KINGDOM OF SAUDI ARABIA
MINISTRY OF EDUCATION
UMM AL-QURA UNIVERSITY

كلية الهندسة والعمارة الإسلامية
College of Engineering & Islamic Architecture

Quality Manual

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INTRODUCTION

Mechanical engineering is a key engineering specialty with applications penetrating all other specialties. It covers a very wide range of technical and industrial areas, such as designing and manufacturing mechanical and thermal tools, devices, and industrial systems, as well as energy transformation systems, and generating mechanical and electric forms of energy-- to mention only some.

Furthermore, mechanical engineering is instrumental for energy transfer, by means of designing, producing and utilizing specific methods and tools (heat exchangers, pipelines, gears, etc.), aside from refrigerating and air conditioning systems.

The Department of Mechanical Engineering was established in 1408H (corresponding to 1987), under the College of Engineering and Islamic Architecture.

The department is known for its impressive heritage and traditions, so far as research, teaching, and keeping in touch with industry are concerned.

The Department of Mechanical Engineering, which accommodates over 500 undergraduate students, is staffed with over 30 faculty members, supported and followed up by a helpful administration, and aided by a myriad of supportive technical working groups.

The courses taught at the department cover the various domains of mechanical engineering (e.g. mechanical power engineering, and production and manufacturing engineering). That is to be added to courses associated with energy management, and research quality assurance, with a view to introducing academic degrees compatible with the various fields.

The department places particular emphasis on engineering topics related to the industrial needs. Coupled with this, there are courses that are meant to enhance students' awareness of the most important, advanced, and recent in the domain of mechanical engineering. This includes mechanical design, energy generating, manufacturing, and computer-based designing and manufacturing, in addition to air conditioning, water desalination, and energy management.

The Quality System employed in the Mechanical Engineering Department is designed to do the following:

1. Focus on and define all aspects of the Department's business process: vision and mission, objectives, organizational structure and operational procedures.
2. Through 1, provides a well-defined, commonly accepted vision along with a well elucidated set of norms of practice.
3. By virtue of 2, reduces levels of uncertainty in the work environment so as to foster a strong organizational team, a fundamental requirement for higher performance levels among staff and students alike.

This Quality Manual serves to document all aspects of the Mechanical Engineering Department of Quality System. This Manual was presented following Department-wide consultation are combined into this single document.

Section I describes the Quality Management Framework that establishes the structures and regulations which make up the Department's Quality System. In particular, it outlines a framework for the assurance and enhancement of the quality of education provided through statements defining quality policy, organization and responsibilities for quality, implementation of processes for review and enhancement of quality.

Section II provides guidelines for the operation of various aspects of teaching and describes the operational features of the quality system. In particular, this Section codifies the norms that reflect Departmental consensus on what is good practice in the conduct of teaching and assessment. The basic principles of fairness, transparency and consistency underpin all of the procedures described in this section.

The Mechanical Engineering Department offers the following programs:

1. Bachelor of Science (BSc) in Mechanical Engineering
2. Master of Science (MSc) in Mechanical Engineering (Production)
3. Master of Science (MSc) in Mechanical Engineering (Thermal)

This Manual covers the BSc and taught postgraduate programs only.

It is hoped that this document will provide a meaningful and useful reference for all stakeholders in the Mechanical Engineering Department as we seek to build on our tradition of professional service and academic excellence.

SECTION I – THE QUALITY SYSTEM

1. Quality Policy and Objectives

The Vision of Umm Al-Qura University is:

> "**Local and regional excellence in education, scientific research, community service and entrepreneurship**".

The Mechanical Engineering Department therefore sees its own Vision as

> "**Generate and promote knowledge and learning nucleus for the mechanical engineering discipline to contribute in the development nationally and internationally**".

The Mission of Umm AL-Qura University is:

> "**Provision of distinctive scientific education and research that serve the community and Hajj and Umrah, and contribute to the development of the knowledge-based economy in accordance with the Saudi Vision 2030**".

The Mechanical Engineering Department therefore sees its own Mission as

> "**Providing highly qualified mechanical engineers, inspired with Islamic and ethical values, capable of mastering major roles in industry as well as conducting advanced scientific research. In addition, providing faculty with means to develop their intellectual capacity through teaching, research and interaction with society**".

The Objectives of Umm AL-Qura University are:

> "**Based on the strategic analyses and subsequent conclusions of drawing a set of strategic decisions, 9 strategic objectives have been planned by UQU over the next three years:**
>
> - **Application of the learning organization model**
> - **Sustainability of scientific research and improvement of its outputs to meet the needs of the community**
> - **Active participation in volunteering, and the service of community and pilgrims**
> - **Infrastructure enhancement**
> - **Establishing an integrated system for total quality management**

- **Convening local, regional and international agreements and partnerships with different organizations**
- **Marketing of UQU and its programs and activities to be a reliable academic brand**
- **Development of the University's own resources**".

The Mechanical Engineering Department therefore sees their program objectives as

"**Provide mechanical engineer professionals with breadth of knowledge, skills, values and confidence to:**

1. **Take a leadership role on various aspects of real-life environments (designing, conducting experiments and simulation, interpreting mechanical engineering applications' outcome and conducting academic as well as applied research).**
2. **Work individually as well as in multidisciplinary teams.**
3. **Continually improve their skills through professional and post-graduate education.**
4. **Demonstrate professionalism as well as sense of societal and ethical responsibility in their endeavor**".

Its strategy for doing this includes:

- Effective delivery of subject content that is of significant relevance to regional development;
- Continuous improvement of the academic management structure for:
  - Implementation of strong, effective quality assurance measures in teaching, research and development that encourage a self-sustaining high caliber world- class learning environment.
  - The encouragement of a departmental culture that continually seeks to improve quality through continuous learning and growth, and which is always open to innovative approaches and ideas.
- Development of programs that fully encourage and exploit the latent creative and innovative talents of Makkah people and which, at the same time, fully tools them for life in the engineering and business professions in the two key dimensions of knowledge and hands-on skill.

As such, elements of the Department's culture must include:

- A Department that operates as a close-knitted team with common goals and objectives;
- A work atmosphere in which all levels of staff are clear about the Department's direction as well as their roles and responsibilities;
- Department staff that operate professionally and competently;
- Faculty who can freely express themselves and respect one another's points of view;
- Departmental staff who are respectful of students as adult human beings and who view the personal and professional growth of each student as a key end product;
- Faculty who maintain international standards in their teaching and assessment practices and who ensure that the content and delivery of courses are always up to date;

- Administrative, Technical and Support staff who pride themselves on being the best in their field and who work assiduously at achieving and maintaining the highest standards;
- Effective strategies for nurturing the overall personal development of students in addition to the fundamental requirement of transferring technical knowledge;
- An environment that nurtures and supports meaningful, relevant, world-class development and research activity that supports the growth and sustainability in the Caribbean region;
- An environment that is completely open to new paradigms, concepts and ideas.

The Quality System described in this Manual is designed to meet these objectives and is guided by the following publications:

1. *Quality Guidebook (First Version)*. The University Development and Quality Deanship, UQU, 2017.	Provides guidance on UQU expectations of quality systems established in University departments, notably the quality model adopted by the UQU Quality Assurance Unit, as one of 'fitness for purpose.'

2. Organization for Quality and Standards

This Section describes the organizational aspects of the quality framework. It describes the Department's committee structure as well as the authorities, roles, and responsibilities of staff and the various committees within the framework. To a large extent what is described below also describes the departmental business process.

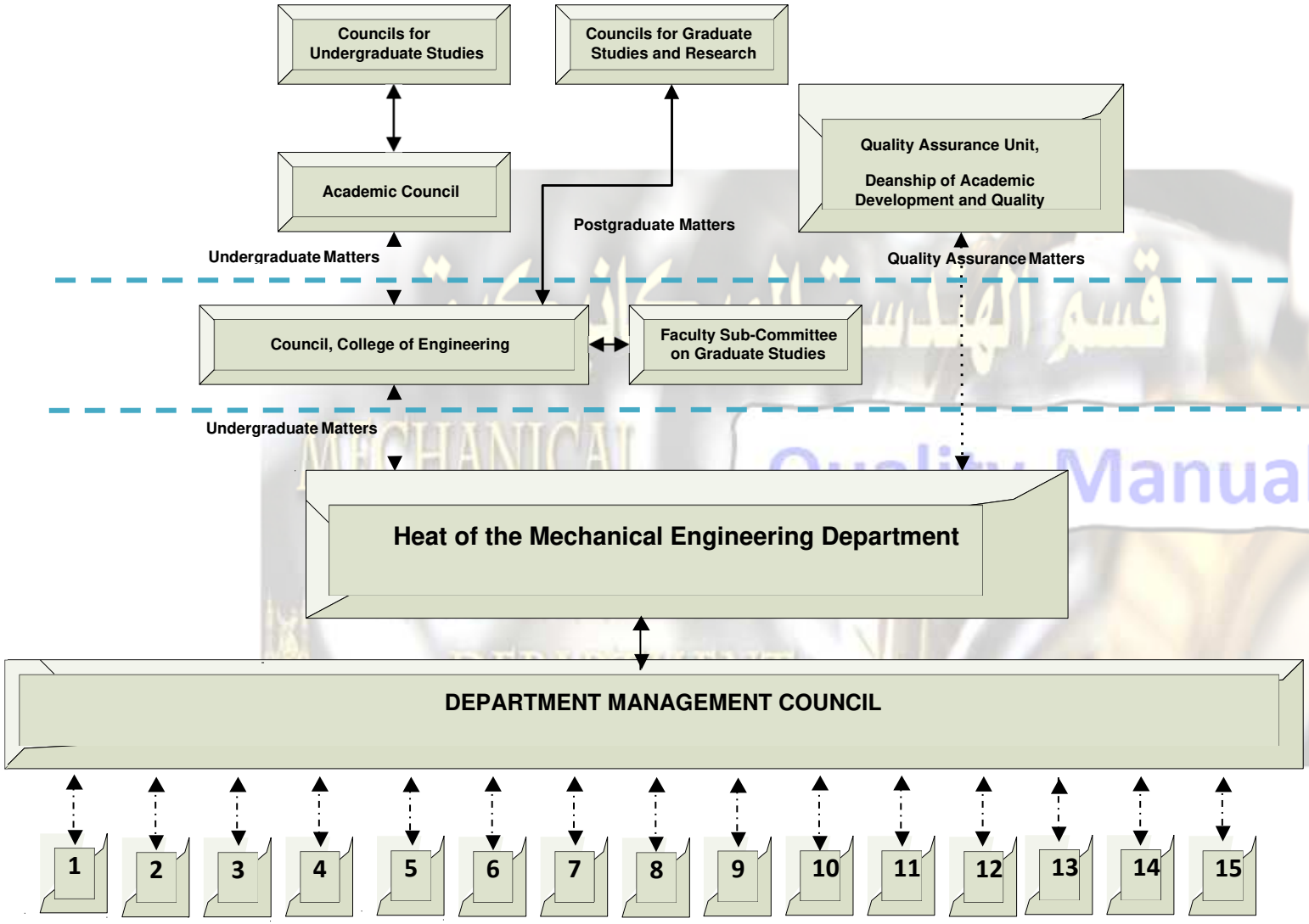
2.1 Departmental Committees

The quality framework of the Mechanical Engineering Department comprises fifteen (15) committees as follows:

1. The Steering Committee
2. The Curriculum Continues Improvement Committee for undergraduate Program
3. The Curriculum Continues Improvement Committee for postgraduate Program
4. The Capstone project Committee
5. The Career Advising Committee
6. The Supporting Courses Committee
7. The Communication Committee
8. The Students' Activities Committee
9. The Examination Committee
10. The Scientific Research Committee
11. The Display Room Presentation Committee
12. The IT Committee The
13. Laboratories Committee,
14. The Academic Advisors Committee
15. The Career Advising Committee

The Department Management Council is the ultimate decision- making body and, in this regard, provides the interface between the Department and the University at large. It is guided by recommendations and general information from the other supporting committees i.e., the Steering Committee, the Steering Committee, the Curriculum Continues Improvement Committee for both under and poste graduated Programs, the Capstone project Committee, the Career Advising Committee, the Supporting Courses Committee, the Communication Committee, the Students' Activities Committee, the Examination Committee, the Scientific Research Committee, the Display Room Presentation Committee, the IT Committee which is supported by a Laboratories Committee, the Academic Advisors Committee and the Career Advising Committee.

The Department's committee structure is detailed in Figure 1. It should be noted that this figure displays decision-based relationships. Extra-departmental committees that impact on quality issues are also included. Of note is the fact that Departmental decisions are routed through the Faculty and University by different committee paths depending on whether these decisions pertain to undergraduate or postgraduate matters.



1. The Steering Committee
2. The Curriculum Continues Improvement Committee for undergraduate Program
3. The Curriculum Continues Improvement Committee for postgraduate Program
4. The Capstone project Committee
5. The Career Advising Committee
6. The Supporting Courses Committee
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12. The IT Committee The
13. Laboratories Committee,
14. The Academic Advisors Committee
15. The Career Advising Committee

LEGEND

Consultation Recommendations,

Approvals

Figure 1- Committee Structure for Quality Assurance

2.1.1 Department Management Council

The Department Management Council is chaired by the Head of Department and comprises all Academic Members of Staff in the Department. Its main duties are strategic planning and formulation of recommendations to the Head on matters relating to courses, programs, funding and other relevant issues. The Council advises the Head of Department on:

1. The organization, policy, structure and operation of the Department;
2. Strategic planning;
3. All academic matters including matters pertaining to examinations, quality assurance and academic standards;
4. All matters pertaining to development, research and consultancy;
5. Resources, budget and funding, resource allocation;
6. Staff recruitment, induction, appraisal and development;
7. All other matters that impact on the quality of the delivery by the Department.

2.1.2 Program Coordinators

The Department is organized such that there are four (4) Program Coordinators covering the undergraduate and postgraduate programs. Figure 2 outlines this structure.

1. Coordinator for the Bachelor of Science (BSc) in Mechanical Engineering program for NACAA Accreditation.
2. Coordinator for the Bachelor of Science (BSc) in Mechanical Engineering program for ABET Accreditation.

   For the above two Coordinators, Leaders are appointed for the following Subject Groups within this Program as follows:

   - The **Production Engineering Group** which conducts teaching and research in machines, strength of materials, vibration, engineering design and other related areas.
   - The **Manufacturing Engineering Group** which conducts teaching and research in the manufacturing areas.
   - The **Thermal Engineering Group** which conducts teaching and research in the Thermodynamics and Energy areas.
   - The **Material Engineering Group** which conducts teaching and research in material science, material testing and other related areas.

3. Coordinator for the Bachelor of Science (BSc) in Mechanical Engineering for Capstone project.
4. Coordinator for the Postgraduate Programs. Leaders are appointed for the following MSc. Programs as follows:
   - Master of Science (MSc) in Mechanical Engineering (Production)
   - Master of Science (MSc) in Mechanical Engineering (Thermal)

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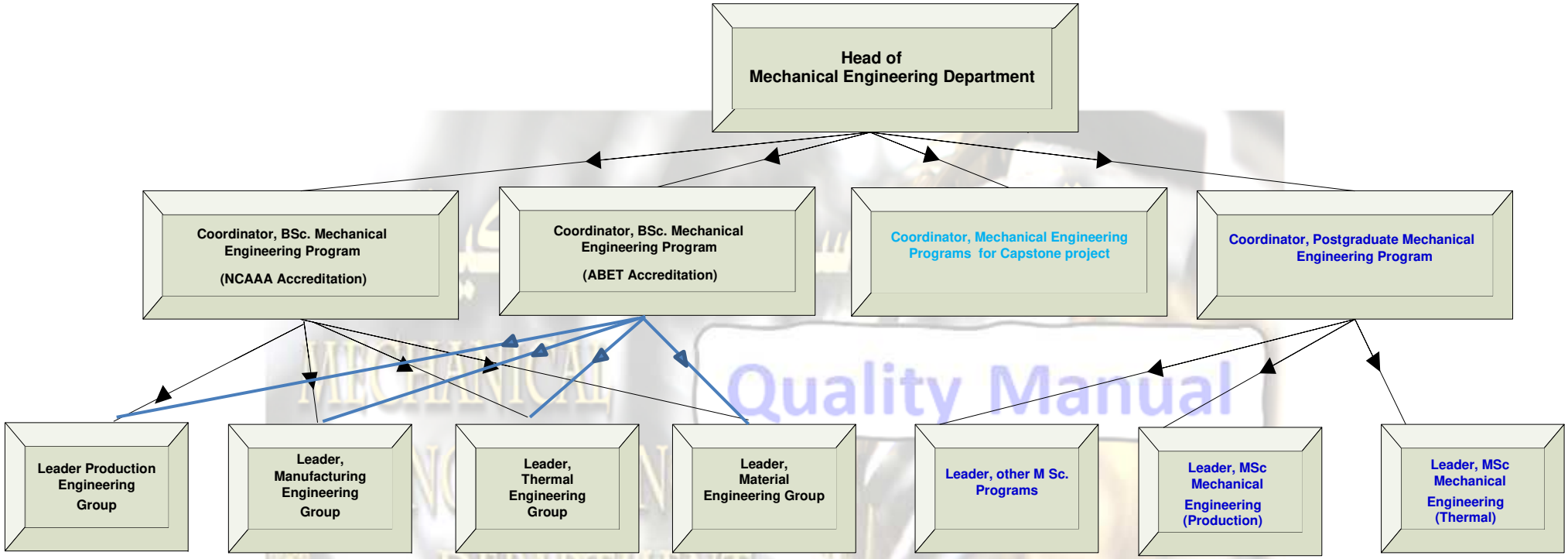

Figure 2- Program Coordinator Structure for Quality Assurance

2.1.3 Undergraduate Programs and Subject Groups

There are one undergraduate and two postgraduate programs offered by the Department. The Mechanical Engineering program is organized into three (4) Subject Groups. Each Subject Group represents a major area of expertise in Mechanical Engineering that is assessed to be of strategic importance to regional industry or to the operation of the Department. The Mechanical Engineering Program conducts teaching and research in machine designs, manufacturing technologies, vibration, automate control, nanomaterial, production, industrial engineering, energy, renewable energy, refrigeration, solar, fuel cells, biomass, machinery and equipment, soil and water engineering, food and process engineering and related areas.

Each Program/Subject Group has its Coordinator/Leader who has the responsibility of managing and developing the Program/Subject Group's areas of expertise. Each Program/Subject Group comprises members of staff in the area and is chaired by a Coordinator/Leader.

Program/Subject Groups are delegated by the Steering Committee to treat with issues of quality assurance and enhancement, course development and review, the sharing of good practice and teaching and learning strategies in courses that pertain to the respective program or subject area. In this regard, the Program/Subject Groups operate at the ground level and are therefore expected to provide a depth of treatment of the pertinent issues that would not be practicable at the higher levels of the organizational hierarchy.

More specifically, the Program/Subject Groups are to:

1. Develop the program/subject areas through teaching, development and research, consultancy and workshop provision, recognizing the requirements of industry and the profession;
2. Design, maintain, deliver and review the assigned portfolio of courses that support the various departmental programs;
3. Design and maintain laboratory exercises to support courses that reflect the requirements of industry and the professional bodies;
4. In the conduct of the above, maintain service links to other Programs/Subject Groups – What do other Programs/Subject groups require from the courses offered?
5. Determine the need for staff development (at all levels) required to support program/subject group activities;
6. Conduct an annual review of the program/subject group area and produce an action plan;
7. Review and approve booklists;
8. Suggest additional resources for program/subject group support, e.g. literature for library acquisition, laboratory equipment.

2.1.4 Steering Committee

The Steering Committee comprises the fifteen (15) of the head of committees. Within its remit are issues of quality assurance and enhancement, the sharing of good practice, teaching and learning strategies and program development and review.
The committee is requested to perform the following:

- Set the regulations and the overall accreditation policy for the department;

- Follow up the progress of the accreditation committees;
- Collect the different sections the self-study report for the program from each related committee and perform the final editing and production of the Self-Study Report (SSR);
- Prepare the NCAAA program specifications and program report;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes;
- Any other related tasks.

2.1.5 Assessment Committee

The Assessment Committee is requested to perform the following:

- Collect and analyze the required surveys: Alumni, Employer, and Student exit surveys as a mean of evaluating the PEO's and the SO's;
- Collect the suggested improvements and remedies suggested by each faculty in the program courses and follow up their application;
- Collect the student outcomes relation forms from each course and construct the overall SO's matrix for the program for both the current and the proposed plan to assess the effect of the plan improvement;
- Held the advisory board meeting on annual bases;
- Conduct and guide the assessment cycles and plan that was indicated in the previous ABET SSR;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes;
- Any other related tasks.

2.1.6 Curriculum Continues Improvement Committee for under and post graduate Programs

The both Curriculum Committees are requested to perform the following:

- Develop the new program plan;
- Prepare transcript analysis for the new plan, i.e. number of credit hours for math and science, engineering courses, university required courses, college required courses, department required courses, elective courses …etc.;
- Collect the NCAAA forms from the faculty;
- Prepare the documents required to approve the new plan and conduct the required procedures for its approval;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes;
- Any other related tasks.

2.1.7 Laboratories Committee

The Laboratories Committee is requested to perform the following:

- Prepare a list of the main equipment in the department;
- Prepare laboratory forms and collect data of maintenance and purchase requests;

- Design a database for the equipment, supplier, purchase date, maintenance requirements, … etc;
- Prepare a laboratory catalog for the department;
- Prepare a laboratory guide for each lab with the lab supervisor;
- Prepare the required signs and regulations for lab safety;
- Conduct laboratory safety awareness to the students at the beginning of each year either as a lecture, video or brochure;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes;
- Any other related tasks.

2.1.8 Capstone project Committee

The committee is requested to perform the following:

- Prepare the graduation project registration and assessment plan for the next year and follow up its application;
- Prepare the graduation exhibition at the end of the year;
- Establish a small permanent showroom for the distinguished projects;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes;
- Any other related tasks.

2.1.9 Academic Advising and Students Affairs Committee

The committee is requested to perform the following:

- Prepare the advising and registration plan and follow up its application;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes. The folder may contain but not limited to the following information: the advising plan, advising lists of students to each faculty and advising forms, university regulation related to student's admission, registration, grading, transfer … etc.;
- Any other related tasks.

2.1.10 Career Advising committee

The committee is requested to perform the following:

- Prepare and held a job fair (may be in coordination with the college and/or the university administration);
- Prepare training course materials to be delivered to the student regarding how to write a CV, how to apply for a job opportunity, interview … etc.;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes. The folder may contain but not limited to the following information: list of employers, advisory board members, etc.;
- Any other related tasks.

2.1.11 Supporting Courses Committee

The Supporting Committee is requested to perform the following:

- Collect the course folders (Course specification, Course report, samples of students' work …etc) for the external courses (Mathematics, Physics, Chemistry, English, Computer, Electrical engineering, Quraan, Arabic language … etc); these folders are to be requested from the related departments and an official letter from the department may be prepared to request these folders from the related departments;
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes;
- Any other related tasks.

2.1.12 Display Room Preparation Committee

The committee is requested to perform the following:

- Set the norms of the course folders;
- Receive the course folders from the faculty and the files from the other committees and make the necessary arrangements of the display room.
- Collect samples of the distinguished capstone design projects and summer training reports to be displayed in the display room;
- Collect all the catalogs and brochures prepared by other committees to be displayed in the display room;
- Complete the textbooks in the display room library.
- Prepare a folder for the committee showing its activities accompanied by their meeting minutes;
- Any other related tasks.

2.2 Summary of Roles and Responsibilities

Responsibilities of Department Faculty

2.2.1 Head of Department

The Head of Department's role is defined by the University and includes duties and responsibilities relating to academic management and quality assurance. The Head has overall responsibility for the Department's academic affairs, quality assurance, internal organization and management of staff.

2.2.2 Coordinator/Group Leader

For Undergraduate programs, the Coordinators/Group Leaders are responsible for the Program/Subject Group to which he/she is appointed by the Head of Department. This is in respect of the academic management, subject area development through the design and improvement of courses and quality assurance. Specifically, the Coordinator/Group Leader's responsibilities are:

- To perform the role of University Examiner for some of the courses under the purview of the Program/Group, as stated in *"Umm Al-Qura University – Regulations for Study and Exams"*;
- To lead and co-ordinate the administration of the Program/Group;
- To seek to ensure the academic coherence of the subject area and that the requirements of internal and external validating and accrediting bodies are being met.
- To review annually the operation of the Program/Group and to plan its future development;
- To monitor the delivery and quality of the courses in the Program/Group;
- To advise the Head of Department, through the Steering Committee, on staffing matters relating to the Program/Group;
- To ensure that the students, particularly in the final year, have the necessary guidance and pastoral support.

2.2.3 Course Lecturer

Course Lecturers are appointed by the Head of Department and have the primary responsibility for the delivery, assessment and review of courses. If more than one person is involved in the delivery of the course, the Primary Course Lecturer will determine the division of the syllabus. The Course Lecturer has the following responsibilities:

- To perform the role of First Examiner for the relevant course (s) as stated in *"Umm Al-Qura University – Regulations for Study and Exams"*;
- To exercise academic overview of the course and be responsible for the quality and consistency of delivery;
- To package and deliver the course according to the guidelines for good practice and an existing course outline, approved by the relevant Group;
- Scheduling and timetabling of laboratory sessions;

- Coordination of the marking of laboratory scripts.

2.2.4 Level/Year Coordinator

Level/Year Coordinators are appointed by the Head of Department. The responsibilities of the Level/Year Coordinators include:

- Offering academic guidance to the students in their Level/Year. Special attention is given to those students who are experiencing academic challenges, whose consultations are recorded on a special form.
- Identifying specific issues which may affect (a) the operation of the program at the specified Level/Year and/or (b) the learning experience of any student within that Level/Year .
- Advising the Head of Department on requests (e.g. Leaves of Absence, Special consideration requests, some Override requests) from specific students within the Level.
- Coordinating examination data for presentation at the Departmental and Faculty Board of Examiners meeting.

2.2.5 Time-table Coordinator

The Time-table Coordinator is appointed by the Head of Department. The responsibilities of the Time-table coordinator include:

- To allocate a suitable timeslot and classroom for each course in consultation with the concerned lecturers.
- To contact the Dean's office for confirmation of the classrooms.
- To ensure distribution of the timetables to the students and to the teaching staff before beginning of each semester.

2.2.6 Laboratory Coordinator

The Laboratory Coordinator is appointed by the Head of Department and is responsible for overseeing the general operation of the laboratory, ensuring that all aspects are in place to support the Department's teaching and research. The major responsibilities of the Laboratory Coordinator are:

- To liaise with the Chief Technician in the management and development of the laboratory facilities and Technicians;
- To liaise with Academic Staff in the assignment of duties to support staff, i.e. Teaching Assistants, Demonstrators, Student Assistants and other short-term employees;
- To advise the Head of Department on issues relating to the laboratory facilities. This includes all requests for laboratory expenditure.

2.2.7 Final Year Project Coordinator

The Final Year Project Coordinator is appointed by the Head of Department and has overall administrative responsibility for the organization and management of the final year project courses 8044999-3 (Graduation Project). (N.B. All academic staff supervise final year projects). Major responsibilities of the Final Year Project Coordinator include:

- Soliciting project proposals from other Faculty;
- Serving as the First Examiner of the Final Year Project courses
- Hosting of a start-of-year session to distribute the Special Project course outline and to discuss various aspects of the Special Project with students;
- Assignment of projects to students;
- Issuance of general guidance to students in the conduct of their projects. This could take the form of workshops, handouts, website etc.;
- Notification to staff and students of relevant deadlines;
- Appointment of first and second markers and moderators for oral presentations;
- Arranging the preliminary and final oral presentations;
- Collection and submission of final grades;
- Recommendations to the Department for revisions to the course outline and the co-ordination/ examination processes.

2.2.8 Undergraduate Final Year Project Supervisor

The Undergraduate Final Year Project Supervisor is responsible for the academic supervision of Final Year Project students to whom he is assigned. The responsibilities of the Project Supervisor include:

- Giving guidance on:
  - the nature of the required research and development activity and the standard of performance expected,

  - the planning of the research program,
  - the objectives and scope of the work to be undertaken,
  - literature and sources, about requisite techniques (including arranging for instruction where necessary), and about attendance at classes and laboratories where relevant;
- Arranging regular meetings with the student, usually once per week;
- Being accessible to the student at other times, and as the need arises;
- Giving detailed advice on the completion dates of successive stages of the research so that the completed research may be submitted within the scheduled time;
- Requesting written work as appropriate and returning such work with constructive criticism in reasonable time and within the time-period stated and/or promised;
- Ensuring that the student is made aware of inadequacy of progress or of standard of work below that generally accepted; also reminding students of the time limits for the completion of the particular program of study or research;

2.2.9 Postgraduate Program Coordinator

The Program Coordinator for postgraduate program is appointed by the Head of Department and is responsible for the overall management of all postgraduate programs offered by the Department. Leaders are appointed for the MSc programs by the Head of Department. In particular, the Postgraduate Program Coordinator in collaboration with the Leaders of MSc programs is responsible for:

1. Co-ordinate the review of applications to the postgraduate programs;
2. Co-ordinate and manage the Final Master Project: project definition, project assignment; supervision and examination;
3. Coordinate examination data for presentation at the postgraduate Examiners' Meeting;
4. Provide general monitoring and guidance on the postgraduate programs with regard to quality, delivery and relevance and make representation to the Academic Management Committee on matters relating to program improvement.

2.2.10 Examination Coordinator

The Examination Coordinator's major role is to ensure the timely submission of examination papers and mark sheets and to co-ordinate the post examination review process. This role is also detailed in the in *"Umm Al-Qura University – Regulations for Study and Exams"*.

2.2.11 Academic Support Staff – Teaching & Research Assistants ,Demonstrators, Instructors and Development Engineers

The role of Academic Support Staff is to assist lecturers in the delivery of lectures, organization of field trips, tutorial sessions and laboratories. In this regard, Academic Support Staff such as may be involved in some aspects of teaching, providing guidance at laboratory and tutorial sessions and grading exercises.

Responsibilities of Administrative and Technical Staff

2.2.12 Computer Systems Technician

The Computer Systems Technician is appointed by the Head of Department and has the responsibility of overseeing the Department's computers and the interconnecting network on a day-to-day basis. The Technician is also responsible for:

- Securing all software and associated licenses required by the Department;
- Liaising with the Computer Systems Coordinator on issues relating to the supervision and ongoing improvement of the Department's computer resources;
- Ensuring that the computer facilities are properly maintained for reliable access by staff and students.

2.2.13 Administrative Assistant

The Administrative Assistant is appointed by the Senior Assistant Registrar (Human Resources) upon recommendation by the Head of Department. He has a wide range of responsibilities associated with the day-to-day task of running the Department, these include:

- General co-ordination of the Department;
- Managing and coordinating the acquisition and maintenance of data, information and records for student, staff and administrative matters of the Department;
- Managing, coordinating and maintaining the systems, procedures and documentation associated with quality in the Department;
- Administrative and secretarial support for Groups, Committees and Coordinators;
- Assisting Group Coordinators in the preparation of course and program reviews and action plans;
- Support for the admissions and examination processes;

2.2.14 Chief Technician

The Chief Technician is appointed by the Senior Assistant Registrar (Human Resources) upon recommendation by the Head of Department. His/ her responsibility is to ensure that the Laboratory is always fully prepared to support the practical aspect of the Department's program. The responsibilities of the Chief Technician include:

- Day to day management of laboratory facilities and supervision of Laboratory staff;
- Procurement of equipment, parts and services as approved by the Head of Department;
- Ensuring that the Laboratory facilities are safe, fully functional and conducive for work and study;

2.2.15 Engineering Technician

Engineering Technicians are appointed by the Senior Assistant Registrar (Human Resources) upon recommendation by the Head of Department. Their responsibility is to provide technical support in the operation of the Laboratory. This includes:

- Day to day supervision and operation of laboratory facilities to which they have been assigned;
- Ensuring the readiness of the laboratory to support laboratory exercises so designated;
- Management and maintenance of the inventory of parts and equipment in the laboratory facilities to which they have been assigned. Identification of requirements in respect of replacements or upgrades of laboratory equipment;
- Ensuring that the Laboratory facilities are safe, fully functional and conducive for work and study;

In the discharge of their duties, Engineering Technicians report to the Chief Technician.

2.2.16 Senior/Laboratory Assistant

Senior/Laboratory Assistants are appointed by the Senior Assistant Registrar (Human Resources) upon recommendation by the Head of Department. Their responsibility is to support Engineering Technicians and the Chief Technician in the conduct of their duties. Laboratory Assistants report to the Chief Technician.

Responsibilities of other non-academic appointees

2.2.17 Consultants

Consultants are appointed by the Head of Department. They are practicing professional engineers who are expected to bring their industrial expertise to assist in the development of the Department's curriculum, thus ensuring a high degree of relevance in the program. An Honorary Consultant is assigned to a particular Group in the Department and works along with Faculty on the following activities, which are addressed at the Groups' annual course review sessions:

- Critical assessment of the Group's Aims and Objectives;
- Feedback on performance of graduates in industry and their readiness for industrial work;
- Recommendations on undergraduate and postgraduate project areas of industrial relevance;
- Recommendations on revisions to the program Aims, Objectives, structure and management.

2.3 Committee Meeting Schedules

At the beginning of each academic year, the Department Head, in conjunction with the Administrative Assistant, produces a calendar of committee meetings. The timing of course and program reviews is especially important so that problems can be rectified promptly. In addition, critical appraisals can be forwarded in enough time to inform relevant Faculty and University Committees.

3. Quality Assurance Processes

This Section describes the quality assurance processes employed in the Mechanical Engineering Department.

3.1 Student Admissions: Quality of Intake

The policy of the Department is to admit students with backgrounds and qualifications which will assist them in realizing their full potential. All applications at the BSc level are considered by the Deanship of Admission and Registration. All applications at the MSc level are considered for approval by the Head of Department, guided by the respective Group Leaders.

As per the policy of Umm Al-Qura University, the Mechanical Engineering Department determines the numbers of new students at the beginning of each academic year as well as the numbers of the students electronically transferred from the second semester, for the mechanical engineering bachelor's and master's degrees. This is based on the annual statistics for the number of students and credit hours for faculty members at the Department, taking into account that the Mechanical Engineering Department has additional teaching hours as it contributes to the programs of other engineering departments for the general mechanical courses.

3.1.1 Admission procedures for the undergraduate program

The Deanship of Admission and Registration is dedicated to providing the best services and simplified procedures in order to overcome obstacles and upgrade all admission and registration mechanisms, relying on the state-of-the-art methods and high-end systems.

The bachelor's degree is awarded to graduates of secondary schools in the various fields of scientific and theoretical specialties, which have been built according to a highly academic and professional academic plan. It is necessary for students to complete all the study modules allocated for each plan. The Mechanism for admission to the undergraduate program is as follows:

1. The admissions system at Umm Al-Qura University is made once before the beginning of the academic year directly after the secondary school results are published, according to the period specified and announced on the website.
2. Apply via the Unified Admission Portal at Umm Al-Qura University website.
3. Preference is given to applicants who meet the stated conditions and standards and according to the capacity of the colleges of the university.
4. Passing personal interviews and admission tests for the departments that require this.
5. Confirmation of admission by students after the announcement of admission results.
6. The university number will be issued after the admission has been confirmed.

3.1.2 Admission procedures for the postgraduate program

The Deanship of Postgraduate Studies stresses that the entered data must be valid and correct; otherwise, the admission request will be canceled without notification, and the disciplinary procedures will be adopted.

3.1.3 Admission procedures for the paid postgraduate program

The Mechanism for admission to the paid postgraduate program is as follows:

1. E-Admission via the Unified Admission Portal during the period specified for admission. The accuracy of the entered data must be confirmed.
2. All the required documents must be attached clearly and correctly.
3. Payment of the admission fees (SR 150) within 48 hours of the admission date.
4. Adherence to the admission schedule procedures regarding the dates of written exams for applicants of the PhD program and the date of announcing the results, the admission confirmation, and the payment of the semester fees.
5. The payment of the semester fees after the admission is confirmed, and obtaining the university ID.

3.1.4 Admission Requirements to the undergraduate program

The admission requirements to the undergraduate program is as follows:

1. The applicant should be a Saudi citizen or born to a Saudi mother (non-Saudis may apply for scholarship programs).
2. The applicant must be holding secondary school certificate (or an equivalent) from the Saudi Kingdom or abroad.
3. The secondary school certificate or its equivalent must be a recent one (not exceeding 5 years).
4. The student must pass the required admission tests (General Aptitude Test [GAT] and the Summative Assessment), organized by the National Center for Assessment, if required by the desired department.
5. The student must pass any other exam or interview required by the college.
6. The applicant must have not been dismissed from the UQU University or any other university for disciplinary reasons.

3.1.5 Admission Requirements to the postgraduate program

General Conditions for Admission:

Article 13 of the unified postgraduate studies regulations stipulates that the admission conditions are as follows:

1. The applicant must be a Saudi citizen.
2. The applicant must have obtained a university degree from a Saudi university or other accredited universities.
3. Conditions of Admission in the Master's Program include: The applicant should have obtained a grade of not less than "Very Good" for the bachelor's stage. For the PhD program, the applicant should have obtained a grade of not less than "Very Good" in the Master's stage. For the diploma program, the applicant should have obtained at least a grade of "Good" in the bachelor's stage.
4. The applicant must be of good behavior, and be medically fit.
5. The applicant must submit two letters of recommendation from current or former professors.
6. The applicant must obtain the approval of their employers, if they are employed.

7. The applicant must submit a letter of consent from the competent officer allowing them to be exclusively dedicated to the PhD study.

Special Conditions for Admission:

All conditions set by the specialized colleges including the appropriateness of the applicant's specialization must be met. Moreover, the applicant must pass the Post-Graduate General Aptitude Test, scoring at least 65%, http://www.qiyas.sa/Pages/default.aspx (5-year validity). Some programs also require passing one of the three types of TOEFL exams: CBT, IBT, PBT), http://www.ets.org/toefl (2-year validity), or other equivalent tests such as ILETS, https://www.britishcouncil.sa (2-year validity) or English language efficiency test "step", http://www.qiyas.sa/Pages/default.aspx (3-year validity).

The required equivalent score in all the accredited tests are summarized in Table 1.

Table 1- Postgraduate programs - The required equivalent score in all the accredited tests

TOFL			IELTS	STEP
PBT	CBT	IBT		
400	97	32	3.5	52
350	60	20	3	48

3.1.6 Admission Requirements to the paid postgraduate program

For the BSc (Hons) in Industrial, Mechanical and Manufacturing and Mechanical Engineering with a minor in Biosystems, the following apply:

1. Obtaining a bachelor's degree in mechanical engineering with a grade not less than 'Good'.
2. Obtaining at least 400 marks in the TOEFL test or its equivalent in the IELTS test or the Standardized Test of English Proficiency (STEP).
3. Obtaining at least 60 marks in the General Aptitude Test for university graduates.

3.2 Delivery and Management of Courses

The major components of the delivery process are:

- The Programs/Subject Groups (See Section 2.1.2)
- Course Outlines. Course Outlines are prepared using an approved template and provide aims and objectives, syllabus details, delivery and assessment schedules and statements of expectations for timing and standards of work;
- A computerized student administration system;
- Section II of this Manual sets the standard for professional practice in the delivery and assessment processes. In addition, a system of peer evaluation, consultations, and independent appraisal provide the opportunity for staff development in teaching.
- Teaching support in the form of Demonstrators and Teaching/ Research Assistants/Instructors/Development Engineers.

3.3 Student Assessment

The assessment of student progress is carried out within the regulatory framework described in *"Umm Al-Qura University – Regulations for Study and Exams"* and the year's Faculty prospectus.

Detailed requirements for the setting and marking of continuous assessments and examinations are set out in Section II, 9–14.

A student's achievement is assessed at the level of the course. Each course is defined by a Course Outline that records the learning outcomes, details of the assessment schedule, type of assessment, timing and contribution to the final mark. The Course Outline is made available on the first day of each course and/ or posted on the Department's web- site. The Course Lecturer is responsible for preparing the assessment, including the collation of any examination paper.

The University allows various types of assessment including the solving of appropriate problems, written assignments, project work, computing assignments, laboratory reports, formal reports, oral examinations, in-class tests and final examinations.

At the end of each semester, an electronic system is held to review the results of the examinations in every course under its purview. The Department then proposes the status of each student's progression.

3.3.1 Role of External Examiners

External Examiners are accomplished senior academics who play an essential part in the University's quality assurance system. Their duties are set out fully in *"Umm Al-Qura University – Regulations for Study and Exams"* and "*Quality Guidebook (First Version) - The University Development and Quality Deanship, UQU, 2017"*. Their role is to verify that the standards set are appropriate for the awards of the University, and to ensure that the assessment process is fair.

The formal mechanism by which External Examiners discharge their role is by submission of a report that comments on the standard of all examination material referred to him/ her by the University Examiner through the Campus Registrar. These reports are regarded as an essential element of the annual review of programs and courses. It is the responsibility of the Assessment Committee, the Subject Groups and individual Lecturers to take appropriate action based on these reports.

In addition, External Examiners make a valuable contribution to the process of quality enhancement, by providing expert advice and assistance to academic staff concerning the development and delivery of their courses.

3.4 Student Support and Guidance

The network of support includes:

3.4.1 Departmental Support

At the start of each year, prior to registration, guidance is offered to students about their academic program and professional development. This is particularly the case at the start of final year when students must specialize in at least one of the main subject areas. The Group Leader of the relevant subject area then provides the necessary guidance.

3.4.2 University Support

The University provides a broad range of student services, including the Deanship of Student Affairs, the Student Guidance and Support Unit of the Joint First Year Deanship (accommodation listings, career guidance and job placement), the Vice Deanship of Counseling Guidance and Community Partnership, University and Faculty Libraries, the Vice Deanship of Counseling Guidance and Community Partnership and the University Medical Center. The University also provides Bursaries to students. The Deanship of Student Affairs and the Deanship of Postgraduate Studies provide additional guidance beyond that provided by Tutors in matters relating to progression and performance.

The University is also the channel through which the Department obtains the resources it requires to successfully operate their programs. In the main, this includes the budget allocations for staff, equipment and consumables and, through the Faculty, building and infra-structural enhancement and repair. The University-Vice Presidency and the he Deanship of Faculty Members and Employees Affairs also play a role in the training and development of staff.

3.5 Service Providers of Program Components

Some program components are taught by other Departments in the University, for example, courses in Engineering Mathematics and some initial year Physics and Chemistry courses are taught by the staff of the Mathematics Department and the Faculty of Applied Sciences; it should be noted that as of the 2016/2017 academic year, the Faculty has appointed a staff member to administer all aspects of the Engineering Mathematics program and to assist in delivery. In all cases, relevant issues are addressed by inclusion of representatives at Departmental Group review sessions and at Faculty Council meetings.

3.6 Student Communication

The Mechanical Engineering Department recognizes that continuous dialog with students is essential to the maintenance and enhancement of quality. This communication is formally affected via student representation on the Department Students' Activities Committee, the Faculty Council and the University Academic Council. This is complemented by the Tutor-Tutee system, course evaluation questionnaires which are administered towards the end of each course offering, and informal exchanges between Lecturers and students. Lecturers are also required to post designated consultation times for students.

3.7 Course Development and Review

3.7.1 Overview

Course development and review is carried out by the Program/Group responsible for the particular subject area. The aim is to improve the quality of the courses. The present University system requires that some review be carried out by the University Examiner who must file a report after each end-of-semester examination for the respective course. The Department's procedures dovetail with this University requirement through the appointment of each Program/Group Leader as University Examiner for some of the courses for which the Program/Group is responsible.

3.7.2 Procedures

The specific procedures for course development and review are:

(i) Course evaluation questionnaires are to be administered in each course at the end of each semester as per University regulations.

(ii) Immediately after the final examination marks are formally submitted, Lecturer(s) complete a Course Report Form. This Form serves as a mechanism to record various significant aspects of a course, such as, comments and statistics (pass rates, average mark) on in-class tests, practical components, final exams as it is delivered and assessed. It is expected that the Form would be kept in the Department Office except for those times when it is to be updated.
The Forms, course outlines, External Examiner comments and summaries of course evaluations, are to be considered at each Program/Group's course development and review meeting. The meeting is to identify and suggest steps to rectify problems in the curriculum, delivery and throughput of each course and consider the following questions: Are course aims still relevant? Should new topics be added, or should some be removed? Are there topics that would benefit from a change in teaching technique? Are the learning measures (exam etc.) appropriate? Are the learning outcomes satisfactory? These meetings are to be held in September/ October for courses offered in the previous academic year.

(iii) The Coordinator/Group Leader must forward the Minutes of the meeting to the Head of Department for consideration by the Academic Management Committee. Proposals for significant changes in courses or the program could then be submitted for Faculty's approval in time for the following academic year.

3.7.3 New Courses

(i) Proposals for new courses must be submitted to the Head of Department for preliminary discussion with the Curriculum Continues Improvement Committee. Proposals must be in the form of a course outline using the approved format;

(ii) The Curriculum Continues Improvement Committee decides which Program/Group should be given academic responsibility for the course;

(iii) The proposal is forwarded to the Program/Group identified for comment and possible modification for final submission to the Department;

(iv) The Department discusses the proposal. If approved, the proposal is submitted for consideration as per University procedures. Otherwise, the proposal is referred back to the Program/Group for further consideration.

3.8 Program Development and Review

3.8.1 Overview

A Program Review exercise is to be carried out at the end of each academic year by the Assessment Committee to critically review the content and operation of the Department's programs. The purpose is to maintain, and where possible improve, the quality of education provided.

3.8.2 Procedure

The review should include consideration of the following areas:

(v) The academic coherence of the program;
(vi) Matters affecting the program arising from course reviews;
(vii) The effectiveness of the delivery of the program from the point of view of students;
(viii) The effectiveness of the pastoral support and guidance available for students;
(ix) The adequacy of resources and administrative support for the program;
(x) Matters arising from student feedback on the program's performance;
(xi) Matters relevant to the requirements of internal and external validating and accrediting bodies;
(xii) Performance indicators for the program – throughput, alumni feedback, graduate placement, other external feedback;
(xiii) Assessment, loading, scheduling, and marking;
(xiv) Production of an action list to correct matters identified during the review.

3.8.3 Reporting and Records

Minutes of the Program Review are forwarded to the Department Management Council for discussion. The Head of Department or nominee is then responsible for ensuring that the action items are dealt with.

3.8.4 New Programs

(i) Proposals for new programs must be submitted to the Head of Department for preliminary discussion and consideration by the Steering, the Assessment and the Curriculum Continues Improvement Committees;
(ii) Proposals may be advanced by an individual staff member or a Program/Subject Group;
(iii) Proposals must describe:
  a) The aims and objectives of the new program, the rationale for its introduction
  b) The component courses
  c) Course Outlines (new and existing)
  d) Student entry qualifications
  e) The type of degree sought
  f) The resources required to support the program;
(iv) The Steering Committee and may seek to make revisions to the proposal or may appoint a suitable Committee to do so. It must also decide the Program/Group responsibility of the new program; does it require the formation of a new Program/Group;
(v) When the Steering and the Curriculum Continues Improvement Committees are

satisfied with the proposal, it can then be forwarded to the Department Management Council for formal approval and eventual submission to the relevant University academic committees;

(vi) If a single Program/Group (existing or new) is given responsibility for the new program, the Coordinator/Group Leader will normally automatically be appointed as Program Coordinator. Otherwise, the Head of the Department will appoint a suitable Program Coordinator.

4. Quality Improvement, Audit and Review

The Mechanical Engineering Department recognizes that Quality Assurance Systems, like all other systems, require continual assessment and review to ensure optimum functionality at all times.

Internal audit and review fall within the remit of the Academic Management Committee. As such, once a year, this Committee will conduct a critical self-assessment exercise that will seek to determine:

1. If all provisions of the quality system are utilized;
2. The effectiveness of the various components of the quality system;
3. Actions required to address any deficiencies in the system.

In addition, the University provides for external, objective audit and review of the Department's quality system through the Deanship of Academic Development and Quality. This Deanship goes through a cycle of audits, rotating this exercise among all Campus Faculties, Departments and Units. The Review process can be seen as comprising three phases:

1. Self-Assessment Exercise	The Department submits a Self–Assessment Report that examines its Aims and Objectives and determines the extent to which they are being realized.
2. Review Team Visit	This serves to test the validity of the Self-Assessment. The team is comprised of a mix of regional and extra-regional professionals. The team meets with staff and students, senior Faculty and management personnel of the campus, graduates of the programs and employers of graduates and postgraduate students. The team also inspects teaching and learning facilities and observes teaching sessions.
3. Reporting and Follow-Up	The team provides oral feedback to the academic staff and its written report is distributed widely. The Campus Principal has overall responsibility for the monitoring of the follow-up processes. As a result of the Self-Assessment exercise and the visit and report of the Review Team, the academic staff identifies issues for further consideration. The Head of a department/section reports on action taken to the Faculty Council, which reports to the campus Academic Council. A year later, the department reports to Council of Undergraduate Studies and Board of Postgraduate Studies and Research, through the Campus Academic Council, outlining the activities that have occurred.

5. Integration and Externality

Figures 1 and 2 described the structural elements pertaining to decisions that impact upon program structure, quality and delivery. On the other hand, Figure 3 describes the key elements that play a role in the more procedural aspects of the business process.

The Bursary is the ultimate authority for accounting and financial matters, including procurement of components and equipment, salaries and remunerations, budget estimates and approvals etc. The Registry is the final authority for approval of all matters pertaining to all staff and students: appointments, assessment and promotion, registration, examinations, academic records, status etc.

Recommendations made by the Head with regard to each of these lines of authority must be routed through the Dean of the Faculty.

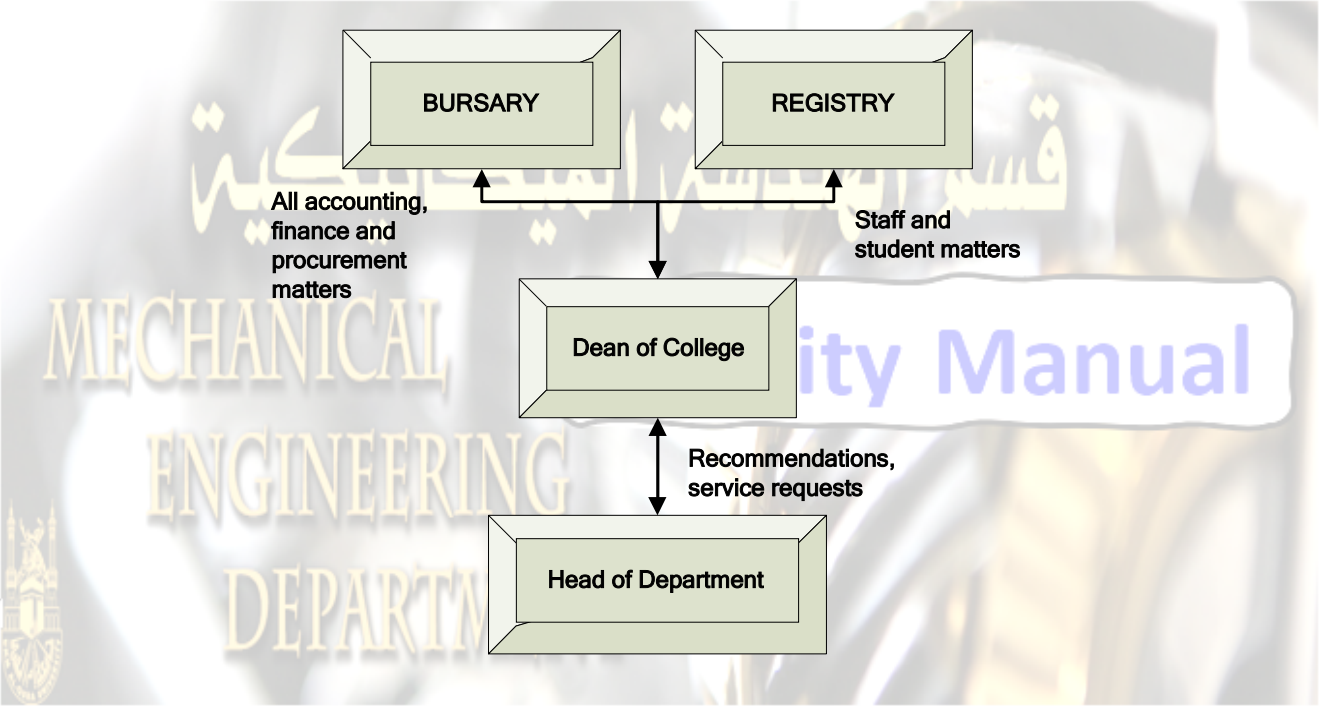

Figure 3: Operational flows

5.1 University-wide Integration

Interaction with other Engineering Departments through Faculty Council and Departments outside of the Faculty through Academic Council, supports the exchange of good practice and provides a level of objective critical assessment of Departmental decisions relating to quality.

Links with student support services (Deanship of Student Affairs, Deanship of Postgraduate Studies, the Student Guidance and Support Unit of the Joint First Year Deanship, University Medical Center, University Residences) provide a mechanism for dealing with problems of a non- academic nature.

5.2 Externality

Visits by External Examiners and accreditation teams provide extra-regional feedback on quality issues. The Department's Career Advising Committee, which comprises industrial personnel, provides additional insight on the needs of regional industry in general and some reference for the standards which the Department seeks to achieve. This Committee meets annually or every semester to provide general Faculty direction, building on the deliberations and decisions at the departmental level. Honorary Consultants appointed to the Department also participate in the development and informal assessment of Departmental Programs.

6. Academic Standards

This Section provides Program Statements for both the BSc and MSc programs offered by the Mechanical Engineering Department. The Program Statements refer to the following documents:

1. *Regulations of the Supreme Council of Higher Education and Universities, "The State of the Council of Higher Education and Universities". 1994.*
2. *Unified Regulation for Graduate Studies at Saudi Universities, 2011.*
3. *Updates to rules and executive procedures of the Unified Regulation for Graduate Studies at Saudi Universities, 2018.*

The BSc and MSc programs are motivated by the Department's Mission:

> "**Providing highly qualified mechanical engineers, inspired with Islamic and ethical values, capable of mastering major roles in industry as well as conducting advanced scientific research. In addition, providing faculty with means to develop their intellectual capacity through teaching, research and interaction with society**".

As such they are designed to provide students with a level of competence that allows them to provide leadership in Caribbean industry in Mechanical Engineering while preparing them for possible entry into postgraduate programs and professional activities internationally.

All programs in the Mechanical Engineering Department therefore seek to adequately expose students to basic principles underlying the discipline, provide a strong mathematical background and to develop "realization" skills that are characterized by the ability to competently, creatively apply theoretical principles to develop "economically viable and ethically sound sustainable solutions." The treatment of aspects relevant to the engineering profession is complemented by strategies for nurturing the overall personal development of students. The only difference between the undergraduate and postgraduate programs is in the level of challenge and depth of exposure. Postgraduate programs also provide students with management and financial tools to carry out their daily work in Industry.

6.1 Program Outcomes and Objectives

Mechanical Engineering Graduates should be able to:

1. Take a leadership role on various aspects of real-life environments (designing, conducting experiments and simulation, interpreting mechanical engineering applications' outcome and conducting academic as well as applied research).
2. Work individually as well as in multidisciplinary teams.
3. Continually improve their skills through professional and post-graduate education.
4. Demonstrate professionalism as well as sense of societal and ethical responsibility in their endeavor.

The objectives of undergraduate program seek to:

1. Motivate students towards the practice of engineering in a stimulating, intellectually challenging environment;
2. Understand the importance of the human element and teamwork in design, analysis, execution and management;
3. Emphasize engineering design both in the theory taught, that provide a strong analytical component, and coursework assignments;
4. Collect, evaluate and present data and clearly communicate results, ideas, conclusions/recommendations and instructions orally and in writing;
5. Demonstrate professional, ethical, environmental and societal responsibilities;
6. Inform on current industrial practice while showing how these practices are motivated by relevant theoretical considerations;
7. Develop student awareness of the responsibility of engineers to the society and the impact engineering decisions can have on that society. In this regard particular reference is made to the Caribbean region;
8. Develop awareness of the environmental, social, legal, economic and regulatory atmosphere within which engineers must operate;
9. Provide a foundation for the personal and professional development of students after graduation (lifelong learning);
10. Embrace industry as a partner in shaping the engineers of the future.

The primary aims of the Master's degree programs in Mechanical Engineering (Production) and Mechanical Engineering (Thermal) programs are:

1) To provide students with greater depth of technical knowledge in management of Production, Manufacturing, Maintenance and Thermal Engineering a greater breadth via

options in related areas.

2) To synthesize and apply the taught course materials in project work that provides experience in business, systems, processes and design projects.
3) To provide a deeper understanding of the knowledge required for management of Design, Tools and systems in a cooperative / team perspective.
4) To develop an understanding of the multi-disciplinary nature of industry and commerce through projects; and
5) To develop an understanding of the use of tools for managing production, manufacturing systems, maintenance and thermal systems.

The courses, coursework, and projects of the taught MSc. Programs in the focus areas of Production and Thermal are designed to provide in the four general learning outcomes for their respective focus areas:

1. **Knowledge and Understanding:** This is achieved by addressing current concepts and best practices, equipping the students with the analytical abilities in identifying and solving problems, application of knowledge to improve and innovate, and the use computer based technologies to support decision making.

2. **Intellectual Abilities:** Developed via application of engineering, maintenance and management principles to develop novel designs, approaches for collecting, collating and evaluating data relevant to problem situations and ability to synthesize innovative solutions for continuous improvement

3. **Practical Skills:** Addressed via experimentation and simulations to assess and remedy problem situations, developing ability to lead and work in teams, capability to assess the health, safety and environmental impacts of work practices.

4. **General Transferable Skills**: Various courses also address this by developing ability to communicate effectively with all organizational levels, ability to mentor and coach subordinates, and ability to design and implement programs, projects and change/ improvements.

The assessment methods deployed in all courses in all MSc. programs show the above general outcomes aspects are addressed by various activities such as case studies, group projects, research projects, etc.

6.2 Teaching and Learning Environment

The Mechanical Engineering Department strives to achieve its program objectives through a range of teaching and learning approaches. Every effort is made to maximize the knowledge transfer process by encouraging deep learning and to cater for a range of learning styles. The mechanisms used in the formal program include: traditional teaching, multimedia based teaching (video, multimedia presentations, writing tablet technologies), e-learning (e.g. using my E-learning etc.), group work, practical, studio sessions (comprehensive teaching laboratories), mini projects, research papers, oral presentations, seminars or workshops. The formal program is complemented by a system of not-for-credit complementary workshops that address the following:

1. Learning skills
2. Creative thinking skills

3. General computer skills
4. Additional technical skills (addresses issues that support the formal program)

The Teaching and Learning strategies and procedures are summarized in the following Table 2 of Mutual Responsibilities.

Table 2- Table of Mutual Responsibilities – Teaching and Learning Environment

Department Responsibilities	Student Responsibilities
• To clearly define subject goals, assessment methods and lecture schedules the course outline published for each course; • To use appropriate teaching methods that most efficiently and effectively promote the learning process among students; • To select a combination of assessment methods that meet the criteria of validity, fairness, and appropriateness for subject goals; • To provide constructive and timely feedback on student progress; • To arouse students' curiosity and creative interest in the subject; • Where appropriate, to draw on life and relevant work experiences and, where appropriate and possible, link theory with professional practice and societal concerns; • To keep abreast of developments in the discipline, profession, and higher education teaching and learning; • Continuously seek ways of improving teaching and assessment methods;	• To approach each course with the intention of maximizing their knowledge and understanding of the specific material; • To fully apprise themselves of the learning objectives of each course and to devise appropriate learning strategies; • To fully participate in all components of the course; • To be supportive of colleagues especially in seminar and group activities; • To be considerate and mature in interacting with those who are involved in the course; • To seek feedback on progress in each of the course modules; • To strive to develop a deeper understanding by exploring course topics beyond the bounds of the formal lecture;

The Mechanical Engineering Department's mission of creating innovative engineers is of special significance. The academic programs in the Department are geared to developing an ethos of creativity and innovation through: Focus on theory, applications and design within the program**.** Emphasis is placed throughout the program on sound reasoning based on scientific knowledge and engineering standards rather than on the ability to regurgitate information. To this end, the programs include courses that carry project-based continuous assessment components. In addition, wherever feasible, the Department augments practical aspects with rigorous advanced theory. In addition, the theory/applications/design philosophy is complemented by continuous discussion and experimentation on effective teaching pedagogies.

6.3 BSc Program Structure

The BSc program is organized in ten (10) levels:

The Levels 1-4 aims at developing an understanding of the basic knowledge, principles and concepts of Mechanical Engineering, while introducing the student to the wider engineering profession including social and environmental issues, critical thinking and responsibilities and communication skills as well as practical skills.

At Levels 5-8, there is a greater emphasis on developing skills of analysis and synthesis while further developing the key mechanical engineering subject domains, particularly in the areas of design.

Levels 9-10 seeks to establish strategic awareness, independent research skills and the ability to develop engineering solutions while gaining an appreciation of the need for effective management and sustainability. In addition to the core courses, the student does elective courses within particular themes including engineering mechanics and design, thermal science or manufacturing. Teamwork is stressed throughout the programs. Design is a thread running throughout the program, starting at Levels 1-4 with Engineering Graphics and Mechanical Drawing, continuing throughout Levels 5-8, leading to Manufacturing Technology (1) and (2), Machine Design (1) and (2) and Engineering Design and Final Year Projects at Levels 9-10. Also, the thermal area is a thread running throughout the program, starting at Levels 1-4 with Thermodynamics (1) and (2), continuing throughout Levels 5-8, leading to Heat Transfer (1) and Fluid mechanics, and Refrigeration and Air-Conditioning, Power Plants, and Final Year Projects at Levels 9-10.

The structure of the entire undergraduate and the postgraduate programs in the Mechanical engineering Department can be found in the University Undergraduate and Postgraduate Booklets.

6.4 Staff Recruitment and Development

An effective system of staff recruitment and development is crucial to the maintenance of academic standards. The Department follows the University's procedures for recruitment, appointment and induction of staff. As part of its commitment to continuous improvement, there is also a University requirement for staff development and appraisal of academic, administrative and technical and support staff. This appraisal process, which includes peer observation of teaching, is confidential and is directed towards improving staff performance and meeting the aims of the Department.

In addition, the University provides guidance to its Lecturers on modern teaching and assessment techniques through its Deanship of Academic Development and Quality. The Mechanical Engineering Department requires ALL new staff to take part in the University's Annual Faculty Forum.

SECTION II – GUIDELINES FOR GOOD PRACTICE

1. Preparing the Course

1.1 Objective

To provide guidance on structuring the course in order to achieve the learning outcomes specified by the Department.

1.1 Responsibilities

Course Lecturer (recommended by the Coordinator/Group Leader, appointed by Head of Department).

Courses are owned by the Department and managed by a Program/Subject Group or the Steering Committee.

Individual Lecturers are charged with the responsibility of preparing, delivering and evaluating particular courses under the general direction of the Department Head and the appropriate Committee or Group. It is therefore expected that in delivering the course, all lecturers would follow the approved course outline. Course Lecturers should ensure that they are familiar with the most current issue of the relevant detailed course outline. They should ensure that they appreciate what the Department requires of the course, its prerequisite dependencies and deliverables.

1.2 Guidelines

(a) Every new faculty member must attend the first available offering of the University's Annual Faculty Forum.

(b) If required to deliver the course for the first time, the Lecturer should find out as much as possible about how it was previously taught and examined and how it integrates into its Program/Group. The detailed course outline should be reviewed by the Program/Group and revised as appropriate and adopted.

(c) The course should rely significantly on any essential texts that have been specified.

(d) Course Lecturers should identify and utilize other sources of useful material, e.g. texts, journals, conference proceedings, videos, web references, reports, etc.

(e) Course Lecturers should identify the most appropriate approaches for dealing with each topic e.g. lecture, group sessions, field trip, demonstration, etc. Guidance can be sought from the Deanship of Academic Development and Quality on this issue.

(f) Course Lecturers should identify suitable teaching aids, e.g. models, photographs, diagrams, etc.

(g) Course Lecturers should draft a week by week program to enable students to achieve learning outcomes in the allotted time. Topics and activities should be sequenced in a way most likely to facilitate learning, taking account of the average load carried by students. Consideration should be given to using a diagram to show the relation between various course topics.

(h) Course Lecturers should schedule makeup hours at the beginning of the semester, taking account of public holidays and other Department activities.

(i) Course lecturers should ensure that online facilities are developed to support the teaching of the course. The facilities may include a dedicated web site or an appropriate management system.

(j) Course Lecturers are required to lodge soft copies of class notes with the Department Office on a yearly basis (subject to IP restrictions).

(k) Course Lecturers

(l) should prepare notes for Tutors as appropriate and conduct Tutor-orientation sessions.

(m) Course Lecturers should review and make recommendations on revising the course outline to reflect the appropriate objectives and content as well as the delivery and evaluation procedures.

(n) Course Lecturers should welcome and be guided by feedback from the relevant Subject Group as well as students.

1.3 Records

2. Teaching the Course

2.1 Objective

To provide guidance on good classroom teaching practice in order to enhance students' understanding.

2.2 Responsibilities

All Academic Staff of the Department.

2.3 Guidelines

(a) All new staff must attend the first available offering of University's Annual Faculty Forum.

(b) Sessions should be planned so that the pace is suited to the topic.

(c) A variety of student activities is desirable - listening, thinking, observing, writing, calculating, group discussions etc., with as much active learning as possible.

(d) A brief introduction should be given to explain the content of the session.

(e) The Lecturer's voice should be clear and audible at the back of the room, and presentation materials should be clearly visible.

(f) Students' questions should be treated sympathetically, but care must be taken that they are not allowed to redirect the flow of the presentation.

(g) The use of worked examples, case studies etc., is helpful for preparing students to solve similar problems/questions themselves.

(h) Questions should be posed as one way of checking that students have understood the material. Lecturers should seek to achieve a balance between questions addressed to individuals and those asked of the class as a whole. Dominant students should be respectfully constrained, and responses invited from those who tend not to contribute.

(i) Dictation and time-consuming copying from board/screen should be kept to a minimum.

(j) Complex diagrams and equations are often best presented in a handout or slide.

(k) Gaps in handouts can be effective; students are more likely to understand and remember a derivation or equation after writing it down.

(l) Overhead projector slides should not contain too much material. Gradual revealing of the content by covering the lower part with a sheet of paper is generally preferable to sudden presentation of a screen-full of information.

(m) Use of key words and bullet points either on a slide or the blackboard helps to focus the attention of the students, helps note-taking and serves as a cue/ reminder for the Lecturer.

(n) Computer-generated slides give a professional look. At least 10 minutes should be allowed for setup and testing. Unfamiliar technology, such as writing tablets, tablet PCs and dual monitor displays for PowerPoint, should be evaluated beforehand.

(o) The use of appropriate video clips, computer programs, internet resources and demonstrations adds variety, realism and interest. Equipment should be checked prior to the actual lecture.

2.4 Records

3. Problem Sets (Assignments)

3.1 Objective

To provide guidance to academic staff on the preparation of problem sets, supplying example problems to give students practice in the application of principles, concepts and techniques introduced in the course.

3.2 Responsibilities

Course Lecturer

3.3 Guidelines

(a) Each problem set should have a suitable title and should give the course title and code.

(b) Problem sets should cover all major topics of the lectures and directed learning component(s).

(c) There should be a number of graded problems, including typical "examination standard" questions, and possibly others which are too complex for solution using the limited tools and time available in a formal examination.

(d) Problems requiring numerical answers should normally be given to build student confidence and to indicate a correct solution.

(e) Answers should be given to intermediate stages where the problem involves a defined sequential solution process.

(f) Worked solutions should be done for all questions. Copies must be provided for other staff supervising parallel seminar/tutorial sessions, and may be made accessible to students, either through library set texts or on the Internet.

3.4 Records

4. Laboratory Experiment Development

4.1 Objective

To provide guidance to academic staff on the development of laboratory activities.

4.2 Responsibilities

All Academic Staff of the Department involved in the development of laboratory experiments.

4.3 Guidelines

(a) The development of laboratory investigations should be motivated by the aims and learning objectives of the course and, where appropriate, those of the program.

(b) Laboratory sessions should have the following general objectives:

(c) Handling equipment;

(d) Application and reinforcement of lecture material already covered;

(e) Introduction to and coverage of material not yet addressed in lectures;

(f) Development of experimental competence and confidence;

(g) Development of instrumentation/ equipment knowledge and skill;

(h) Development of oral/ written communication skills;

(i) Development of self through active involvement and arousal of interest;

(j) Investigation of the limitations of theoretical models and/or computer simulations;

(k) Familiarity with safety issues.

(l) There should be some degree of coherence in the laboratory program. In developing new/ modified experiments for a course, regard should be paid to the wider objectives of the whole experimental program.

(m) Investigations should be achievable in the time allocated.

(n) Pre-lab exercises should be utilized as much as possible to maximize knowledge delivery.

4.4 Records

5. Laboratory Instruction Sheets

5.1 Objective

To achieve a consistent layout of laboratory sheets to provide students with appropriate instructions for the safe completion of the laboratory exercise.

5.2 Responsibilities

All Academic Staff of the Department with responsibility for providing laboratory support material.

5.3 Guidelines

(a) Laboratory experiment instruction sheets should bear the name of the institution, Faculty and Department, a title and a statement of the purpose/ objectives, and the name or initials of the originator and date or revision date.

(b) Further information will normally be given. This may include:

(c) Introduction - explaining, for example, the relevance/ applications

(d) Equipment

(e) Procedure

(f) Results expected

(g) Discussion - suggested topics for consideration

(h) References - relevant papers, textbooks etc

(i) Performance Assessment sheet with marks weightings

(j) The style and content of the sheet will be determined by, for example, the difficulty level of the experiment and the stage/ year of the course for which it will be used.

(k) Laboratory instruction sheets should be updated regularly to take advantage of new equipment, student suggestions for improvement, etc.

(l) When the laboratory sheets are revised, ensure that all outdated stock is destroyed and that the master file copy is replaced.

Where any element of risk is involved, this must be stated clearly e.g. use of voltages greater than 50 V.

(m) As far as possible, laboratory sheets should be compiled into a comprehensive laboratory manual for each course.

5.4 Records

6. Running Laboratory Sessions

6.1 Objective

To provide guidance to academic and technical staff with respect to the effective execution and supervision of laboratory sessions in order to enhance the students' learning experience.

6.2 Responsibilities

Lab Coordinator, Course Lecturer, Technicians, Teaching Assistants, Demonstrators

6.3 Guidelines

The Lab Coordinator should:

i. Inform Teaching Assistants/ Demonstrators/Instructors of their responsibilities at least a week prior to the commencement of laboratory exercises.

ii.

iii. Inform the Course Lecturer(s) about the Teaching Assistants/ Demonstrators/Instructors who have been assigned to the laboratory exercises.

iv.

v. Hold a briefing session with all Teaching Assistants/ Demonstrators/Instructors to discuss their duties. The Course Lecturer(s) must also be present at this session.

vi.

vii. Appoint one Teaching Assistant/ Demonstrator/Instructor as head in the event that several are assigned to one lab (in consultation with Course Lecturer).

Course Lecturer should:

i. Meet with Teaching Assistants/ Demonstrators/Instructors and Technicians to ensure that laboratory exercises are well understood by all.

ii. Check with technical staff to ensure that the necessary equipment is functional and available prior to the first laboratory session.

iii. Ensure that laboratory manuals are free of error and ambiguity.

iv. Ensure that students have received their laboratory manuals prior to the commencement of all laboratory exercises.

v. Lease with Teaching Assistants/ Demonstrators to ensure that all laboratory sessions are running well. Feedback is imperative for the improvement of the quality of the labs.

vi. Ensure Technicians and Teaching Assistants/ Demonstrators are aware of basic safety procedures.

vii. Revise laboratory exercises regularly to allow students sufficient time to complete them and develop confidence in the use of the equipment.

Technical Staff should:

i. Test and calibrate all laboratory equipment before the start of the exercises to ensure they are functional.

ii. Perform every laboratory exercise prior to the first session to verify their understanding of the requirements of the equipment, to ensure that the suggested equipment is appropriate and available.

iii. Ensure that students are equally distributed to the various laboratory groups and stations.

iv. Record attendance by circulating an attendance register. Ensure that the names recorded correspond to the students expected to attend the session.

v. Be present for the duration of each laboratory session.

vi. Be alert for potentially hazardous situations during the conduct of the lab. In conjunction with the Teaching Assistants and Demonstrators in attendance, identify all hazardous aspects of the laboratory exercise to the students.

vii. Be knowledgeable of safety procedures in the event of fire or any other life-threatening situations. Emergency phone numbers e.g. Fire Station, Police Station and Ambulance should be known and a First Aid Kit must be readily available.

Teaching Assistants/Instructors and Demonstrators should:

i. Familiarize themselves with the experiments using the specified equipment prior to the first session and resolve any problematic issues that may arise.

ii. Provide students with laboratory instruction sheets, manuals and any other approved supporting material prior to laboratory sessions.

iii. Correct pre-labs prior to each laboratory session. Students who have not completed or who have partially completed the pre-lab should not be allowed to perform the laboratory exercise.

iv. Debar students who arrive fifteen minutes or later after the start of a laboratory session. Arrangements should be made to allow students to complete the exercise at another time and a penalty imposed by way of a mark deduction.

v. Invite students to peruse their corrected pre-labs and address any concerns that may arise. This must be done in a timely fashion so that there will be sufficient time to complete the laboratory exercise.

vi. Ensure that students are aware of basic safety practices in an electrical laboratory with emphasis on the correct dress code – no slippers, jeweler, short pants. Draw attention to any unsound or unsafe practices observed. Students should be warned when additional safety measures are necessary, e.g. the use of shrouded safety leads for voltages exceeding 50 V.

vii. Discuss common material with all groups at the start of the session.

viii. Remind students if marks are to be allocated for performance in the laboratory.

ix. Start students on their task without delay, reminding them to note the ID numbers of all equipment utilized at their station.

x. Ensure that within the first half-hour, each group is fully aware of what is expected of the investigation.

xi. Throughout the exercise, be actively involved with the various groups, ensuring that they are progressing satisfactorily, understanding what they are doing and making appropriate records in their log books. They should also be prepared to explain any aspect of the experiment, its relevance to the course, and to answer questions posed by students.

xii. Actively seek to identify students who choose to lend minimal support to the group and encourage these students to participate. Students are to be informed that a penalty would be imposed for continued lack of participation.

xiii. Remind students to check that their results are in order **before** dismantling the equipment.

xiv. Encourage group members to develop oral communication skills wherever possible, by having them explain the experimental investigation, covering purpose, method, results and conclusions.

xv. Ensure that students are never left unsupervised during any laboratory exercise.

xvi. Conduct make-up labs the week before final examinations are scheduled to begin. Students must submit a valid medical certificate for missing a laboratory session.

xvii. Notify the Technician of any faulty equipment or shortages of equipment or consumables and propose to the Course Lecturer of any modifications to the exercise that may be required.

xviii. Sign off on all results at the end of the laboratory session.

6.4 Records

7. Submission and Assessment of Laboratory Work

7.1 Objective

To provide uniform procedures for the submission and assessment of laboratory work.

7.2 Responsibilities

Lab Coordinator, Course Lecturer, Technicians, Teaching Assistants and Demonstrators.

7.3 Guidelines

The Lab Coordinator should:

i. Establish a standard framework for the marking of pre-lab books and laboratory reports that would facilitate feedback on student performance. The framework should require students to attach a signed copy of the Plagiarism Declaration Form on each lab script.

ii. Establish clear deadlines for the submission of marks.

The Course Lecturer should:

i. Provide students with guidelines for assessment and format of pre-lab books and reports at the beginning of each course.

ii. Liaise with the Teaching Assistant/ Demonstrator to develop a marking scheme for each laboratory exercise.

iii. Review mark sheets and post marks on notice boards.

Technical Staff should:

i. Collect all pre-lab books and laboratory reports. Sign submission slips verifying that the information is correct.

ii. Ensure that a Plagiarism Declaration Form is submitted for each laboratory exercise submitted for marking.

iii. Inform students that late submissions must be supported by a medical certificate or the report would be marked zero.

The Teaching Assistant/ Demonstrator should:

i. Liaise with the Course Lecturer to develop a marking scheme for each laboratory exercise.

ii. Mark all pre-lab books and laboratory reports. Pre-lab books and reports containing unsigned results and those submitted late without an accompanying medical certificate are to be marked zero.

iii. Assess books/ reports based solely on work carried out during the laboratory session and any pre-lab exercises.

iv. Submit marks to the Course Lecturer by the deadline date.

7.4 Records

8. Preparing Examination Papers

8.1 Objective

To ensure consistency in the preparation of examination papers.

8.2 Responsibilities

First Examiners in accordance with these Guidelines and the University's regulations.

8.3 Guidelines

(a) Examination questions should be set to provide a fair assessment of the achievement of the learning objectives specified in the Course Outline and framed in such a way as to give all students a fair chance of achieving a passing grade while allowing examiners to discern very capable students.

(b) The duration of the examination is as specified in the Course Outline, and the paper set should be similar in standard to previous ones, except where there is a changed Course Outline or an agreed policy/ instruction to the contrary.

(c) Due consideration should be made of what can be achieved in the time allocated for the examination

(d) Papers for courses which prepare students for study of the subject at a higher level should give candidates only limited choice; the use of compulsory questions and/ or sections is desirable to ensure basic knowledge.

(e) Examinations should be cross-checked against lecture notes etc. to verify that they have been adequately prepared. The Second Examiner should also be involved in this process.

(f) Examination questions should not be set on material that was not taught except, perhaps, where it is felt that the average student can within the allocated time limit treat with the question on the basis of what was actually taught.

(g) Papers should attempt to assess understanding rather than pure memory recall, questions should therefore ideally include elements of "lateral thinking", "problem formulation and solution", "model representation and application".

(h) Formula derivation/ proof which relies heavily on pure memory should be kept to a minimum. However, short derivations of familiar equations from basic laws are acceptable.

(i) Papers should NOT be dominated by tedious arithmetic/ algebra.

(j) All tables, data sheets etc. required to solve questions should be specified in the rubric of the exam paper. The questions should be constructed so as not to give any advantage to those students who have programmable calculators.

(k) Units and symbols should normally be in accordance with the Institution of Electrical Engineers' booklet "Units and Symbols for Electrical and Electronic Engineering" which is issued to all academic members of staff. However, there may be cases when alternative symbols, more familiar to the student, are used, e.g. when the course is based on a textbook using these symbols. In all cases, symbols should be defined within the question and the phrase "where the symbols have their usual meaning" should NOT be used.

(l) Questions should be clear and unambiguous, worded carefully, grammatically correct and use terminology with which the students are familiar.

(m) Questions should be worded such that a simple YES or NO answer is clearly not appropriate.

(n) Questions, together with data sheets/ books supplied, must provide all the information necessary to complete the solution.

(o) Questions involving definitions are acceptable provided that the practical application of the definition(s) is also explored.

(p) Questions should have realistic parameter values and current financial data where appropriate.

(q) Option questions carrying the same marks should be equally demanding.

8.4 Records

9. Examination Paper Layout

9.1 Objective

To standardize the layout of examination papers in the Mechanical Engineering Department.

9.2 Responsibilities

First and Second Examiners

9.3 Guidelines

(a) Examinations should be prepared using a text editor or typesetting tool. They must be formatted for printing directly. If using Microsoft Word or Latex, templates are available with the required formatting. Alternatively, examination papers can be printed then cut and pasted using the standard forms.

(b) The use of a compatible Equation Editor, such as that used in Word is preferred. Handwritten equations, if used, should be clearly legible.

(c) Diagrams should be neatly drawn, preferably using an appropriate computer tool and embedded into the document immediately following the appropriate question. Diagrams should be numbered according to the question number.

(d) Font style and size: Times New Roman, 12-point, English (UK) Language.

(e) Page setup: The top and bottom margins. Left and right margins should be 0.5".

(f) Text alignment: Justified so that the question text does not fall below question numbers.

(g) Spacing: Single line spacing throughout text
3 lines of space between questions
2 lines of space between question subsections
1 line of space between sub-subsections
Tab spacing - every 0.5 in/ 1.27 cm

(h) Question numbering/ sectionalizing:
Main questions 1, 2, 3, etc.
Subjections (a), (b), (c), etc.
Sub-subsections (i), (ii), (iii), etc.

(i) Sub-sections of questions should indicate the marks allocation breakdown (total maximum possible marks need not be 100).

9.4 Records

10. Examination Paper Solutions and Marking Schemes

10.1 Objective

To provide guidelines on the provision of examination paper solutions and marking schemes. Solutions and marking schemes facilitate:

- moderation by another member of staff;
- checking by the External Examiner;
- uniformity in the award of marks;
- review/ remarking of exam papers.

10.2 Responsibilities

First Examiner

10.3 Guidelines

(a) Complete answers for examination questions are required to give Second Examiners and External Examiners enough information to know the breadth/ depth of response expected so as to earn full marks.

(b) The solutions and marking scheme should be neatly typed.

(c) The following are NOT acceptable in place of all or part of the solutions:

(d) The use of terms such as 'Bookwork' or 'Class work',

(e) a copy of a published article.

(f) In questions which require a discursive response, the specimen solution should detail:

(g) what aspects of an answer that will earn marks? This could include bulleted points that list alternative solutions,

(h) how much detail, as opposed to generality, is required.

(i) The marks for each sub-section should be shown in the right-hand margin and the total of the question should be indicated at the end. A highly detailed breakdown is not necessary.

10.4 Records

11. Moderation of Examination Papers, Solutions and Marking

11.1 Objectives

- To provide guidelines for examination moderation which ensures that examination papers are of an appropriate standard and that they have been set in accordance with these Guidelines.
- To ensure that the questions are feasible, the solutions accurate and can be completed within the allotted time.
- To establish that the marking system is fair and reasonable.

11.2 Responsibilities

First and Second Examiners

11.3 Guidelines

(a) The Second Examiner of each course must complete and sign the appropriate section of the Course Report Form, for each element of assessment requiring it. Moderators are encouraged to record suggestions for improvement of presentation, explanation, clarity or standard.

(b) The questions, solutions and marking scheme must be checked:
- to eliminate errors of any description,
- for conformity with the Department Guidelines.

(c) It is the responsibility of the First and Second Examiners to ensure that the paper given to the students is correct by following the procedures outlined in "Umm Al-Qura University – Regulations for Study and Exams".

(d) The First Examiner should check that all agreed moderation changes and corrections are incorporated. In particular, any disagreements with suggestions from the Second Examiner should be noted on the Course Report Form and signed by the First Examiner.

(e) The solutions and marking scheme must be kept with the examination paper at all times.

(f) The First Examiner must ensure that all superseded versions are clearly so marked.

(g) The copy of the paper which is submitted to the Examinations Section must be accompanied by the solutions and marking schemes.

11.4 Records

12. Marking Examination Papers

12.1 Objective

To achieve a standardized marking procedure to eliminate errors and facilitate easy checking by other members of staff.

12.2 Responsibilities

First Examiner

12.3 Guidelines

(a) Check the number of scripts received against the number indicated on the envelope.

(b) Mark each question in turn for all the scripts.

(c) Scripts should be marked strictly in accordance with the marking scheme.

(d) Questions should not normally be marked on a basis of full marks or no marks:

(e) Minor arithmetic/ algebraic errors should not be excessively penalized.

(f) Where the final answer in a section is incorrect, the source(s) of the error should be found, and marks deducted as appropriate.

(g) A slight increase in marks may be justified in cases where the student makes a suitable comment upon an erroneous result.

(h) Where an erroneous answer is carried forward from one section to another, the decision on the marks to be awarded must be based on the correctness of the method used and not the detail of the arithmetic.

(i) Where a student submits answers based upon unforeseen but reasonable interpretations of the question, due credit must be given.

(j) The marks awarded for sub-sections should be shown – mark/ max. mark, e.g. 4/7 rather than 4, and should be entered in the right-hand margin.

(k) Mark or stroke through all work to indicate that it has been examined. No part of the script, even blank pages, should be without some form of marking.

(l) The total mark for each question should be shown by an encircled number in the left-hand margin at the end of each question and the figure transferred to the front sheet.

(m) The total mark for each question should be double-checked by deducting the total marks 'lost' from the marks available and compare with the total marks awarded.

(n) All scripts should be scrutinized page by page to ensure all the work has been examined.

(o) The marks for each question should be cross-checked with the marks shown on the front of the script.

(p) Where a student has attempted more than the required number of questions, mark all the questions and award the highest set of marks based on a selection of questions consistent with any instructions applying to sectionalized papers/ compulsory questions.

(q) Calculate the average marks per question to highlight any unusually high or low averages for future reference and modification of teaching methods. The use of Excel is recommended in determining the appropriate statistics. In any event, some statistical detail is required for completion of the Course Report Form.

(r) Double-check the addition of marks on the front of the script.

(s) Review any scripts in important borderline areas, i.e. 30%, 40%, 50%, 60%, 70%, and make a decision as to whether the standard of work falls above or below the borderline.

(t) Double-check the marks on the scripts with the marks entered on the mark sheet. It is strongly advised that Microsoft Excel be used to record marks as the course is delivered; these can then be uploaded to the University's Banner Grade book system when examiners are fully satisfied that the entries in Excel are correct.

12.4 Records

13. Specification of Assessed Coursework Components

13.1 Objective

To provide guidance to academic staff with respect to the assessed coursework components (laboratory exercises, tests, mini-projects, research papers etc) that contribute to the final mark for the course.

13.2 Responsibilities

First Examiner (See *"Umm Al-Qura University – Regulations for Study and Exams"*)

13.3 Guidelines

(a) Course Lecturers should familiarize themselves with the coursework assessment breakdown approved for the course. These may be found on the most recent Application for Approval of Assessment Procedure Forms submitted for consideration by Faculty Council, copies of which can be obtained from the Department Office.

(b) Subject Groups and Course Lecturers should ensure that the Course Outline correctly states current approved components, assessment weightings and learning outcomes.

(c) Penalties applied for late submission of work must be clearly stated in the course outline.

(d) Assessed coursework exercises must be given to students, in writing, no later than two weeks before the submission date. This should normally be done during a formal lecture.

(e) Modifications to assessed coursework components should be recommended at Course Review sessions for submission to Faculty Board.

13.4 Records

14. Marking and Returning Assessed Coursework

14.1 Objective

To establish uniform procedures for feedback on assessed coursework components.

14.2 Responsibilities

First Examiner

14.3 Guidelines

(a) Both the First and Second Examiner of each course must complete and sign the appropriate section of the Course Report Form for each element of assessment requiring it. Moderators are encouraged to record suggestions for improvement of presentation, explanation, clarity or standard. Disagreements with suggestions from the Second Examiner should be noted on the report and signed by the First Examiner.

(b) The First Examiner will forward all marked submissions of each component to the Second Examiner for moderation. For cases where the total assessed coursework counts for more than 60%, 20% or 20 samples of the coursework must also be reviewed by the University Examiner.

(c) Particularly in the event of any disagreement, the final mark is to be determined by the First Examiner.

(d) Examiners should ensure that feedback is provided on the students' submissions. Feedback should address each of the objectives detailed in the specification of the work.

(e) Marked submissions should be returned to students no later than 2 weeks after submission and prior to the start of final exams.

(f) Every effort should be made to check submissions for instances of collusion and plagiarism. To this end, the Department will ensure the availability of an appropriate plagiarism detection utility such as Turnitin.com.

14.4 Records

15. In-class (Mid-Term) Tests

15.1 Objective

To provide guidance to Academic Staff with respect to the setting of tests.

15.2 Responsibilities

Course Lecturer

15.3 Guidelines

(a) The approved scheduling of any tests should be indicated in the Course Outline.

(b) Tests have the following purposes:

- To motivate students to study consistently;
- To give each student an indication of progress;
- To assess each student's performance and provide feedback to the Lecturer.

(c) Students should be provided with at least a fortnight's notice of:

- The date, place and time, usually one of the normal lecturing periods, in the week designated in the course outline;
- The format of the test;
- The range of material included.

(d) It is sometimes appropriate to conduct the test under 'open book' conditions or with 1 or 2 pages of information. In the latter case, these pages must bear the student's name and must not be used by other students. Students should be advised to prepare these themselves, preferably in writing so as to facilitate the learning process.

(e) Tests should be set so that an average student can perform reasonably well within the allotted time, usually fifty minutes duration.

(f) The use of question papers with spaces provided for answers will reduce the labor involved in marking.

(g) Every effort should be made to mark and return the work within two weeks.

(h) Students' queries on the test should be dealt with at the first convenient class.

15.4 Records

16. Project Proposals

16.1 Objective

To provide guidance to staff with regard to the proposal of the BSc and MSc Final Projects.

16.2 Responsibilities

Academic staff

N.B. The Head of Department will have the final say on the suitability of a proposal for the Final Project.

16.3 Guidelines

(a) Project proposals should be submitted using the Project Proposal Form.

(b) Project proposals must take account of laboratory space, manufacturing needs, equipment and material needs, and other likely expenditure. The resources required, particularly, physical equipment and components should be assessed. Where any of the above resources are significantly beyond what is typically available, the proposal should not be submitted without discussion with the Head of Department.

(c) Projects making use of the results of previous projects are encouraged, as are ones linked to research and consultancy projects.

(d) Projects suggested by industry, or linked with companies are encouraged, but before submitting such suggestions, Examiners should satisfy themselves that for all necessary inputs from the company (e.g. information, materials, components), there is a firm commitment to deliver and a full awareness of the importance of the project to the student's final-year progress. The industrial contact must be advised that the educational aspects of the project are paramount.

(e) The project proposer should have a clear understanding of the objectives of the project and be confident that they are achievable and appropriate to the level of a final year BSc Engineering program.

(f) Projects which rely on purely "inspirational" solutions (e.g. solutions to certain design problems) should be avoided on the basis that the student may achieve either little, or a quick solution which leaves little scope to demonstrate his/ her ability.

(g) Projects involving only literature review activities should not be proposed.

(h) Projects that are heavily biased towards computer programming should have appropriate scientific and engineering content/ relevance, enabling the student to draw upon scientific and engineering knowledge/ understanding.

(i) Projects should be as independent as possible; it should not be that the success of one project relies upon the outcome of another.

16.4 Records

17. Project Supervision

17.1 Objective

To provide guidance to Project Supervisors so that all students receive adequate support and guidance for their project.

17.2 Responsibilities

All Academic Staff of the Department.

17.3 Guidelines

(a) Supervisors should be familiar with the documents Course Manual for MSc Project, and the BSc Project Course Manual.

(b) At the very beginning of the project, Supervisors should establish contact with all their students and make specific arrangements to see them, usually on a weekly basis.

(c) Students who do not regularly attend meetings or fail to make satisfactory progress must be written a warning note copied to his/ her Tutor and the Head of Department.

(d) Students must be encouraged to plan the project as a number of tasks, so that if one is halted, another can be worked on to keep the momentum going.

(e) Supervisors should impress upon the student the importance of steady effort throughout the project period and keeping to the proposed plan of work, of keeping the schedule of tasks under constant review, and of trying to anticipate possible delays/ problems.

(f) Supervisors should impress upon the student the importance of keeping detailed information in the form of a log record, and insist on seeing this at intervals. This should be signed and dated when inspected.

(g) Supervisors should encourage the student to begin thinking about and drafting the project report as early as possible, on a chapter by chapter basis.

(h) Supervisors should encourage students to finalize their projects in such a way as to leave a completed piece of hardware or software which can be used as a teaching or project resource or as a basis for commercial development.

(i) Supervisors should offer advice on the structure and format of the final project report without becoming too involved in the creation of the report itself. It must be remembered that this is the student's responsibility.

17.4 Records

18. Monitoring Student Attendance

18.1 Objective

To provide guidance to academic staff with respect to the monitoring of student attendance and reporting of absence.

18.2 Responsibilities

Course Lecturers

18.3 Guidelines

(a) At orientation, students should be advised of Umm Al-Qura University regulations pertaining to attendance of classes (See "Umm Al-Qura University – Regulations for Study and Exams").

(b) The Course Lecturer should as much as possible keep attendance lists for all classes.

(c) When a student has missed three or more consecutive sessions, the Lecturer should immediately inform the Department Head, who should immediately contact the student's other Lecturers to determine whether the absence is specific to a particular course or a more general attendance problem.

(d) The Department Head should then attempt to contact the student to discuss the reason(s) for absence and advise the student accordingly. If the absence is without good cause, the Head of Department may decide to formally notify the student, through the Examinations Section of the Registry, that he/ she will be debarred from this course examinations if he/she cannot make satisfactory arrangements to attend classes and make up missed work.

18.4 Records

19. Annual Departmental Seminar

19.1 Objective

To define the motivation and procedures for the Annual Department Seminar.

19.2 Responsibilities

Administrative Assistant

19.3 Guidelines

A one-day Departmental Seminar is to be scheduled for the end of the academic year.

The Seminar has the following objectives:

- Team building for all members of academic, administrative and technical and support staff;
- Re-acquainting staff with the departmental mission and practices;
- Reviewing the state of the Department;
- Identifying particular objectives for the coming year;
- Readying staff for an effective, collaborative year.

The Seminar may include:

- Welcome message by the Head of Department
- Motivational presentation by a guest lecturer, treating with topics, such as, of good practice in teaching, management, team work etc.
- Group sessions, guided by guest lecturer
- Review of Department matters by Head of Department
- Feedback
- Lunch

19.4 Records

20. Control of Quality Records

20.1 Objective

To ensure that quality records are properly maintained and readily retrievable.

20.2 Responsibilities

Administrative Assistant

20.3 Guidelines

(a) Quality Records are listed on the Form # List of ME Quality Records. This list also indicates the active and inactive locations of the records, method of storage, the respective retention times, methods of disposal, personnel responsible for authorizing disposal, identification, method of indexing and personnel responsible for access/maintenance.

(b) The Administrative Assistant, Course Lecturers, and the Head of Department have the authority to move their respective Quality Records from active storage within their department to inactive storage location.

(c) The Administrative Assistant, Course Lecturers, and the Head of Department are responsible for the maintenance of records in the inactive storage and keep track of any records that may be temporarily removed from this location.

(d) The Administrative Assistant, Course Lecturers, and the Head of Department identify those records that have become due for disposal and submit this list to the Departmental Meeting for approval to proceed with disposal. Once approved he/she proceeds with the disposal.

(e) Where Quality Records are stored, they are properly labelled and indexed so as to facilitate easy retrieval. Storage facilities and handling are also designed to protect the records from being lost or from deterioration.

(f) Where contractually agreed, relevant Quality Records are made available to a customer for a specified period.

20.4 Records

List of Quality Records **Form # List of ME Quality Records**