Module Descriptor

Title	Quality Assurance and Management		
Session	2025/26	**Status**	Published
Code	QUAL10002	**SCQF Level**	10
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10 (European Credit Transfer Scheme)
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	S Qureshi		

Summary of Module

This module will provide students with a comprehensive understanding of quality management (QM) concepts, tools, and their applications, incorporating both foundational principles and emerging trends. It intends to prepare students for advanced roles in QM within industrial and engineering contexts. This module aligns with modern advancements, such as Industry 4.0 and sustainability, to ensure relevance in the current professional and market requirements and challenges.

Included in the module is:

• Foundations of QM: Introduction to QM principles and practices, historical development, and the influence of Quality Gurus.

• Standards & Compliance: Overview of ISO 9001, Integrated Management Systems, and compliance requirements.

• Quality Tools & Techniques: Application of traditional tools (e.g., Pareto analysis, control charts, fishbone diagrams) and advanced techniques for quality improvement and problem-solving.

• Statistical Quality/Process Control (SQC/SPC): Causes of variation, control charts, and statistical process analysis, Process Capability Analysis: understanding and applying Cp and Cpk indices to evaluate process performance.

• Quality Cost Programmes: Development and use of quality-cost frameworks for organisational improvement.

• Continuous Improvement Frameworks: Lean, Six Sigma, Lean Six Sigma, Kaizen and 5S, and the PDCA cycle.

• Latest Trends in QM: Industry 4.0, Quality 4.0, IoT in quality analytics, and sustainability in quality practices.

• The Role of Stakeholders: Engaging with customers and suppliers, supplier/vendor rating systems, and the importance of stakeholder relationships.

• Case Studies and Practical Application: Real-world scenarios and processes to connect theory with practice.

During the course of this module students will develop their UWS Graduate Attributes (https://www.uws.ac.uk/current- students/your-graduate-attributes/) in the following areas Universal: Academic - Critical thinking, analytical & inquiring mind; Personal- Emotionally

Intelligent Ethical; Professional- Collaborative, Research Minded Work-Ready: Academic - Knowledgeable, Digitally Literate, Problem Solver; Personal - Effective Communicator; Professional - Ambitious, Potential Leader Successful : Academic - Autonomous, Innovative; Personal - Creative, Imaginative, Resilient; Professional- Driven .

This module has been developed and will keep updated, taking cognisance of the University's Curriculum Framework principles. Examples of this are found within the module such as active and engaging, module assessment which reflects industry design activities, development of digital intelligence meta-skills, learning synergies across modules and levels of study, self-direction of curriculum, small group supervision providing concurrent weekly feedback on progress and the use of real-world practical student generated data.

Module Delivery Method	**On-Campus**[1] ☒	**Hybrid**[2] ☐	**Online**[3] ☐	**Work -Based Learning**[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☒	Term 2	☐	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Explain and apply core QM concepts, models, and principles in various engineering contexts.
L2	Evaluate and compare methods and techniques for QM and continuous improvement.
L3	Apply QM tools and techniques to real-world scenarios, considering the latest industry trends and sustainability practices.
L4	N/A
L5	N/A

Employability Skills and Personal Development Planning (PDP) Skills

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	**SCQF 10** A critical understanding of the key elements of QM and their role in ensuring customer satisfaction. Specific knowledge and understanding of the principal QM tools and techniques, including SPC, process capability analysis, and continuous improvement frameworks, and how they support quality assurance and improvement. A detailed knowledge of the application of emerging technologies, such as Industry 4.0, IoT, and sustainability as tools for optimising QM practices and enhancing decision-making in modern industrial contexts.
Practice: Applied Knowledge and Understanding	**SCQF 10** Understand the key components and principles of QM used in industrial settings. Apply quality tools and techniques, such as Lean and Six Sigma, to analyse and improve processes effectively.
Generic Cognitive skills	**SCQF 10** Develop the ability to communicate quality concepts and findings effectively in professional settings. Understand quality-related challenges and propose creative, economical, practical solutions using appropriate tools and techniques from quality management.
Communication, ICT and Numeracy Skills	**SCQF 10** Ability to analyse, interpret, and use numerical data to solve quality-related problems, using SQC/SPC tools such as control charts and process capability analysis. Communicate clearly, both orally and in writing, using data analysis techniques such as Pareto analysis and fishbone diagrams when needed. Use computer software and IT tools to improve communication and present quality data.
Autonomy, Accountability and Working with Others	**SCQF 10** Identify and address their own learning needs related to quality management, both during class and through independent study, while actively participating in group discussions. Identify appropriate solutions and strategies to quality-related problems using their own initiative while collaborating with team members and applying tools like Lean, Six Sigma, and statistical analysis.

Prerequisites	Module Code	Module Title

	Other	
Co-requisites	**Module Code**	**Module Title**

Learning and Teaching
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours. The learning and teaching for this module will be delivered via weekly lectures and tutorials. Lectures will introduce the key concepts that can be applied to a wide range of areas in the field of quality. Tutorials will be in class to further develop students' practical skill set. The approach is learner-centred with students actively engaged in a range of tasks to promote engagement with and analyses of different kinds of quality management techniques. Students will be given sufficient time and support to work on assignments.

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	24
Tutorial / Synchronous Support Activity	12
Independent Study	164
Please select	
Please select	
Please select	
TOTAL	200

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Juran J M (2010) Juran's Quality Handbook. 6th edn. New York:McGraw Hill. Montgomery, D.C.(2009) Introduction to Statistical Quality Control. 6th edn. Oxford: John Wiley and Sons. Stapenhurst, T.,(2013) Mastering statistical process control. Oxon: Routledge. Oakland, J.S., Oakland, R.J. and Turner, M.A. (2021). Total quality management and operational excellence : text with cases. Oxon: Routledge Dale, B.G., Bamford, D.R. and Van, A. (2016). Managing quality : an essential guide and resource gateway. Chichester: Wiley Ibidapo, T.A. (2022) From industry 4.0 to quality 4.0 [electronic book] : an innovative TQM guide for sustainable digital age businesses. Cham : Springer. Hoyle, D. (2018). ISO 9000 Quality Systems Handbook : Increasing the Quality of an Organization's Outputs. Oxon: Routledge.

(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements
In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time. **For the purposes of this module, academic engagement equates to the following:** The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. Students will scan their attendance, via the attendance scanners, each time they are on-campus, they will have their attendance recorded in class and they will be expected to login to the VLE several times per week. Students who are unable to attend a timetabled session, due to illness or other circumstance, should notify their Programme Leader. Across the School an 80% attendance threshold is set. Students who fall below this, will be referred to the Student Success Team to see how they can be best supported in their studies.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has laboratory-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Engineering Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☒ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Civil, Project and Quality Management
Moderator	M Ayat
External Examiner	TBC

Accreditation Details	N/A
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	N/A

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Individual Assessment (Review/Article/Critique/Paper)- 50% of the final mark
Assessment 2
Closed book class test- 50% of the final mark
Assessment 3
N/A
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Individual Assessment (Review/Article/Critique/Paper)	☒	☒	☐	☐	☐	50%	0

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
UNseenClosed book class test	☒	☒	☒	☐	☐	50%	2

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
N/A	☐	☐	☐	☐	☐		
Combined total for all components						100%	2 hours

Change Control

What	**When**	**Who**
