EXECUTIVE MASTER OF QUALITY ENGINEERING AND MANAGEMENT

PROGRAM HANDBOOK & STUDENT MANUAL

2023

UNIVERSITY OG HA'IL
COLLEGE OF ENGINEERING
DEPARTMENT OF INDUSTRIAL ENGINEERING

December 2023

TABLE OF CONTENTS

LIST OF TABLES

OVERVIEW

Through its ambitious Vision 2030, the Kingdom of Saudi Arabia seeks to improve its economic position to become among the top 15 economies in the world. This is through liberating the economy from dependence on oil and taking advantage of available resources and investing them in order to diversify the economy, and unleash the potential of various promising economic sectors such as renewable energies, tourism and religious investments, and others. . In light of these strategic directions of the government of the Custodian of the Two Holy Mosques, ***quality*** has become a national requirement and a strategic choice to ensure the competitiveness of Saudi economic sectors locally and internationally.

In this respect, the College of Engineering at the University of Hail has contributed through a wide range of general academic programs (master's programs, research chairs, and research projects approved by the Ministry and the King Abdulaziz City for Science and Technology) to enhance the scientific and research status of the University of Hail at the local level, Upgrading national human competencies has become a high-quality output, which qualifies them as contributors to achieving the goals of Saudi Vision 2030.

The Master's program in "Quality Engineering and Management" (QEM) at the College of Engineering at the University of Hail falls within the Saudi Vision 2030 and the strategic direction towards quality and standards of excellence, which was established by the Custodian of the Two Holy Mosques. The Master of Quality Engineering and Management program falls within the depth of the national programs approved to achieve the Saudi Vision 2030, such as the Quality of Life Program and the National Industrial Development and Logistics Services Program.

FOREWARD BY THE CHAIRMAN INDUSTRIAL ENGINEERING DEPARTMENT

It gives me immense pleasure to welcome and congratulate you on joining the Department of Industrial Engineering, College of Engineering at University of Ha'il (UoH) for the Executive Master Program in Quality Engineering and Management. In coming to study for the Master program, you have made an excellent choice.

Our Mission at the Department of Industrial Engineering is to assist our students in unlocking and creating opportunities to make a valuable contribution to the Kingdom of Saudi Arabia and actualize The Saudi Vision 2030 as individuals and leaders in the field of quality engineering and management.

We have prepared this handbook to help you gain an understanding of our department and how it operates. If you meet a situation or circumstance that you need assistance in resolving, or the information in this handbook is not enough to provide you with a solution, kindly meet your instructor, advisor, department coordinator, chairperson, or any staff member in the Department. All academic staff are welcoming you all time. We would like to ensure your time here at our college is productive, rewarding, and pleasant.

Finally, the entire academic, non-academic staff and students are partners in our journey towards excellence.

Professor Isam Abdul Qadir Elbadawi
Chairman Industrial Engineering Department
i.elbadawi@uoh.edu.sa

VISION AND MISSION OF THE UNIVERSITY OF HA'IL

Hail University is an innovative institution, and it is one of the fastest growing academic institutions in the Kingdom of Saudi Arabia, where groups of talented people meet to exchange knowledge and develop a better future. The vision is to maintain an advanced academic, administrative and research environment blended with.

Vision

"*Local and regional leadership in knowledge dissemination, research excellence, and sustainable community partnership*".

Mission

"*Provide academic programs to prepare qualified graduates for the labor market and produce scientific research that serves the community by applying the highest quality standards and utilize the university's human and technical resources to reach the society of knowledge*".

VISION, MISSION & GOALS OF THE COLLEGE OF ENGINEERING

A Brief History of the College of Engineering

In the recent years, the education sector in Saudi Arabia shows a remarkable development, this occurs as a result of the expansion in the establishment of universities, colleges and attention to rehabilitation and attraction of qualified faculty members.

The College of Engineering at the University of Hail was established in 1426H (2006) to be the source of science and applied engineering in the region, and to contribute to advancing development and renaissance in our country.

The college consists of six academic departments for males, which are Electrical, Mechanical, Civil, Chemical, Architectural and Industrial Engineering, and Decoration and Interior Design Engineering department for females.

The student can join the College of Engineering after passing the preparatory year and meet the college requirements, where students spend at least four years (eight levels for each study plan) to be qualified for a bachelor's degree in engineering.

There are also graduate programs through which the student can get a Master's degree in engineering.

Vision

The College of Engineering at the University of Hail aspires to be a leading college in the fields of engineering education, technological innovation, scientific research, transfer and application of knowledge locally and regionally, and to prepare qualified engineers to work on improving the quality of engineering.

Mission

> *"The College of Engineering at the University of Hail is committed to preparing, qualifying and training engineering competencies, and providing distinguished educational and research programs at the hands of qualified faculty members by providing training courses in the applied and engineering fields, providing a supportive environment for teaching, learning and practical research, and optimal employment of human, material and technological resources to meet Community needs".*

Goals

The goals of the College of Engineering are:

1) Providing distinguished education for the people of the region in line with the needs of the labor market for engineering specializations.
2) Graduating qualified national cadres in the scientific and technical fields needed by the industrial sectors.
3) Working to develop scientific research and teaching curricula in line with local and international requirements.
4) Attracting distinguished professors in the field of teaching and scientific research.
5) Cooperating with governmental and private bodies and institutions to serve the development and improvement process.
6) Serving the community by holding engineering courses and workshops in applied and engineering fields.

1. INTRODUCTION

The Industrial Engineering Department was established in the College of Engineering at University of Ha'il in the academic year 2012 – 2013. The Department had its first graduates in 2016.

Our core areas rely on a knowledge-based economy. The Department of Industrial Engineering also encourages scientific research and provides advisory and technical services to government and private institutions. The Department of Industrial Engineering offers programs at undergraduate as well as graduate levels.

At the undergraduate level, the department offers a Bachelor of Science (BSc) in Industrial Engineering, while at the graduate level, it offers two Executive Master Programs, one in Quality Engineering and Management (QEM), and the other in Occupational Safety & Health (IHS). The first batch of the QEM program graduated in 2017, and the first for the IHS program graduated in June 2023.

Our undergraduate program. i.e., BSc in Industrial Engineering, is accredited by the Engineering Accreditation Commission (EAC) of ABET: *http://www.abet.org* under the General Criteria and Industrial Engineering Program Criteria.

1.2 Vision

"*To excel and lead locally, regionally and globally in providing theoretical and practical manufacturing production systems and quality programs to prepare students for meeting market customer need*".

1.3 Mission

"*The Industrial Engineering Department is committed to the preparation of distinct industrial engineers in the fields of industrial engineering and its applications in accordance with international standards to meet the needs of industry, government and the private sector. It is also keen that the graduates are fully aware of the ethics of the profession and the requirements of environmental protection. Furthermore, the graduates are encouraged to contribute to the development of industrial sectors by carrying out research projects*".

2. SEMESTER SYSTEM RULES AND GUIDELINES

2.1 Admission Requirement

The students must satisfy the undermentioned conditions to be admitted into the Master of Quality Engineering and Management (QEM) program.

1) The applicant must have a bachelor's degree in engineering, scientific, health, medical, and administrative specializations from a Saudi university or from any another recognized university.
2) The student must have obtained at least a grade of "Good" in the undergraduate stage.
3) He must be of good conduct and medically fit.
4) He must submit two academic recommendations from professors who previously taught him.
5) The applicant for the program must pass the personal interview by the department.
6) Fulfill of the basic conditions according to the Unified Regulations for Postgraduate Studies at the University of Hail.

2.2 Other requirements

Priority will be given to the applicant who has experience or practice in any of the following:

1) Manufacturing, maintenance or safety management in industry.
2) Construction work or other building work or building industry.
3) Training, education or research in the field of accident prevention in industry or in any organization.

2.3 Examination and Grading System

Success in a course is usually based on the combination of grades awarded to term work and final examination. Each course has a total of 100 points. Out of this, the instructor allocates 60% marks to the term work consisting of quizzes, homework, term projects and mid-term exam or any other periodic assessments while the remainder 40% is allocated to the final examination.

The instructor awards the grade as marks out of 100. The marks are converted to a letter grade and grade points. The letter grades corresponding to the final numerical marks obtained by the student in the course are listed in **Table 2-1**. The passing grade for each course is "D".

Table 2-1: Possible Grades Earned by Students in a Course

Range of Marks	Grade	Letter Grade	Grade Points
95 – 100	Exceptional	A+	4.00
90 – 94	Excellent	A	3.75
85 – 89	Superior	B+	3.50
80 – 84	Very Good	B	3.00
75 – 79	Above Average	C+	2.50
70 – 74	Good	C	2.00
65 – 69	High Pass	D+	1.50
60 – 64	Pass	D	1.00
Less than 60	Fail	F	0.00

In addition to the grades listed in the above table, other administrative non-traditional grades that could be assigned to the students are listed in Table 1-3 along with their conditions:

Table 2-2: Administrative Non – Traditional Grades

Grade	Conditions
IC (Incomplete)	Grade of "Incomplete" (IC) is given to the student if the course requirements are not completed by the student. The instructor may with the approval of the Department Council give the student an IC grade provided the student has provided an acceptable reason. The student must complete the course requirements by the end of the following term. Failure to do so will automatically change the IC grade into an F grade (Fail).
IP (In Progress)	If any course of a research nature requires more than one term for its completion, the student will be assigned an IP grade, and after the completion of the course, the student will be given the grade he has earned. However, if he fails to complete the course on time, the department council teaching the course may approve the assignation of an IC grade for this course in his record. If a student is registered in the Cooperative Program in summer term and is assigned an IP grade in it, the "IP" grade will be changed to: a) "No Grade-Pass (NP)" if the student passes the Cooperative Program b) "F" grade if the student fails the Cooperative Program
DN (Denial)	A regular student should attend all classes and laboratory sessions. A student may be discontinued from a course and denied entrance to the final examination if his attendance is less than the limit determined by the University Council. This limit cannot be less than 75% of classes and lab sessions assigned to each course during the term. A student who is denied

Grade	Conditions
	entrance to the examination due to excessive absences will be considered as having failed that course. A regular student will not be allowed to continue in a course and take the final examination and will be given a DN grade if his unexcused absences are more than 20% of the lecture and laboratory sessions scheduled for the course.
W (Withdrawn)	The grade WP is given to a student who officially withdraws from all courses after the permitted withdrawal deadline. This grade does not earn the student any credit units and affect the student's cumulative GPA.
NP (No Pass) NF (No Fail)	The grades NP or NF are assigned for courses offered on the basis of pass or fail, such as thesis and summer training.

The student's overall performance is determined through the process of assignment of academic status. A student's academic status will be determined at the end of each term and will appear on the transcript that shows his achievements throughout his undergraduate study.

The minimum passing grade in the Master program is C+.

2.4 Academic Record

The academic record is a statement which explains the student's academic progress. It includes the courses studied in each term with course numbers, codes, number of credit-hours, the grades attained and the codes and points of these grades. The record also shows the semester, cumulative GPA and the student's academic status in addition to the courses from which a transferred student is excused. Below are examples of information found in an academic record for two consecutive semesters.

First Semester GPA

Subject	Grade	Grade Value	Credit Hours	Quality Points
QEM 511	A	3.75	3	3 × 3.75 = 11.25
QEM 512	A+	4.00	3	3 × 4.00 = 12.00
QEM 515	B+	3.50	3	3 × 3.50 = 10.50
QEM 517	B	3.00	3	3 × 3.00 = 9.00
Total			12	42.75
GPA = Total Grade Points / Total Credit Hours				

GPA = 42.75 ÷ 12 = 3.56

Second Semester GPA

Subject	Grade	Grade Value	Credit Hours	Quality Points
QEM 513	A+	4.00	3	3 × 4.00 = 12.00
QEM 602	A+	4.00	3	3 × 4.00 = 12.00
QEM 621	B	3.00	3	3 × 3.00 = 9.00
QEM 623	B	3.00	3	3 × 3.00 = 9.00
Total			12	42.00
GPA = Total Grade Points / Total Credit Hours GPA = 42.00 ÷ 12 = 3.50				

$$\text{Cumulative GPA} = \frac{\text{Total Quality Points } (42.75 + 42)}{\text{Total Credits } (12 + 12)} = \frac{84.75}{24} = 3.53$$

2.5 Assessment

The IE department uses many sources of data for the continuous improvement process. Various assessment methods used by the program are:

2.5.1. Direct Assessment

Direct assessments provide for the direct examination or observation of student knowledge or skills against measurable learning outcomes and may include exams, homework / Assignments, presentations, course project and reports. Direct assessment methods primarily rely on possible components as described in Table 2-3.

Table 2-3: List of Possible Assessment Components

S-No	Possible Assessment Component	Number per course
1	Mid Term Exam	1
2	Final Exam	1
3	Homework / Assignments	Varies
4	Presentations	Varies
5	Project	Varies
6	Reports	Varies

Mid Term Exam

Every course can have a maximum of ONE Mid Term Exam. In this case the Mid Term Exam is of two hours duration and generally carries 30 – 35% of the total marks.

Final Examination

Final Examination is conducted in the 12th week of the term. The final exam is a comprehensive exam that covers all the material covered in the course. The final exam is of TWO hours duration. The final exam generally carries 40 – 45% of the total marks. The final exam is also required to be signed by the instructor as well as the checker.

Homework / Assignments

A course may have a series of take-home assignments. It is the discretion of the faculty member to decide upon the number of homework assignments that he may give.

Presentations / Project / Reports

A faculty member may employ presentations, project or reports as part of evaluation component in his respective course.

2.5.2 Indirect Assessment Methods

Indirect assessments methods ascertain the perceived extent or value of learning experiences. They assess opinions or thoughts about student knowledge or skills and may include interviews, questionnaires and Advisory / Alumni / Faculty / Employer / Exit Student surveys.

2.6 Academic Advisory

At the beginning of the program, the newly inducted students are briefed about the program structure and other aspects that are expected from the students during their program of study at the College of Engineering.

The following arrangements are made for student support, academic and non-academic advice and counseling:

1) During each term students are allocated to academic advisors from within the faculty members of the Department. These advisors guide students about the choice of courses, advice to set career direction and other academic related matters. Around 10 – 15 students are assigned to each faculty member. The advisee students are allocated to the faculty members by the Department Advisory Committee coordinator. Academic advisors assist students in planning their academic programs, but their academic advising activities do not relieve students of this responsibility. Therefore, every student should be thoroughly familiar with all the academic regulations and the degree conferral system and remain informed about them throughout his career at the University.

2) The Department Advisory Committee includes the Head of the Department and a Department Coordinator. This committee cooperates with the College Advisory Committee to advise students on course selection at the beginning of each academic term.
3) At least 6 office hours per week are scheduled by each faculty member to provide academic support to students. The office hours along with list of Advisees are displayed on the Academic Advisor's Office door.
4) All students are made aware of any important information, dates and deadlines via Blackboard System, information and notice boards.
5) Career and non-academic counseling are also available from the UOH Deanship of Student Affairs
6) Advisory Board for IE students has been constituted to convey student requirements to the IE Council.

The advisees allocated to a faculty member are listed on his personal portal. All student requests for addition / deletion of courses, managing of conflicts etc. are also managed thru the Student Advising portal. The request from the student first comes to the respective faculty member, who then forwards it with the justification to the Head of the Department. The request finally goes to the Department Advisory Committee coordinator for final implementation.

2.7 Counseling

The Deanship of Student Affairs has established a Counseling Center. Faculty members are available to provide help if needed, however, the students may be advised to go to University Medical Centre when further professional counseling is required. It also provides transport to nearby hospitals.

3. MASTER OF QUALITY ENGINEERING AND MANAGEMENT

3.1 Introduction

The University of Hail launched an Executive Master of Quality Engineering and Management program specifically designed to meet these requirements by enhancing the core competencies for quality professionals keeping in mind the primary focus on quality engineering and management. The course modules have been designed accordingly. Various aspects of quality requirements are covered by a wide range of international and national legislations. The master's degree is also designed in line with national priorities defined by the Saudi Kingdom's Vision 2030. The program accepted its first batch of students in Fall 2015.

3.2 Program Goals / Objectives

The goals / objectives of the Executive Master of Quality Engineering and Management are:

1) Prepare experts and leaders in quality engineering and management.
2) Engage in research activities related to quality engineering and management.
3) Disseminate the culture and importance of quality of products and services in the community at large.
4) Perform tasks with a high level of professionalism, ethical values and social responsibility.

3.3 Employment Opportunities

The Master's program in Quality Engineering and Management is designed to prepare specialists and professionals with skills and competencies in the areas of total quality management and organizational excellence. The primary goal of the program is to meet the growing demand for quality professionals in private and governmental institutions in the Kingdom of Saudi Arabia. The program contributes to achieving the following:

1) Enabling graduates to conduct planning, design and implementation processes for quality management programs and improve processes in various sectors of industry and services and strive for continuous improvement of products and services that meet customer needs and expectations.
2) Providing graduates with the basics of quality engineering and management to enable them to develop and enhance quality management systems and institutional excellence standards in their fields of specialization.
3) Providing graduates with the latest knowledge about quality engineering and management and all related disciplines.

4) Providing graduates with the knowledge and skills that help them participate effectively in professional and scientific activities related to quality management and institutional excellence.

Consequently, holders of the master's degree in Quality Engineering and Management will be able to find jobs as

1) Quality Manager
2) Business Excellence Manager
3) Quality Auditor
4) Quality Control Supervisor / Manager
5) Quality Assurance Supervisor / Manager
6) Quality Analyst

3.4 Program Vision

The vision of the QEM program is:

> *Achieving national and regional leadership in knowledge dissemination, research excellence, and sustainable community partnerships in the fields of quality engineering and management.*

3.5 Program Mission

The mission of the QEM program is:

> *"Prepare qualified professionals and excellence leaders in quality engineering and management through quality teaching using modern technologies and tools, engage in scientific research and provide sustainable community services"*

3.6 Graduate Attributes

The graduates of the QEM program will have following attributes:

1) The ability to plan and design effective quality management / quality improvement systems in various types of industries and services.
2) Strive for continuous improvement of products and services that meet customers' needs and expectations
3) The ability and skills to collect, analyze and evaluate information and ideas and to solve problems by thinking clearly, critically and creatively using established methods of enquiry
4) The ability to communicate effectively and appropriately in various contexts

5) The ability to learn independently and continuously in order to keep pace with developments in their field of expertise
6) Work with a high degree of professionalism and commit to ethics and ethical standards in personal, social, business and professional contexts
7) Have the capacity to relate to, collaborate with, and, where appropriate lead others, and to exchange views and ideas in order to achieve desired outcomes through teamwork, negotiation, conflict resolution, and leadership

3.7 Program Learning Outcomes

The Master of Quality Engineering and Management consists of eight (8) Program Leaning Outcomes (PLOs) divided into three domains, namely, Knowledge & Understanding, Skills and Values, according to the requirements of the Saudi National Qualifications Framework (NQF) at level 7. The QEM PLOs are listed in Table 3-1.

Table 3-1: PLOs for Master of Quality Engineering and Management Program

Knowledge and Understanding:	
K1	Describe the general theories, methods, principles and tools employed in quality engineering and management.
K2	Define the fundamental concepts, including those based on national and international standards, of business excellence, innovation, creativity in the field of quality engineering and management.
Skills:	
S1	Apply advanced statistical and analytical techniques, including software tools, to design, implement and monitor quality management systems based on national and international standards of excellence.
S2	Demonstrate problem-solving skills in order to be able to make informed decisions based on quality data analysis, risk assessment, and cost-benefit analysis in complex engineering and management context.
S3	Conduct research, think critically, and innovate in the field of quality engineering and management, contributing to the advancement of the profession.
S4	Exhibit effective verbal and written communication skills.
Values, Autonomy, and Responsibility:	
V1	Demonstrate ethical and professional responsibilities in engineering and management situations within a global and societal context.
V2	Show the characteristics of interdisciplinary collaboration, teamwork, and leadership.

3.8 Accreditation

The management of the Master's program in Quality Engineering and Management is currently working towards the accreditation by the Saudi National Center for Academic Accreditation and Evaluation (NCAAA).

3.9 Curriculum

The QEM program study plan (curriculum) structure is structured as shown in Table 3-2.

It consists of 13 required courses and one (1) graduation project spanning a period of four (4) semesters as illustrated in Table 3-3.

The Program is made of a total of forty four (44) credit hours: thirty nine (39) credit hours for mandatory courses and five (5) credit hours for a mandatory project.

Table 3-2: Structure of the QEM program curriculum.

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Course	Required	13	39	86.7%
Graduation Project (if any)	Required	1	5	13.3%
Total		**14**	**44**	**100%**

Table 3-3: QEM program courses.

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Semester 1	**QEM 511**	Total Quality Management	NONE	3
	QEM 512	Project Management	NONE	3
	QEM 515	Applied Statistical Methods	NONE	3
	QEM 517	Metrology with the perspective of ISO 9001	NONE	3
Semester 2	**QEM 513**	Process Improvement Approaches	NONE	3
	QEM 602	Methodologies	NONE	3
	QEM 621	Six Sigma Quality Improvement Methodology	NONE	3
	QEM 623	Organizational Excellence	NONE	3
Semester 3	**QEM 518**	Innovation and Creative Problem Solving	NONE	3
	QEM 624	Systems Engineering	NONE	3
	QEM 625	Computer Applications in Quality Engineering and Management	NONE	3
	QEM 626	Supply Chain Management	NONE	3
	QEM 627	Quality in Islam	NONE	3

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Semester 4	**QEM 600**	Research Project	NONE	5

3.10 Courses Descriptions

QEM 511 Total Quality Management

This course builds on an understanding of business statistics to develop a personal understanding of quality management theory and practices. Topics include quality definition, quality management history, Principals of Quality management, Deming fourteen quality points, Deming cycle, quality deployment strategies (lean, six sigma), quality metrics and considerations based on application sector (manufacturing, service, not for profit, government). Quality assurance, ISO standards for quality, Quality management tools and techniques.

QEM 512 Project Management

Project Management is the application of management principles to deliver a project in accordance with predetermined objectives for time, cost & quality. This course will consider these principles in the management of all types of engineering project, with respect to the project's life-cycle, the parties involved, planning, estimating, team and people management, contract strategy, contractor selection and contract management. The course offers a practical approach to managing projects, focusing on organizing, planning, and controlling the efforts of the project. At the end of the course, attendees will understand why project management requires a high degree of professionalism, and how to achieve that end in future projects.

QEM 513 Process Improvement Approaches

This course builds on a foundation of statistics, supply chain management and project management to develop process improvement knowledge and skills for the workplace. Green Belts are designed to be working members of process improvement teams and initiatives. Topics include: Six Sigma concepts, theories and applications, measurement systems, analysis, process capability, analysis of variance, failure mode and effects analysis, design of experiments and statistical process control (SPC). Applications of quality tools in manufacturing, services and government using Minitab Software.

QEM 515 Advanced Engineering Statistics

This is an introductory course in probability & statistics that is designed for engineering purposes. Topics to be covered will include data analysis, probability, random variables, discrete and continuous probability distributions, estimation, hypothesis testing, sampling, and introductory linear regression and statistical process control. Applications on Minitab software will be conducted in laboratory sessions covering topics in different areas of engineering, services and government organizations.

QEM 517 Metrology with the perspective of ISO 9001

The course provides a basic understanding of the principles of measurement and calibration of measuring instruments. Fundamental concepts of measurement. Length and Angular measurement, Mass measurement, Pressure, Force, Temperature measurements, Electrical quantities, fluid flow metrology. Basic concepts and definitions, ISO 9001 requirements and uncertainty determinations are also studied.

QEM 518 Innovation & Creative Problem Solving

This course introduces the student to a broad approach in studying key aspects of the innovation process and formal techniques in creative problem solving, which are applicable in a broad areas of business organizations. It is designed to enhance an individual's creative thinking and problem solving skills in which the circumstances require unique and creative solutions. Students will be exposed to individual and team-based idea generation methods, along with a variety of formal problem solving processes, which can be applied immediately to personal or professional challenges in the student's life.

QEM 600 Research Project

This course is designed to help graduate students conduct a research project to obtain the Master degree in Quality Engineering and Management. The focus will be on helping students implement the basic concepts of research as well as their implications in real field research project. Another focus will be on assisting students in developing the ability to effectively conduct a research project and write a research report. The course will address the process of defining appropriate research problems, formulating research questions and objectives, techniques for reviewing literature, methods of data collection and analysis, methods for assessing and improving the validity and reliability of data and measures, writing and defending his project, and the ethics of scientific research. Upon completion, the student must defend his project in front of the jury.

QEM 602 Research Seminar - Research Methods

The course provides the student with an overview of research in quality engineering and management. It makes him familiar with the research methodology to be adopted during his research project. Student should conduct a seminar in the field of his field of specialization (manufacturing, services, construction, healthcare etc.).

QEM 621 Six Sigma Methodology

This course provides an introduction to the six sigma body of knowledge as defined by the American Society of Quality (ASQ). The course will examine the foundations of six sigma and the statistical tools used in the initial stages of the Define, Analyze, Measure Improve and Control DMAIC problem solving methodology. Also, the course teaches lean manufacturing tools for continuous improvement in a manufacturing environment. Minitab program will be used during the laboratory sessions.

QEM 623 Organizational Excellence

Review of fundamental concepts of Total Quality management, Pillars of organizational excellence, Excellence models, Deming Quality prize, Malcom Baldrige Award, King Abdul-Aziz Quality Award, ISO standards and Charity organizational excellence model.

QEM 624 Systems Engineering

This course is an introductory overview of the systems engineering perspective and is presented to set the conceptual and practical framework of the entire systems engineering graduate program. The first portion of the course covers the foundational components of systems engineering. The second portion of the course is spent on the concept development stage every complex system should go through. The process steps of the engineering development stage comprise the third portion of the course. Finally, the fourth portion presents several issues related to post-development and special topics areas.

QEM 625 Computer Applications in Quality Engineering and Management

This course is provides the graduate students with the skills and the competencies to use computer techniques and applications for problem solving and process improvement in real field situations.

Topics include review of quality tools, statistical process control, Management and planning tools, Innovation tools, Acceptance sampling plans, Design of Experiments, Customer Surveys Analysis, and Quality Costing Analysis. Specific training on known software programs such as Minitab will be undertaken during this course. Mostly projects are executed in teams during course sessions. These projects should be presented and defended.

QEM 626 Supply Chain Management

The course provides basic concepts in managing the complete flow of materials in a supply chain from suppliers to customers are covered in the Basics module. This module covers manufacturing, distribution, service, and retail industries. This includes the fundamental relationships in the design, planning, execution, monitoring, managing demand, including markets and customer expectations, Designing products, processes, and information systems.

QEM 627 Quality in Islam (Language of instruction: Arabic)

This course is taught to all students of the program. The content includes:

- The concept of quality and its foundations and importance in Islamز
- Quality in belief and moralsز
- Quality in acts of worship and transactions.
- Quality in calling to Allah, god Almighty.
- Quality in management.

4. PROGRAM FACULTY

	**Prof. Isam A-Q Elbadawi** Chairman of Industrial Engineering Department PhD (Industrial Engineering, Purdue University, USA, 2010) BEngg (Systems Engineering, Mutah University Jordan, 1990) Six Sigma Master Black Belt, Jordan Engg Assoc Email: i.elbadawi@uoh.edu.sa Phone: +966 54 693 3712
	**Prof Mohamed Aichouni** PhD (Mechanical & Aeronautical Engineering, Salford University, UK, 1992) BEngg (Marine Engineering, University of Sci & Technology in Oran, Algeria, 1987) Member ASQ, SQC Email: m.aichouni@uoh.edu.sa Phone: +966 50 896 8402
	**Prof. Imran Ali Chaudhry** PhD (Systems Engineering, Cardiff University, UK, 1997 BEngg (Aerospace Engineering, NED University of Engg & Tech, Karachi, Pakistan, 1989) PE – Pakistan, Member IET, INFORMS, IISE Email: i.chaudhry@uoh.edu.sa Phone: +966 58 050 7479
	**Prof. Naim Ben Ali** PhD (Industrial Systems Engineering, National Engineering School of Tunis (ENIT), Tunisia 2012) MS (Industrial Systems Engineering, National Engineering School of Tunis (ENIT), Tunisia, 2008) BEngg (Industrial Systems Engineering, National Engineering School of Tunis (ENIT), Tunisia, 2007) Email: na.benali@uoh.edu.sa Phone: +966 59 556 9515

	**Prof. Nidhal Khedher** PhD Energy Engineering, 01/04/2014 College of Engineering, University of Monastir, Tunisia MSc: Energy Engineering, 07/2005 College of Engineering, University of Monastir, Tunisia Engineer's degree: Energy Engineering, 06/2004 College of Engineering, University of Monastir – Tunisia Email: a.boudjemline@uoh.edu.sa Phone: +966543624966 Email: N.khedher@uoh.edu.sa
	**Dr Attia Boudjemline** PhD (Optical Recording (Electronics), University of Manchester, UK, 1995) MSc (Microprocessor Systems, University of Manchester, UK, 1987) Ingenieur d'Etat (Electronics, Ecole Nationale Polytechnique, Algiers, Algeria, 1984) Email: a.boudjemline@uoh.edu.sa Phone: +966 54 873 5760
	**Dr Serhan Alshammari** PhD (Manufacturing, Cranfield University, UK, 2020) MSc (Industrial Engineering, Arizona State University, USA, 2012) BSc (Industrial and Systems Engineering, King Fahd University of Petroleum and Minerals, KSA, 2009) Member SCE, IET, ASQ, INFORMS, ASCM Email: s.alshammari@uoh.edu.sa Phone: +966 55 898 6264

5. FACILITIES

The College of Engineering is located in a purpose-built modern building (Building # B14) in the main campus of the University of Ha'il. The building is equipped with a modern Building Management System for environment control. The Department of Industrial Engineering is housed in the southern side of the building on the first and second floor. The new building provides much more space for offices, classrooms, laboratories, and facilities than it was available in the old building.

5.1 Classrooms

All classes are held in the Postgraduate Section located on the second floor of the College of Engineering building. There are six classrooms ranging from a capacity of 25 to 40 students. All classrooms are equipped with a smart projector, screen, whiteboard and internet connection. All classrooms have control for air-conditioning system.

5.2 Computer Laboratory

One computer lab with 25 workstations in the Postgraduate section. The computer lab is equipped with all necessary software applications required by the students like Microsoft Office suite. The lab is also equipped with smart multimedia projector and white board.

5.3 Library Services

The central library of UoH is maintained by the Deanship of Library Affairs and is available to all faculty members and students. The central library has wide range of books related to Industrial Engineering. In addition to the main University library, College of Engineering has a small library of its own.

Library material in the main University Library is shelved in open stacks using the Dewey Decimal Classification Scheme. The library collection is accessible to all faculty members and students during the weekday work hours. Professional librarians are available during the working hours to provide any assistance.

All essential books required by the program are available in the library.

5.3.1 Access to Saudi Digital Library (SDL)

All faculty members and students have access to the Saudi Digital Library (SDL) which provides access to all the major international databases like, IEEE Xplore, ACM Digital Library, Science Direct, Springer, Taylor & Francis, Wiley, Oxford etc. and numerous more.

All library digital services are accessible through the personal account of the faculty members as well as the students.

6. FINANCIAL INFORMATION

The Master of Quality Engineering and Management program is a paid Executive program offered over the weekend.

The student is obligated to pay the full program fee SAR 100,000 to obtain the graduation certificate.

To register, a student is required to pay the tuition fees for each semester before its start, as follows:

1) First semester: SAR 25,000
2) Second semester: SAR 25,000
3) Third Semester: SAR 25,000
4) Fourth Semester: SAR 25,000

The student must pay additional fees if he does not pass the registered hours or withdraws from a semester.

7. Student Affairs and Support Services

For detailed information on the following topics, please refer to the relevant documents listed below, as they provide essential guidance and policies to support you throughout your academic journey:

Admission and Registration

Study Regulations and Exams

Guidance and Counselling

Rights and Duties

Complaints and Grievances