Module Code	**EG7070**
Module Title	**Quality Management and Reliability**
Coursework Title	Coursework: Portfolio (3000 words) **INDIVIDUAL WORK**
Coursework Number	1
Weighting	100%
Handout Date	**16 June 2025**
Coursework Submission Date	**03 September 2025**
Learning Outcomes Assessed by this Coursework.	***Knowledge*** 1. Comprehensively explain and implement quality management and reliability principles to real-world industrial issues. (SID) (CID) (CC) 2. Critically identify and describe best practices in quality engineering and management with the organisational constraints (economics, time, space etc.). (DP) (CC) (SID) ***Thinking skills*** 3. Establish best industrial practices related to quality management and reliability engineering. (UGB) (CC) (DP) 4. Fully implement quality related solutions to challenges given the opportunities of engineering projects and its impacts on sustainability. (UGB) (CC) (DP) ***Subject-based practical skills*** 5. Critically assess the impact of execution of quality and reliability measures on engineering projects. (EID) (CID) (UGB) (CC) (DP) ***Skills for life and work (general skills)*** 6. Develop a deeper understanding of the ways in which managers interact with the organizational and technical complexities by the use of tools and techniques related to quality and reliability. (UGB) (CC) (SID) 7. Critically apply ethical judgement to demanding situations at the interface between society and technology. (EID) (SID) (CC) (SID)
Turnitin Submission Requirement	YES
Additional Information	**Please read the entire coursework brief to ensure you understand all the requirements before you begin.** This coursework is **individual work** and done independently. ASSESSMENT FEEDBACK - Feedback on your assessment will be available in four working weeks from the submission date. Please refer to the module pages on Canvas for assessment specific details.

Coursework: Portfolio (3000 words) 100% - INDIVIDUAL Work

Please read the entire coursework brief to ensure you understand all the requirements before you begin.

NOTE: *Master's degree learners are required to read the entire coursework brief-question paper. Effort and engagement with the material presented in this coursework question paper is essential. Learners must take responsibility for your learning and ask questions to your lecturer teaching this module for further clarifications if necessary.*

A portfolio is a work in progress (accumulated work). It begins from lesson 1 and develops over 16 lessons (final 3000 words report). Read the case study and develop your individual portfolio.

A mid-sized auto parts manufacturer experienced a 25% rise in defect rates and customer complaints, prompting the adoption of an IATF 16949 framework. This led to a 20% decrease in defects and a 15% boost in customer satisfaction, highlighting the value of a structured Quality Management Strategy and effective Change Management for operational improvements. Consider this scenario: A mid-sized computer and electronic product manufacturer implemented a Total Quality Process strategy framework to address declining product quality and rising customer complaints. The organization faced a 25% increase in defect rates and a 15% rise in warranty claims, coupled with internal inefficiencies and inconsistent quality management practices. Externally, the competitive landscape and stringent industry standards further exacerbated these challenges. The primary objective was to deploy a comprehensive Total Quality Process strategy to enhance product quality, reduce defects, and streamline operations. In the face of mounting quality issues, a leading manufacturer embarked on a comprehensive Total Quality Process strategy. This case study delves into the strategic initiatives undertaken and the transformative outcomes achieved. From leveraging Six Sigma methodologies to integrating advanced technology solutions, the organization's journey offers valuable insights into effective quality management. Explore the detailed analysis and results that underscore the importance of a data-driven, holistic approach to quality improvement. Unmasking Quality Deficiencies, The assessment revealed several critical quality issues. The manufacturer experienced a 25% spike in defect rates, which significantly impacted customer satisfaction and loyalty. Analysing warranty claims data, it was evident that a 15% increase in claims was directly tied to these defects. Customer feedback further corroborated these findings, highlighting recurrent issues with product reliability and performance. According to a study by McKinsey & Company, companies that focus on quality improvement can reduce costs by 20-30%. The assessment phase leveraged a comprehensive approach. The team utilized Six Sigma methodologies to identify root causes of defects. This process involved rigorous data collection and statistical analysis, pinpointing specific areas in the production line prone to errors. In addition, a Failure Modes and Effects Analysis (FMEA) was conducted to prioritize issues based on their impact and likelihood. This dual approach ensured a thorough understanding of both the symptoms and root causes of quality problems. Internal inefficiencies were also scrutinized. The assessment revealed that inconsistent quality management practices were a major contributor to the rising defect rates. Quality control processes varied significantly between different production shifts and facilities, leading to inconsistent output. The team identified gaps in Standard Operating Procedures (SOPs) and recommended harmonizing these practices across all operations. This alignment was critical for ensuring uniform quality standards. External factors further complicated the quality landscape. The competitive market and stringent industry standards exerted additional pressure on the organization. The assessment highlighted that competitor had already adopted advanced quality management systems, putting the company at a disadvantage. Industry benchmarks from Gartner indicated that leading firms in the sector had defect rates below 5%, setting a high bar for quality expectations. The organization needed to close this gap to remain relevant. The assessment phase also involved a thorough review of the supply chain. Supplier quality management was identified as a weak link in the quality chain. Inconsistent raw material quality and delays in supply deliveries contributed to production issues. The team recommended implementing a Supplier Quality Management (SQM) system to monitor and enhance supplier

performance. Regular audits and performance metrics were suggested to ensure suppliers met the organization's quality standards. Employee feedback was another critical component of the assessment. Surveys and interviews with frontline workers revealed insights into operational challenges and areas for improvement. Employees cited inadequate training and lack of clarity in quality expectations as major pain points. Addressing these issues was essential for fostering a culture of quality within the organization. The team recommended comprehensive training programs and clear communication of quality objectives to all employees. The assessment phase culminated in a detailed report. This report outlined the key findings, quantified the challenges, and provided actionable recommendations. The data-driven approach ensured that the organization had a clear roadmap for implementing the Total Quality Process strategy. By addressing both internal inefficiencies and external pressures, the organization was well-positioned to enhance product quality and operational efficiency.

Source taken from: https://flevy.com/topic/total-quality-process/case-mid-sized-electronics-manufacturer-overcomes-quality-challenges-total-quality-process

Coursework: Portfolio Tasks

1. **Comprehensive Quality Management Implementation (Lesson 3 for feedback)** Critically analyse the Total Quality Process strategy implemented in the case study.

   Using relevant quality management and reliability principles, propose a structured framework for improving product quality in a mid-sized computer and electronic product manufacturing firm.

   Your response should include an implementation plan with key performance indicators (KPIs) and risk mitigation strategies.

2. **Best Practices in Quality Engineering and Organizational Constraints (Lesson 6 for feedback)** Evaluate the role of best practices in quality engineering and management within the organizational constraints such as economics, time, and resource availability.

   Drawing from the case study, critically discuss how the company can balance these constraints while ensuring high-quality standards. Support your discussion with relevant literature and any industrial case examples and any quality management models.

3. **Industry Standards and Sustainable Quality Practices (Lesson 9 for feedback)** Considering the competitive pressures and stringent industry standards outlined in the case study, develop a strategic plan for establishing best industrial practices in quality management and reliability engineering.

   Critically discuss how sustainability considerations can be integrated into this strategy, including its long-term impact on the organization’s financial and operational performance.

4. **Impact of Quality and Reliability Measures on Engineering Projects (Lesson 12 for feedback)** Critically assess how the execution of quality and reliability measures affected the manufacturer’s operations and engineering projects.

   Analyse the long-term implications of adopting Six Sigma and Failure Modes and Effects Analysis (FMEA) in quality control processes.

Provide recommendations on how to further enhance product reliability while maintaining operational efficiency.

5. **Ethical and Managerial Decision-Making in Quality Management (Lesson 15 for feedback)** Critically discuss the ethical dilemmas faced by managers in implementing quality and reliability measures within the organization.

   Using the case study as a reference, critically evaluate how managers can navigate the intersection between corporate responsibility, regulatory compliance, and business profitability.

   Recommend ethical decision-making frameworks that can guide managers in making informed quality-related decisions.

6. **Full Portfolio 3000 words Lesson 16- final submission.** See **Annex A** and **Annex B** in this assessment brief.

REPORT TEXT FORMATTING INSTRUCTIONS

i. **Spelling:** Use British English spellings.

ii. **Font:** Use a plain, easy-to-read font style, such as Calibri. Use font size 11 for the body of the report.

iii. Be consistent with the **size of headings**, for example:
- Title (font size 16, Bold)
- Heading 1 (size 14, Bold)
- Heading 2 (size 12, Bold)
- Heading 3 (size 12, Italics)

Ideally, use the facility for headings in Microsoft Word (Home tab ▶Styles) because this allows for consistency and generation of a table of contents, if required. However, if choosing to use the sizes outlined above, you will need to update the Styles settings to match them. Whatever headings you decide to use, be consistent. Only the first letter of the first word of each heading or subheading is capitalised (except in the case of proper nouns).

iv. **Line spacing Numbers:** The recommended academic standard is 1.5. Single line spacing is not normally used in academic work except for quotations over twenty-five words. Only put a single line space between paragraphs and be consistent throughout the report.

v. **Page numbers** should be centred at the bottom of the page

vi. **Remember that paragraphs** consist of more than one sentence. A paragraph should focus on a single idea, theme or argument. Linking sentences from one paragraph to another ensures coherence.

vii. **Tables** should be numbered and have a heading, for example: Table 1: Literature Framework. The format should be consistent throughout the report.

viii. Word Count Guidelines

Maximum 3000 words (Introduction to Conclusion). Excludes executive summary, cover page, Table of Content, References, and Annexes.

The purpose of a word limit is to provide you as learners with a clear indication of the maximum length for an assessed written piece, helping to set expectations for the scope of work, the level of detail required, and how to manage time effectively for different assignments. **Adhering to word limits is not only an academic skill but also a valuable professional competency.**

Word limits are established based on the assessment objectives. For all coursework assignments, the maximum word count is 3,000 words. Anything beyond this limit will not be marked. The word

count includes any allowed tolerance (e.g., a +20% margin). If an executive summary or abstract is required, its word count will be specified separately.
For more information on word count guidelines, read again this coursework question paper or consult with your lecturer for clarification.

7. **DELIVERABLES TO BE UPLOADED** into LSBF Canvas submission link
    - **i** A report in MS Word Document format
        a. A 10-minute video presentation (URL or mp4 format) should be uploaded to Canvas. This video is not graded and is intended solely for the Q&A viva to validate the student's written work.
    - **ii** Turnitin Report
    - **iii** Acknowledgement of Generative AI tool and prompts

If you have used generative AI in assessments, this should be clearly acknowledged. Include proper Harvard citation and references.

Which permitted use *(for example creating content, assisting with research, or generating ideas, according to established **UEL policies and guidelines)* of generative AI are you acknowledging?

Which generative AI tool did you use (name and version)?

What prompt did you provide?

What did you use the tool for?

How have you used or changed the generative AI's output?

EXAMPLE IN APPENDIX OR ANNEX:

Declaration

I acknowledge the use of ChatGPT [https://chat.openai.com/] to help brainstorm topics for an assessment.

I entered the following prompt: "Come up with five questions that would help a university student explore [topic]."

I used the output as a starting point for generating ideas before narrowing down the topic for my assessment.

-END OF COURSEWORK TASK BRIEF-

ANNEX A - ASSESSMENT MARKING SCHEME
Report is marked for 100 marks and contributes 100% to the overall assessment component.

No:	Report Content	Marks Allocated	Marks Awarded
1	Executive Summary (max 350 words not included in the word limit)	5	
2	Introduction Background, Problem statement, Purpose, Aim, SMART Objectives	10	
3	Comprehensive Quality Management Implementation	15	
4	Best Practices in Quality Engineering and Organizational Constraints	15	
5	Industry Standards and Sustainable Quality Practices	15	
6	Impact of Quality and Reliability Measures on Engineering Projects	15	
7	Ethical and Managerial Decision-Making in Quality Management	15	
8	References (Harvard format)	5	
9	Gantt Chart/Time Plan	5	
	TOTAL	100	

Marker's feedback

i. What did you do well?
ii. What did you do less well?
iii. What to take forward/improve next time?
iv. Comments on Turnitin Similarity Score:
v. Comments on prompts used Generative AI tool

ANNEX B ASSESSMENT CRITERIA

Each of contents in the coursework report will be marked using the following scale:

Report contents – Assessment Criteria	**Grade** **Band**
• Excellent coverage of issues with good exemplification and a complete list of references along with Turnitin report. • Clear signs of excellent understanding of the theme, requirements, design under discussion, develops working model capable of robust functionality for range of environments. • Excellent articulation of points/views/comments, tested, and rigorously evaluated, - Suggests optimization of design methods to accommodate needs, considers additional features useful to customer and design/research methods for optimal incorporation. • Independent analysis, observations, and comments, final report clearly represent a development of the tasks , considers iterative nature of design, and incorporates any relevant design models/charts.	*70-100%* **Excellent**
• Very good coverage of issues with some relevant exemplification with adequate references. • Very good in terms of comprehensiveness and clarity, builds working model capable of essential functions. • Very good use of external sources to support points brought up, relates customer needs to design, requirements, distinguishes necessities versus luxuries. • Very good signs of independent analysis, shows how each requirement fits together, labels components to identify key features and provides description	*60-69%* **Good *to* Very Good**
• Adequate coverage of issues with little exemplification. • Good effort. builds reasonable scale presentation of design. • Clear and covers the obvious points coherently, lists requirements of and considers clients needs, shows several possibilities of solutions based on requirements. • Some effort at use of independent judgement and external sources of information.	*56-59%* **Satisfactory *to* Good**
• Unclear coverage of issues but little exemplification, provides brief outline of approach to design problem. • Effort in covering important points mostly gathered from textbook and lecture notes. • Scattered efforts at using information gathered from external sources. mostly with a purpose and sometimes with no clear purpose. • Simplistic or slightly unstructured /confused presentation.	*50-55%* **Pass standard**
• No relevant material or very little relevant material. • Fails to present relevant points satisfactorily to answer the specific questions. • Confused presentation and unclear language. • Produces chunks of information from the sources with no signs of having assimilated the information.	*0-49* **Unsuccessful**

*****End of Coursework Brief*****