

SYE6037: MANAGING STRATEGIC QUALITY

Effective Term

Semester B 2024/25

Part I Course Overview

Course Title

Managing Strategic Quality

Subject Code

SYE - Systems Engineering

Course Number

6037

Academic Unit

Systems Engineering (SYE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

P5, P6 - Postgraduate Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

SEEM6037 Managing Strategic Quality (offered until 2021/22) / ADSE6037 Managing Strategic Quality (offered until 2023/24)

Exclusive Courses

Nil

Part II Course Details

Abstract

This course aims to provide a broad understanding of the principles and practice of modern quality management strategies, and to develop the students' ability to integrate and apply the knowledge in the formulating, planning, implementing, and evaluating Total Quality Management (TQM) programs in order to enhance organisation-wide competitiveness.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Define various dimensions of quality in product and service delivery systems, with emphasis in customer orientation.	15	x	x	
2	Outline the evolution and principles of modern quality management theories and practices	20		x	
3	Apply the concepts and principles of quality systems in developing organization wide quality management systems.	25		x	x
4	Integrate and apply key elements of Total Quality Management (TQM): strategic quality management leadership, customer focus and satisfaction, supplier partnership, employee involvement, performance measures, etc. in developing organization wide quality improvement programs.	30	x	x	x
5	Describe the framework and associated strategic and operation issues of implementing TQM based quality improvement systems in the organizations.	10	x	x	

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Large Class Activities (lectures)	Introduction and Explanation of concepts, theory and practice through examples	1, 2, 3, 4, 5	26 hours/ sem
2	Case Studies/ Presentation (tutorials)	Further learning the theory and practice from case studies and solving problems in team work basis	1, 2, 3, 4	13 hours/ sem

3	Consultation	Discussions of Course Materials	1, 2, 3, 4, 5	13 hours/ sem
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Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Individual Assignments, class exercises or Quiz(s)	2, 3, 4, 5	30	
2	Group-based literature review/ case study, report and presentation	1, 2, 3, 4	20	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

For a student to pass the course, at least 30% of the maximum mark for the examination should be obtained.

Individual assignment:

Each student is required to submit a paper stating one of the current quality problems or potential quality improvement areas in their companies (For full-time students, it can be a literature-review based individual paper on a self-proposed topic in the scope of quality management). The background, causes, and needs and justifications for taking improvement actions must be well described in the paper. Improvement actions should then be proposed with supports of literatures and case studies (personal and subjective judgement without sufficient objective evidence and proven supports are not acceptable; full list of all supporting literature and references is required). In addition, the individual performance in various class exercises and case studies will be taken into account.

Quiz

40-45 minutes short quiz(s) will be used to assess students' understanding of the contemporary quality concepts and techniques of quality management taught in the lectures.

Learner-centred group-based work on a quality management related topic:

Students are required to form a group, not more than 4 members, and then select one topic in the scope of quality management for this group-based literature-review project (only one group for one topic in each tutorial class). For each project, it is required to thoroughly search the recent literature on the chosen topic. The project must be finished by giving a 30-min presentation, including a 10-min Q&A session, in the period of Week 10 to 12, as well as the submission of the finalized presentation material and a write-up of min. 10 pages by Week 13.

Examples of topics and requirements:

- CRM (Customer Relationship Management) and Quality Management: its basic philosophy, tools and techniques, implementation methods, organizational issues, case studies...
- Data Mining in Customer Satisfaction Management: its basic principles and approaches, tools and techniques, implementation methods, case studies...
- Innovation and Quality Management: the relationship between innovation and quality management in principles and practices and how to develop an integrated innovation and quality management system in an organization, case studies.....
- Integrative Management System, integration of quality assurance system with other management systems, such as environmental management, occupational health and safety, risk management, occupational health, etc.....
- Knowledge Management and Quality Management: its basic ideas, methodologies, scope of implementation of knowledge management in an organization and how it affects the practice of quality management, case studies.....

- Managing Quality in Global Supply Chain: characteristics of global supply chain, outstanding quality issues in supply chain management, supplier policy, selection, evaluation, monitoring……, ways to assure quality in supply chain network, case studies ……
- New Product Planning and Quality Management: basic concepts and principles in customer-oriented new product planning, procedures of new product ideas generation, development and screening, transforming customer requirements to product specifications and product quality standards, case studies, ……
- Quality Management Development in Mainland China: industrial development background and characteristics in China……, and past, current and future development of quality management in China, case studies…….
- Quality Tool – FMEA: Failure Mode and effect Analysis, terminology and principles, definition of a failure modes, detectability, severity, and RPN, application examples……
- Variability Reduction Through DOE and Taguchi Methods: concepts and principles of Design of Experiments and Taguchi Methods, loss function, sources of variability, variability control program, case studies……..

Assessment Rubrics (AR)

Assessment Task

Individual Assignments or Quiz(s) (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Submitted solutions to individual assignments / Quiz(s) with the following criteria:

The background, causes, and needs and justifications for taking improvement actions must be well described in the paper. Improvement actions should then be proposed with supports of literatures and case studies. In addition, the individual performance in various class exercises and case studies will be taken into account.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Group-based literature review/ case study, report and presentation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Submitted group work and presentations with the following criteria:

Thoroughly search the recent literature on the chosen topic, a clear and well-prepared 30-min presentation, submission of the final report with improvement.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Submitted solutions to the final examination with the following criteria:

Understanding the concepts and provide practical examples, provide clear and justified problem identification, solution design, implementation plan based on given cases.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Individual Assignments or Quiz(s) (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Submitted solutions to individual assignments / Quiz(s) with the following criteria:

The background, causes, and needs and justifications for taking improvement actions must be well described in the paper. Improvement actions should then be proposed with supports of literatures and case studies. In addition, the individual performance in various class exercises and case studies will be taken into account.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Moderate/Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Group-based literature review/ case study, report and presentation (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Submitted group work and presentations with the following criteria:

Thoroughly search the recent literature on the chosen topic, a clear and well-prepared 30-min presentation, submission of the final report with improvement.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Moderate/Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

Examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Submitted solutions to the final examination with the following criteria:

Understanding the concepts and provide practical examples, provide clear and justified problem identification, solution design, implementation plan based on given cases.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Moderate/Basic

Failure

(F) Not even reaching marginal levels

Additional Information for AR

This is a Continuing Education Fund (CEF) Approved Courses, to be eligible for reimbursement; students must achieve the following criteria;

- A minimum attendance rate of 70% (Students should sign on the attendance record for every lesson); and
- Grade C+ or above of the reimbursable course.

Part III Other Information

Keyword Syllabus

- Definition and Dimensions of Quality
- Modern Quality Management development and background
- Quality Management Philosophy: Deming/Juran/Crosby/Kaizen
- Organization-wide Quality System: ISO9000.
- Strategic Quality Management and Leadership: Balanced Scorecard, Benchmarking
- Core Concepts of Total Quality Management (TQM): Customer Needs and Satisfaction, Leadership, Supplier Partnership, Employee Involvement
- Six Sigma
- Performance Measurement: Quality Costs, Malcolm Baldrige/ HKMA Quality Awards, Self assessment
- Organization-wide Quality Improvement Implementation Framework

Reading List

Compulsory Readings

Title	
1	NIL

Additional Readings

Title	
1	Business performance excellence through total quality management, Jack P. Pekar, West Conshohocken, PA : ASTM International, c2009
2	"Total Quality Management", by D H Besterfield et al., 3rd edition, Prentice-Hall, Englewood, USA, 2003."
3	"A TQM Implementation Framework for Hong Kong Manufacturing Industries", by K S Chin and B G Dale, City University of Hong Kong, 2000."
4	"Juran's Quality Planning and Analysis", F M Gryna, C H Chua and J A DeFeo, 5th edition, McGraw-Hill, 2007."
5	"Quality Management: Theory and application", P D Mauch, CRC Press, 2010."
6	"ISO9001:2008 Explained", C A Cianfrani, J J Tsiakals & J E West, ASQC Press, 2009."
7	Quality Progress, ASQ monthly publication
8	Quality Management Journal
9	International Journal of Quality and Reliability Management
10	Total Quality Management & Business Excellence (journal)
11	Managing Service Quality (journal)