobs for which students are qualified

Intermediate Diploma Holders in Mining and Quarrying can lead to various professional opportunities and give several benefits. Students can qualify for the following professions/jobs:

- Mine supervisor or Foreman – Overseeing daily operations at mining sites.
- Drilling or Blasting Technician – Specializing in controlled explosions for excavation.
- Mine Surveyor Assistant – Supporting survey teams in mapping and monitoring mining sites.
- Quarry Manager Assistant – Managing quarry operations, including safety and logistics.
- Mineral Processing Technician – Working in the processing of extracted minerals.
- Environmental or Safety Officer – Ensuring compliance with regulations and minimizing environmental impact.
- Equipment Operator – Operating heavy machinery like excavators, dump trucks, and drills.
- Junior Geotechnical – Supporting geologists in collecting and analyzing geological data.
- Lab Technician (Mineral Analysis) – Performing tests and quality checks on mineral samples.
- Mine Planning Assistant – Helping develop plans for efficient and safe mining operation
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5. Relevant occupational/ Professional sectors:

Some of the relevant sectors for Mining and Quarrying Intermediate Diploma Holders are as follows:

1. Mining Industry
   - Coal, metal, and non-metal mining operations
   - Underground and surface mining sites
2. Quarrying Industry
   - Stone, gravel, sand, and aggregate extraction
   - Construction material supply companies
3. Mineral Processing Plants
   - Ore crushing, screening, and beneficiation plants
   - Cement and lime production facilities
4. Construction & Infrastructure Development
   - Large-scale infrastructure projects (roads, bridges, tunnels)
   - Earthworks and excavation services
5. Oil & Gas (Surface Mining Projects)
   - Involvement in surface extraction and processing support
6. Geological Survey & Exploration
   - Mineral exploration companies
   - Geological research and surveying services
7. Environmental Management
   - Land rehabilitation and mine closure operations
   - Environmental monitoring and impact assessment
8. Equipment Manufacturing & Maintenance
   - Heavy mining machinery and drilling equipment companies
   - Technical support and maintenance services
9. Safety and Regulatory Bodies
   - Mining safety and inspection agencies
   - Government departments overseeing mining regulations
10. Education & Training Institutes

- Technical training centers
- Field instructors and lab technicians

6. Major Tracks/Pathways (if any):

Major track/pathway	Credit hours (For each track)	Professions/jobs (For each track)
1.		
2.		
3.		
...		

7. Exit Points/Awarded Degree (if any):	
exit points/awarded degree	**Credit hours**
1.	
2.	
3.	
8. Total credit hours: (60 hours)	

B. Mission, Objectives, and Program Learning Outcomes

1. Program Mission:

The program should be distinguished at the local and regional levels in preparing specialized competencies in the fields of mining geology and Quarrying.

2. Program Goals:

1. Preparing graduates with sufficient knowledge and technical competence to work effectively in the mining, industrial, and energy sectors.
2. Meeting industry expectations in the mining and energy sector with professional knowledge, excellent communication, and leadership skills.
3. Preparing students intellectually and skillfully to become effective national cadres capable of operating ore processing plants and mineral exploration companies.
4. Contributing to new technical ideas that advance the mining and energy sector.
5. Continuing professional development in the mining and mining sector through self-learning, undergraduate studies, and advanced postgraduate studies.
6. Enhancing students' knowledge and understanding of mineral ore processing and exploration.
7. Providing technical and practical solutions to existing or potential problems in mining plants and companies.
8. Equipping students with analytical thinking skills to enhance their professional competence in solving technical and practical problems in mining plants and companies.

3. Program Learning Outcomes*

Knowledge and understanding	
K1	**Understanding the Basic Principles of Geology and Earth Sciences** **Recognize rock types, mineral formations, and geological structures relevant to mining operations.**
K2	**Identify and explain surface and underground mining techniques, as well as quarrying processes.** **Understand the Economic and Legal Aspects of Mining, Basic awareness of mining conomics, project evaluation, and legal/regulatory frameworks.**

K3	Recognize the environmental benefits, economic considerations, and societal impacts of mining and Quarrying, with emphasis on Saudi Arabia's Vision 2030.
K4	Understand the functions, uses, and maintenance basics of machinery used in extraction and processing. Understand industry-standard safety procedures, environmental laws, and sustainable mining practices.
Skills	
S1	Skillfully use and perform routine maintenance on machinery such as drills, excavators, crushers, and conveyors. Assist in collecting field data, taking measurements, and using surveying tools and equipment accurately.
S2	Assist in the preparation and execution of drilling and controlled blasting under supervision, following safety protocols. Perform tasks such as crushing, screening, grinding, and separating minerals using relevant tools and technologies.
S3	Read and understand mine plans, geological maps, and equipment layouts to support operational activities. Apply safety practices, conduct risk assessments, and respond appropriately to workplace hazards.
S4	Operate software and digital instruments for data recording, mapping, and mine planning (e.g., AutoCAD, GIS basics, or specialized mining software).
S.5	Write reports, complete logbooks, and communicate clearly with team members and supervisors in both oral and written formats.
Values, Autonomy, and Responsibility	
V1	Adhere to ethical standards, honesty, and integrity in all mining and quarrying practices. Take responsibility for personal actions and assigned tasks, ensuring safety, accuracy, and quality in work.
V2	Perform assigned duties with minimal supervision and contribute effectively within diverse teams. Consistently uphold occupational health and safety procedures, and contribute to minimizing environmental impact.
V3	Display reliability, punctuality, and a disciplined approach to technical and operational responsibilities. Show resilience and flexibility in adapting to evolving technologies, procedures, and work environments.
V4	Demonstrate a willingness to learn new skills, seek feedback, and engage in lifelong learning relevant to the field. Foster a respectful, inclusive attitude toward colleagues from different backgrounds and disciplines.

C. Curriculum

1. Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	0	0	0
	Elective	0	0	0
College Requirements	Required	4	12	20
	Elective	0	0	0
Program Requirements	Required	18	42	70
	Elective	0	0	0
Capstone Course/Project		0	0	0
Field Training/ Internship		3	6	10
Residency year				
Others				
Total		26	60	100

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

2. Program Courses

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	Uni101	English Language (1)	Required		4	College
	G101	General Geology	Required		2	Program
	G102	Crystallography and Mineralogy	Required		3	Program
	G121	Sedimentary Rocks	Required		2	Program
	Gphy121	Exploration Geophysics-I	Required		2	Program
	G104	Structural Geology	Required		2	Program
	Phys101	General physics-1	Required		3	Program
Level 2	Uni202	English Language (2)	Required		4	College
	Tc221	Soil and Rock Mechanics	Required		3	Program
	G222	Geology of Mineral Deposits	Required		2	Program
	G223	Stratigraphy	Required		2	Program
	G225	Microfossils	Required		3	Program
	Tc447	Surface and underground mining operations			2	
	Uni202	Values and Ethics	Required		2	College

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 3	Gphy322	Exploration Geophysics - II	Required		3	Program
	G232	Mineral Extraction and Environmental Aspects	Required		2	Program
	G348	Risk Assessment and Crisis Management and Safety in the Field (2h/w)	Required		2	Program
	Tc331	Mining and Quarrying Geology	Required		2	Program
	G337	Field Geology	Elective		2	Program
	Uni301	Professional skills	Required		2	College
	Tc333	Geographic Information Systems	Required		3	Program
	G340	Ore Deposits of Saudi Arabia	Required		2	Program
Level 4	TR411	Training	Required		6	Program

* 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)

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4. Program learning Outcomes Mapping Matrix:

Align the program learning outcomes with program courses' according to the following desired performance levels *(I = Introduced & P = Practiced & M = Mastered).*

Course code & No.	Program Learning Outcomes												
	Knowledge and understanding				Skills					Values, Autonomy, and Responsibility			
	K1	K2	K3	K4	S1	S2	S3	S4	S5	V1	V2	V3	V4
English Language (1)	College requirement												
General Geology	✓	✓	✓	✓	✓	✓	✓					✓	
Crystallography and Mineralogy	✓	✓	✓		✓		✓			✓			
Professional skills	College requirement												
Sedimentary Rocks	✓	✓	✓	✓	✓	✓			✓	✓	✓		
English Language (2)	College requirement												
Exploration Geophysics-I	✓	✓	✓	✓	✓	✓						✓	
Structural Geology	✓	✓	✓		✓	✓			✓	✓	✓	✓	
General physics-1	✓	✓	✓		✓	✓	✓					✓	✓
Values and Ethics	College requirement												
Data Base Applications in Geology	✓	✓	✓		✓	✓	✓			✓		✓	
Soil and Rock Mechanics	✓	✓	✓	✓	✓				✓			✓	✓
Geology of Mineral Deposits	✓	✓			✓	✓	✓			✓	✓	✓	
Stratigraphy	✓	✓	✓	✓	✓	✓		✓				✓	✓
Geological Mapping	✓	✓	✓	✓	✓	✓		✓				✓	✓
Microfossils	✓	✓	✓		✓	✓	✓			✓	✓	✓	
Surface and underground mining operations	✓	✓	✓	✓		✓	✓	✓			✓		✓
Exploration Geophysics - II	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
Mineral Extraction and Environmental Aspects	✓	✓	✓			✓	✓	✓			✓	✓	
Risk Assessment and Crisis Management and Safety in the Field					✓	✓	✓	✓					
Mining and Quarrying Geology	✓	✓	✓	✓									

Course code & No.	Program Learning Outcomes												
	Knowledge and understanding				Skills					Values, Autonomy, and Responsibility			
	K1	K2	K3	K4	S1	S2	S3	S4	S5	V1	V2	V3	V4
Field Geology	✓	✓	✓										
Geographic Information Systems								✓	✓	✓	✓		
Ore Deposits of Saudi Arabia	✓	✓	✓	✓	✓			✓	✓			✓	✓
Cooperative training	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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

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

Describe teaching and learning strategies and curricular and extra-curricular activities adopted to achieve the Program's learning outcomes in all areas.

The following policies, teaching and learning strategies, learning experiences, and learning activities are followed to achieve the program learning outcomes:

- Lectures, practical and independent study assignments.
- Presentations on different topics.
- Realistic Case Studies
- Teamwork practical study assignments

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 following direct assessment methods are as follows:

- Classwork and homework assignments.
- Exam
- Case Studies Presentations
- Teamwork reports / presentations
- Case Studies reports and presentations

On the other hand, a course survey is conducted to the student, and the results are collected and analyzed as a direct assessment method by the assessment committee.

D. Student Admission and Support:

1. Student Admission Requirements

Registration requirements are determined by the Applied College at Umm Al-Qura University in accordance with the procedures approved for the diploma.

2. Guidance and Orientation Programs for New Students

(Include only the exceptional needs offered to the students of the Program that differ from those provided at the institutional level).

N/A

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).

The academic advising and student support mechanism is as follows: 1. Academic Counseling - Guidance on course selection, study strategies, and time management. - Support for academic challenges such as exam stress, low performance, or concentration difficulties. - Assistance with learning resources, tutoring, and referrals to faculty or academic support units. - Help in developing individualized academic improvement plans. 2. Professional and Career Counseling - Career planning and goal setting based on interests, skills, and market trends. - Advice on internship opportunities, job search strategies, and resume/interview preparation. - Information sessions on industry expectations, technical certifications, and career paths. - Connections with alumni, industry partners, and job placement services. 3. Psychological Counseling Confidential one-on-one sessions with trained counselors for mental health support.

- Help with managing stress, anxiety, depression, self-esteem issues, and personal challenges.
- Crisis intervention and referral to external mental health services when needed.
- Workshops on emotional intelligence, resilience, and coping mechanisms.

4. Social and Personal Counseling
- Support in adapting to campus life, especially for new students or those from diverse backgrounds.
- Conflict resolution, peer relationship management, and communication skills development.
- Programs promoting inclusion, cultural sensitivity, and positive social engagement.
- Assistance with personal challenges, such as family concerns, financial stress, or housing issues.

4. Special Support

(Low achievers, disabled, gifted, and talented students).

The Applied College supports the students who have special needs, such as low achievers, disabled, gifted, and talented. The College introduces the best of the advising scheme and puts the plan of their schedules carefully to meet the college, and university expectations.

E. Faculty and Administrative Staff:

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professor	1	4	-	5	-	5
Associate Professor	1	5	-	6	-	6
Assistant Professor	-	5	-	5	-	5

Lecturer	-	7	-	7	-	7
Teaching Assistant	1	4	-	5	-	5
Technicians and Laboratory Assistants	1	8	-	9	-	9
Administrative and Supportive Staff	1	6	-	7	-	7
Others (specify)	1	10	-	11	-	11

F. Learning Resources, Facilities, and Equipment:

1. Learning Resources

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

- Access to textbooks, reference materials, journals, and industry publications.
- Digital library with e-books, databases, and technical papers.
- Quiet study areas and research assistance from trained staff.
- Online Learning Management System (LMS) for lecture notes, assignments, quizzes, and announcements.
- Recorded video lectures, simulation software, and interactive tutorials.
- Access to forums, discussion boards, and collaborative tools for group projects.
- Well-equipped labs for geology, rock mechanics, mineral processing, and surveying.
- Hands-on practice using industry-standard tools and instruments.
- Safety-focused environments that simulate real-world mining conditions.
- Specialized software for mine design, 3D modeling, mapping, and mineral analysis.
- Examples: AutoCAD, Surpac, ArcGIS, and other mining-related tools.
- Training sessions and guided exercises provided to build technical competence.
- Access to instructors during office hours for one-on-one academic help.
- Academic advisors are available for course planning and performance feedback.
- Peer tutoring and mentoring programs for additional support.
- Case studies, field reports, and access to real-world mining project data.

- Guest lectures and webinars by industry professionals and researchers.
- Opportunities to engage in industry-linked projects and applied research.

2. Facilities and Equipment

(Library, laboratories, classrooms, etc.)

- Equipped with rock and mineral samples, microscopes, and analysis tools for studying geological formations. Includes crushers, grinders, screening equipment, and separators for hands-on practice in ore processing.
- Tools and testing equipment to analyze rock strength, stability, and behavior under stress.
- Provides traditional and modern instruments such as theodolites, total stations, and GPS units for mapping and layout exercises.
- Drilling and Blasting Practice Area
- Controlled environment for simulating drilling patterns, blast design, and safety procedures.
- Heavy Equipment Simulator Room
- Virtual training systems for safe, realistic practice on bulldozers, excavators, dump trucks, and other machinery.
- Hands-on space to learn repair, maintenance, and troubleshooting of mining equipment.

- Workstations equipped with specialized software such as:
- AutoCAD – for drafting and mine planning.
- Surpac / MineSight / Micromine – for 3D mine modeling and geological data analysis.
- ArcGIS / GIS tools – for spatial analysis and mapping.

- On-site Quarry or Field Training Area
- For practical exposure to extraction methods, surveying, and geological mapping.
- Safety and Rescue Simulation Zone
- Space to train on emergency procedures, hazard identification, and mine rescue operations.

- Personal Protective Equipment (PPE) provided during practicals (helmets, boots, goggles, etc.)
- Access to first aid kits, safety signage, and fire safety equipment in all labs and workshops.

3. Procedures to ensure a healthy and safe learning environment

(According to the nature of the Program)

The general safety measures taken in the Applied College are summarized as follows:

- The college building is equipped with surveillance cameras for security purposes.
- A University Health Center is available for all students.
- Smoke detectors are installed everywhere in the college building.
- Fire extinguishers are installed everywhere in the college building.
- Sprinklers are installed everywhere in the college building.
- All labs are equipped with an Emergency Button enclosed in a breakable glass that can be activated in emergency situations.
- An emergency evacuation procedure is affixed in laboratories and in different appropriate places in the college building.
- A General computer laboratory safety procedure is affixed in each laboratory.

Laboratory Safety Guidelines

- The Applied College offers these suggestions for improving laboratory safety. We believe that understanding inherent hazards and learning how to be safe should be an integral and important part of the education process.
- The Applied College and the College of Engineering, to ensure safe practices in the laboratories, have adopted the following guidelines. They will be consistently enforced. Non-compliance will result in suspension from the laboratory.

Personal Safety

- Perform non-unauthorized experiments, tasks or job and perform given experiments, tasks or job only according to directions.
- Never work in a laboratory alone or at least without another person within easy call.
- Wear safety glasses or face shields when working with hazardous materials and/or equipment.

G. Program Quality Assurance:

1. Program Quality Assurance System

Provide a link to the quality assurance manual.

https://drive.uqu.edu.sa/_/quality/files/%D8%AF%D9%84%D9%8A%D9%84%20%D8%A7%D9%84%D8%AC%D9%88%D8%AF%D8%A9%2015-%D9%81%D8%A8%D8%B1%D8%A7%D9%8A%D8%B1-2022.pdf

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

Indirect assessment of SOs through Faculty Survey is important because it is the judgment of the instructor teaching the course. Obviously, the instructor knows from the direct assessment how well the students have attained SOs. The judgment of the instructor will be usually about the same as reflected by the direct assessments. However, the instructor observes the performance of students over the semester and there may be reasons to believe that the students' ability as reflected by the direct assessments are not true. Thus, indirect assessment through Faculty Survey is necessary. It shows the perception the instructor has about the students' abilities attained in the course. In this survey, the instructor indicates, for each PLO, his opinion about the real abilities attained by the students. Therefore, the input is very simple. An in-house Excell sheet takes the input from the instructor and then converts it to SO satisfaction using the same PLO-SO mapping as discussed earlier.

Exit Survey

In each semester, all graduating students are required to fill in a survey form and go through an exit interview by the Surveys Committee of the department.

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

Diploma students of the Mining and Quarrying program acquire abilities as prescribed by the required Student Outcomes through various courses during the two-year degree program. These courses are from various departments from different colleges and span over a wide range of subject areas. Even though all such courses contribute a little or more towards attaining the required Student Outcomes, assessment and evaluation presented here to demonstrate the attainments of Student Outcomes are limited to the core courses of the program, including the Capstone Project.

The above refers to the courses that are taken by all students enrolled in the program, and the department has full control over them for devising the assessment and evaluation processes as well as implementing the improvement plans.
The courses that are not considered in the Student Outcomes evaluation processes are the following:
- General courses to satisfy the program requirements
- Elective courses of the Mining and Quarrying program

It must be re-emphasized that all the above courses that are not considered in the evaluation of the attainment of student outcomes contribute to the abilities related to student outcomes. The preference here to exclude the above from the evaluation of the Student Outcomes attainment has the following main reasons:
We will demonstrate that all the students' outcomes are attained to the required satisfaction level through the Mining and Quarrying core courses, as mentioned above. Therefore, the abilities gained through other compulsory courses, and elective courses represent "a plus" and are not required to be evaluated.
The student outcomes attained in various elective courses are different, and therefore the attainment of student outcomes in these elective courses is not representative of the abilities of all students in the program. However, the data from these elective courses are collected just like all core courses.
The core courses of the program used in the evaluation of Student Outcomes attainment cover all the student Outcomes, though not equally.

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

A-1 Accreditation Software

The Applied College is using an in-house Excell sheet. The college decided to use a software package to achieve the following goals:

a) To cut down the instructor's time and effort in preparing the course file and data collection.
b) To increase the reliability of the collected data.
c) To allow error-free processing of large amounts of data and thus enable the department to analyze and evaluate all courses within a week after obtaining the data files from the instructors.
d) To obtain faculty's opinions on a few issues that may help improve the PLO and SO attainments.
e) To identify any course that has an issue and to take corrective measures.

f) To enable the chairman of the department to re-view the SO attainments and "Loop-closing" in each semester.
g) To maintain a unified database for syllabus of all courses.
h) To make the assessment and evaluation system highly sustainable.

The in-house Excell sheet is satisfied all the above requirements. This sheet has been extensively used by the instructors in preparing the course files.

A-2 Assessment Processes Summary

The attainment of SOs is continually assessed and evaluated through several processes. The evaluation system is automated through an in-house Excell sheet mentioned above. The evaluation system maintains a unified database containing the syllabus, CLO-SO maps for all courses, Program Satisfaction Criterion and various other data. The evaluation system itself is being improved continually. At this time the system has reached a very stable and reliable status with a very high degree of sustainability and the department was quite successful, drastically cut down the instructors' time in preparing the course files and the evaluation of data. To understand the assessment processes, the following two points are to be noted:

a. In the direct assessment process, reliance on some "SO-based" questions in a *subset* of courses was not fruitful. Complete data for all core courses are required to make decisions that bring improvement. Since the instructor teaching the course is more oriented towards the "Course Learning Outcomes" PLOs and naturally plans to assess the PLOs of the course and considers students' attainment of the PLOs of the course as the major responsibility, we let the instructor focus on the PLOs for proper assessment of the course PLOs. The in-house Excel sheet converts the PLO based data to the SO based data through the PLO-SO map of the course.

b. Due to the automation, the ease and the speed available through the in-house Excel sheet, the "Formative Assessment" now includes all courses. The philosophy in the Formative Assessment is because SOs are in fact the abilities at the time of graduation and not the abilities demonstrated in individual courses. All courses taken before graduation are just preparing the students to attain the SOs. Therefore, the Formative Assessments represent the quality of learning and teaching and the data from these assessments are indicators of students' progress towards the attainment of SOs.

Other than the direct Formative and Summative Assessments, five other indirect assessment processes constitute a system of assessment and evaluation. A

summary of these processes is given in Table A2.1. Following the table, a brief description of each process is given to help the reader have a quick view of the processes. The details of these processes are given in the later sections.

Table A2.1- Assessment processes

S/N	SO Assessment Process	Assessment Type	Frequency	Data Collected by:	Data Processing	Evaluated by:
1	Formative Assessment	Direct	Each Semester	Instructors	An in-house Excell sheet	Assessment Committee
2	Summative Assessment	Direct	Each Semester	Project Supervisor	An in-house Excell sheet	Assessment Committee
3	Course-wise Student Survey	Indirect	Each Semester	Instructors	An in-house Excell sheet	Assessment Committee
4	Course-wise Faculty Survey	Indirect	Each Semester	Instructors	An in-house Excell sheet	Assessment Committee
5	Exit Survey	Indirect	Each Semester	Assessment Committee	Assessment Committee	Assessment Committee
6	Alumni Survey	Indirect	Every 3 years	Assessment Committee	Assessment Committee	Assessment Committee
7	Employers Survey	Indirect	Every 3 years	Assessment Committee	Assessment Committee	Assessment Committee

A-2-1 Formative Assessment

For each course, course assessment data are collected by the instructor in a prescribed format. The data for each core course is input to the in-house Excel sheet by the instructor. The in-house Excel sheet produces all the required analyses and evaluation data. It also produces a printout of the complete course file for accreditation purposes. The results are finally reviewed and evaluated by the chair of the assessment committee. The compiled results are reviewed and evaluated by the Assessment Committee.

A-2-2 Summative Assessment

The Capstone Project over a period of one semester under the supervision of a faculty member with a good design background. The tasks are defined in a document approved by the department. The in-house Excel templates are available for the instructors to report the assessments of all the tasks of the Capstone Project. The data are processed, and all the required analysis of data and the evaluation are produced by the in-house Excel sheet.

A-2-3 Course-wise Student Survey Assessment

For each course, the in-house Excel sheet produces a PLO satisfaction survey form. The instructor distributes the survey form to the students at the end of the semester before the final examination. The students fill in the survey form to tell their opinion about how well they think they have learned based on their perception. The data is entered into the in-house Excel sheet by the instructor. The software does the rest of the processing.

A-2-4 Course-wise Faculty Survey Assessment

For each course, the instructor enters his own opinion about students learning based on his perception at the end of the course. The data is entered into the in-house Excel sheet by the instructor. The software does the rest of the processing.

A-2-5 Exit Survey Assessment

Exit survey is conducted just before the final examinations of each semester... All graduating students fill in a survey form. In this survey the graduating students give their assessments of how well they have attained the SOs. The data is compiled and reviewed by the Assessment Committee.

A-2-6 Alumni Survey Assessment

The Alumni survey is performed at an interval of three years. The survey has other purposes but one of the objectives is to obtain the opinion of the alumni about how they found themselves in the abilities relevant to the SOs at the time of graduation.

A-2-7 Employer Surveys

Employment survey is carried out every three years. There are several items on the questionnaire. One major purpose of the survey is to determine the opinions of the employers about the abilities of the graduates of the diploma related to each SO at the time they were hired after graduation.

A-3 Assessment Processes Details

A-3-1 Formative Assessment

Since all data processing is done by the in-house Excel sheet which has been thoroughly checked by comparing with calculations done manually in different departments of the university, the key to success in achieving the reliability of the direct course assessment and evaluation system is the data collection and data entry. The data to be collected by the instructor during the whole semester are described in the following sections.

A-3-1-1 SO Assessment Plan

The first piece of information that is required by all instructors is a SO assessment plan for the courses they are teaching and share it with the students in the first week of classes. The purpose of this plan is to increase the awareness of the course relevant SOs among the students and to re-emphasize the faculty of the importance of SO assessment though done implicitly through the assessment of the PLOs. This helps the instructor in keeping in view the relevant SOs whenever designing an assessment for PLOs. At the same time, it helps the students in paying attention to their abilities that are required at the time of graduation.

Table 4-7, 4-8 and 4-9 show the choices available to the instructor for three different aspects of the SO assessment plan. Figure 4-2 shows a typical instructors' input in the in-house Excel sheet.

Table 4-7: SO Introduction to Students - Choices for Instructors

Choice No.	When will the SO be introduced to the students?
1	In the first week of classes
2	In the second week of classes
3	Any time before mid-term
4	After the mid-term
5	Last week of classes
6	Never

Table 4-8: SO Students Awareness Check - Choices for Instructors

Choice No.	How will it be ascertained that students are aware of the SO?
1	Through verbal cross-questioning
2	Through a questionnaire
3	Through questions in assessments
4	No. Nothing will be done.

Table 4-9: SO Assessment Method - Choices for Instructors

Choice No.	How will the SO be assessed?
1	Implicitly through CLO based questions
2	Explicitly through SO based questions
3	Through a presentation, student will make
4	Through an assessment for this purpose
5	Through oral questions
6	Not applicable (because no plan to assess)

Here the instructor enters the plan of SO evaluation. The questions and the possible answers are shown in the screen snapshot in Figure 4-2. The SOs in the first column is only those that are relevant to the course. This information is gathered from all instructors for increased awareness of the faculty teaching the course and the students and may be used by the Assessment and Evaluation Committee to resolve any issues concerning the satisfaction of SO attainment.

SO ID	When will the SO be introduced to students?	How will it be ascertained that students are aware of the SO?	How will the SO be assessed?
a	In the first week of classes	Through verbal cross-questioning	Implicitly through CLO based questions
b	In the second week of classes	Through a questionaire	Explicitly through SO based questions
c	Any time before the mid-term	Through questions in assessments	Through a presentation student will make
e	After the mid-term	Through questions in assessments	Through an assignment for this purpose
g	Last week of classes	Through questions in assessments	Through an assignment for this purpose
k	After the mid-term	Through verbal cross-questioning	Through oral questions

Figure 4-2: An example of SO Assessment Plan Input

A-3-1-2 Assessment Contribution Data

For the purpose of data input to the in-house Excel sheet, an assessment is characterized by four attributes:

a) An assessment ID (usually the serial order of occurrence of assessment)
b) A name given to the assessment by the instructor
c) Raw marks used for grading the assessment
d) Actual marks out of 100 that the assessment contributes to the final grade

An example is shown in Table 4-10. It is worth noting that data shown in Table 4-10 is typically maintained by all instructors universally and therefore it is no additional burden on the instructor.

Table 4-10: Typical Assessment Marks Contribution Data

Assessment ID	Assessment Name	Raw Marks (Used for grading the assessment)	Marks Contribution to Final Grade (%)
1	Quiz 1	20	5
2	Homework 1	100	5
3	Quiz 2	20	5
4	Mid-Term	20	20
5	Term-Project	50	15
6	Final Exam	100	50
Total marks contribution: (must add up to 100)			**100**

A-3-1-3 PLO Marks Allocation Data

Keeping track of the PLO marks allocation data is an important part of the process. The instructor in each assessment must specify the marks allocated to each question and the PLO that it addresses. In some assessments like quizzes, only a single PLO is addressed, while there are others like the final examination and other periodic examinations (such as “Mid-term” examination) that have questions belonging to different PLOs.

If an assessment is a "Single PLO Assessment" i.e. it has all questions belonging to the same PLO, it makes things simple because keeping track of the students' marks for the assessment is enough. The instructor does not need to keep track of students' marks in each different question. Figure 4-3 shows the PLO Marks Allocation data required for a "Single PLO" assessment.
However, if an assessment is "Multiple PLO Assessment", the questions in the assessment belong to different PLOs as shown in Figure 4-4. In this case, it is required that marks of students for all questions belonging to each PLO be recorded. In such cases, the data collection is a little burdensome on the instructor but there is no other way to determine how the students are performing in a particular PLO that in turn provides their performance in the respective Sos.

5. Program Evaluation Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
Formative Assessment	Instructors	An in-house Excel sheet	Each semester
Summative Assessment	Master's Capstone Research Project supervisors	An in-house Excel sheet	Each semester
Course-wise Student Survey Assessment	Students	An in-house Excel sheet	Each semester
Course-wise Faculty Survey Assessment	Instructors	An in-house Excel sheet	Each semester
Exit survey	Students	Assessment Committee	Each semester
Alumni Survey Assessment	Students	Assessment Committee	Every 3 years
Employer Surveys	Employer	Assessment Committee	Every 3 years

Evaluation Areas/Aspects: e.g., leadership, effectiveness of teaching & assessment, learning resources, services, partnerships, etc.
Evaluation Sources: students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, etc.
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 (____) year(s).

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
1	KPI-PG-1	Percentage of achieved indicators of the program operational plan objectives	90%	Indirect	Yearly
2	KPI-PG-2	Students' Evaluation of quality of learning experience in the program	80%	Indirect	Yearly
3	KPI- PG-3	Students' evaluation of the quality of the courses	80%	Indirect	Yearly
4	KPI-PG-4	Students' evaluation of the quality of scientific supervision	80%	Indirect	Yearly
5	KPI-PG-5	Average time for students' graduation	2 years	Direct	Yearly
6	KPI-PG-6	Rate of students dropping out of the program	10%	Direct	Yearly
7	KPI-PG-7	Employers' evaluation of the program graduates' competency	80%	Indirect	Every 3 years
8	KPI-PG-8	Students' satisfaction with the provided services	80%	Indirect	Yearly
9	KPI-PG-9	Ratio of students to faculty members	100%	Direct	Yearly
10	KPI-PG-10	Percentage of faculty members' distribution based on academic ranking	100%	Direct	Yearly
11	KPI-PG-11	Proportion of faculty members leaving the program	10%	Direct	Yearly
12	KPI-PG-12	Satisfaction of beneficiaries with learning resources	80%	Indirect	Yearly
13	KPI-PG-13	Satisfaction of beneficiaries with	80%	Indirect	Yearly

No.	KPIs Code	KPIs	Targeted Level	Measurement Methods	Measurement Time
		research facilities and equipment			

*including KPIs required by NCAAA

H. Specification Approval Data:

Council / Committee	**Umm Al-Qura University Council**
Reference No.	**851110214476/195605**
Date	**18/2/1447**

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