

LEVEL 5

DIPLOMA IN QUALITY

(Assurance and Management)

Syllabus



THE CHARTERED QUALITY INSTITUTE

CQI Level 5 Diploma in Quality

(Assurance and Management)

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1.0 Introduction

The Chartered Quality Institute (CQI) is a respected contributor to policy issues at both national and international level, promoting the role of the quality professional from its headquarters at Grosvenor Crescent in London. The CQI introduced the professional body of quality knowledge, which provides the basis for the CQI's qualification criteria. As the professional body for quality practitioners, the CQI provides training, education and information on a range of quality issues. CQI examinations have been designed to assist quality practitioners in acquiring the relevant skills needed in their employment. Through the years the examinations have evolved into a selection of modules designed to assist today's quality professional in acquiring relevant knowledge. Since the last major change to examination structure in 1996, with the introduction of the A-11 'Introduction to Quality Assurance' and the A-12 'Principles and Techniques of Quality Management', over 27,000 papers have been taken.

The post-secondary learning environment has become increasingly competitive in the last decade. The pre-eminence of the traditional universities as the major providers of higher education is being challenged by non-traditional organisations, such as corporate and virtual providers. Numbers of pre-print archives, electronic journals and virtual libraries are on the increase. The growth of the information society, and the importance of knowledge based skills, aligned with the increased availability of communication and information based technologies, has facilitated the development of flexible 'virtual' learning environments. There has been a growth in the demand for continuing professional development (CPD) as an element of lifelong learning.

Employer demand is now moving toward flexible education and training, which can be tailored to company needs, allowing re-training of employees to improve competitiveness and recognition of the learning needs of employees in globalised businesses. Through the development of the body of quality knowledge, the CQI has established a clear indicator of key quality competencies. It is now the intent of the CQI to translate those competencies into the pedagogy of the examination. It is the responsibility of the CQI to ensure the pedagogy and standard of all awards granted by the CQI as the awarding institution. It is also the responsibility of the CQI to ensure that the academic standard of all awards made under any collaborative arrangement must be equivalent to those comparable awards for programmes delivered by the CQI as an awarding institution itself. These awards should be comparable with any relevant benchmark information recognised within the UK.

2.0 Rationale

2.1 Background

The structure of the Diploma has been assisted by, but not been limited to, consideration of the report of the National Committee of Inquiry into Higher Education (NCIHE) in July 1997 (the Dearing Committee), and the subsequent consultation on the promotion of learning and teaching (HEFCE 98/40). Additional deliberation has been achieved through consideration of the requirements outlined by the Department for Education and Employment and the Learning and Skills Council. Through review of the June 1999 white paper 'Learning to Succeed – a new framework for post-16 learning' and with regard to the LSC study QBO – Learning Skills Council Study Summary Report – March 2001.

2.2 Programme principles

The programme will be guided by four key principles:

- i. The need to provide an experience that will be relevant and practical for participating individuals and their employers or sponsors.
- ii. Intellectual rigour will be reflected in the nature of the subject material of each module.
- iii. The need for flexibility both in programme design and delivery, and in the tailoring of assessment work.
- iv. The research project will require demonstration of appropriate application, research and communication skills applied to an advanced area of study.

These principles have been further developed to form programme aims and learning outcomes.

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- 2.3 Programme aims This Diploma programme will enable participants to:
- Acquire and develop a range of skills to analyse quality problems and to suggest and implement strategies to resolve them.
 - Select, evaluate and apply appropriate quality assurance/management skills, knowledge and techniques in a competent and professional manner.
 - Provide industry with autonomous professionals, equipped to lead in quality assurance/management.
 - Provide a programme where individuals can select one or more modules in order to enhance their knowledge, skills and understanding in specific subject areas.
 - Encourage students to promote a positive quality culture.
 - Provide an opportunity for critical appraisal, application and research, which engages with issues and debate relevance to quality assurance/management principles and practices.

- 2.4 Programme learning outcomes On successful completion of the Diploma programme, students should:
- Have gained a critical understanding of key concepts, principles and practices relevant to each module, and where appropriate, demonstrate links between modules.
 - Be able to evaluate the applicability and usefulness of general principles, concepts and practices to specific situations based on workplace experience and/or case studies.
 - Recognise limitations in knowledge and management tools as applied to quality problems and reformulate new lines of approach.
 - Independently argue the need to recognise a number of differing approaches to a problem and the necessity for predicting and evaluating consequences.
 - Be able to engage in professional discourse with other quality professionals.
 - Present information that is critical and evaluative in a variety of forms (including oral and written) using appropriate professional and academic styles.
 - Have gained confidence and competence in their areas of expertise and demonstrate these in the workplace or in group situations.
 - Complete a project which allows opportunity for appraisal, application and research, and which engages with issues and debate relevant to quality assurance/ management principles and practices.

The generic programme aims and learning outcomes have been mapped against the specific modules.

3.0 Course structure

3.1 General principles

The structure of the CQI Diploma in Quality (Assurance and Management) is informed by the education advisory group of the CQI, and approved by CQI board. The programme requires students to undertake a course of study based on a six-module configuration, which is outlined below:

Module	Title	Mandatory or optional
D1	Principles of quality and data analysis	mandatory
D2	Quality management	mandatory
D3	Quality tools and techniques	mandatory
D4	Communications and project management	mandatory
D5	Project	mandatory
D6*	Quality and environmental management	optional
D7*	Information technology and quality management	optional

* More electives may become available in later editions of the syllabus. See section 4.2.2.

- 3.2 Delivery pattern Students are able to enter the programme at the start of any semester. Each module is essentially free standing but has clear links and relationships with other modules. As part of the learning process, special focus is placed on the ability to transfer knowledge, practices and skills between and across modules.

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Level descriptors are designed as guidance for levels of learning to be attained. Learning accredited to all modules contained within the framework of the Diploma is to be considered at Level 5.

3.3 Level descriptors

This will reflect the student's ability to:

- Develop a rigorous approach to the acquisition of a broad knowledge base
- Employ a range of specialised skills across an area of study
- Evaluate information, and use it to plan and develop investigative strategies
- Determine solutions to a variety of unpredictable problems
- Operate in a range of varied and specific contexts
- Take responsibility for the nature and quality of outputs

3.4 Key-skills signposting

Upon completion of the Diploma, the individual will have covered the full suite of key skills at Level 5.

4.0 programme structure

In line with the findings and proposals outlined in 'Benchmarking Credit Ratings for Professional Qualifications' (HECIW, 1999) each module has been considered against the credit accumulation and transfer scheme (CATS) tariff. The assessment of the programme learning outcomes will be achieved by assessment at the module level. Students will therefore achieve the programme learning outcomes by successful completion of the combination of mandatory and optional modules.

4.1 Mapping of programme learning outcomes to modules

The table below shows the relationship between the modules and the programme learning outcomes. It can be seen that many of the programme learning outcomes are assessed in a range of modules. In some cases there is a particularly strong relationship between a programme outcome and a module. Similarly there are cases where there is a relationship between modules but the relationship is considered to be a weak one. Any programme outcome that does not indicate a strong relationship with any of the modules is one that contributes to the success of the programme. (See overleaf.)

	D1	D2	D3	D4	D5	D6/D7
Outcome i	xxx	xxx	xxx	xxx	xxx	xxx
Outcome ii	000	xxx	xxx	***	xxx	xxx
Outcome iii	xxx	xxx	xxx	***	xxx	000
Outcome iv	***	000	xxx	000	xxx	xxx
Outcome v	xxx	000	000	xxx	000	000
Outcome vi	***	000	000	xxx	xxx	***
Outcome vii	000	000	xxx	xxx	xxx	xxx
Outcome viii	000	000	000	xxx	xxx	000

Key: xxx = Strong 000 = Normal *** = Weak

4.2 Programme of study

The CQI Diploma in Quality has been designed as a professional qualification for delivery on a part-time attendance mode at the CQI approved education centres. The mode of study can, however, be adjusted according to the students' needs and education centre's preferences. The basis of the qualification is the completion of the five mandatory modules and the one optional module. These modules may be taken in any order by the student, with the exception of D5.

4.2.1 The mandatory modules

The four mandatory modules (D1, D2, D3, D4) incorporate the pedagogy of the CQI devised body of quality knowledge and are designed for delivery over one semester or one academic year. The fifth mandatory module – project (D5) involves less contact time and is based on assessment of student centred activity. The breakdown of delivery is shown in the table on the following page:

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Module	Contact hours	Directed study	Independent study	CATS tariff at cats Level 5
D 1	45	75	80	20
D 2	45	75	80	20
D 3	45	75	80	20
D 4	45	75	80	20
D 5	30	135	75	30
D 6	45	75	80	20
D 7	45	75	80	20

4.2.2 The optional module

Introduced to allow programme diversity and flexibility. This module will contain subject material approved by the CQI (and QCA) as appropriate to the philosophy of the Diploma. Each approved education centre delivering this module can submit syllabi proposals.

The submission shall include the following at a minimum a detailed syllabus which includes:

- Module rationale
- Modular aims
- Learning outcomes
- Indicative content
- Teaching and learning strategy
- Assessment rationale
- Indicative reading
- Essential text
- Supplementary text
- A module implementation plan

The design of each optional module will bear the same principles as that of the mandatory modules in terms of contact and study hours and CATS Tariff.

4.2.3 Directed study

Directed study time will have a number of important features within each module. It will:

- Allow students to read and prepare materials for subsequent lectures and assignments.
- Engage in relevant activities within their professional sphere.
- Develop a broader view of their studies by extending the breadth of knowledge, and provide important conceptual and practical links to other modules.

4.2.4 Independent Study

Independent study time will allow the student to develop and refine individual skills and knowledge base. This allows the student to make use of both primary and secondary source material, and in developing research skills.

4.3 Pre-course requirements

All applicants may have to undertake an interview with a centre to ensure that they have the necessary skills and knowledge (see below) to complete the course successfully.

The centre should ensure that all students enrolling on the course are aware that CQI may ask for details of their interview as well as pre-course requirements (4.3.1/4.3.2 and 4.3.3) for statistical purposes when they register for the Diploma.

4.3.1 Academic qualifications

The interview should address the following areas:

Although the CQI does not require any formal academic qualifications students should be made aware that they will be required to make mathematical calculations for two of the modules. Where possible those with weaker skills should be encouraged onto the CQI level 3 certificate in quality to assist their development.

4.3.2 Vocational/occupational qualifications

CQI does not stipulate that potential students should have any particular qualifications before entering this programme. It should be stipulated this is a Level 5 qualification and explained the level of attainment that will be required. Those with an engineering background may find Modules D1 and D3 easier and those with a management background may find D2 and D4 easier.

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A pass at maths and english GCSE is advisable.

Students who have previous qualifications at Level 5 (eg management) should be made aware that this course may broaden their expertise. If students have already fully covered one or more modules they should be encouraged to apply for Accreditation of Prior Certificated Learning (APCL) [Section 4.4] available at www.thecqi.org

4.3.3 Vocational experience

As quality is a subject that covers all industries, the student may have skills and knowledge from a variety of experiences within their background. For example, time spent in service industry, manufacturing industry, etc. The body of quality knowledge that is produced by the CQI may be of interest when looking at experience of skills and the body of quality knowledge. See www.thecqi.org

The student should be working where quality principles can be applied or they can be involved in quality within a working environment. This can be paid or unpaid work. Where students have in depth experience in certain areas they should be encouraged to pursue Accreditation of Experiential Learning (APEL) [Section 4.4].

4.4 Accreditation of Prior Learning

CQI operates a policy for both individuals and centres. This information is available from the CQI website on www.thecqi.org/education.

5.0 Assessment and awards

5.1 Introduction

This section deals with the summative assessment of student performance. The assessment framework has been designed to allow flexibility in matching forms of assessment to:

- teaching and learning strategies
- the overall aims and learning outcomes of the programme
- the desired outcomes of individual modules.

5.2 Assessment profile

Coursework assessments may take a variety of forms, eg essay, report, presentation, critique, review etc. Formative exercises may be employed within modules to assist progression and development of course members.

5.2.1 Module coursework

Module assessment will be achieved by a variety of means and these are identified in each module specification. In general terms the assessments can be divided into a coursework element and an examination element. This is useful as it provides a guideline by which workload can be distributed more evenly. This additionally enables students to plan their study activities. When combined with a plan of assignment handout and submission dates these form a vital tool for students, especially part-time students who have to juggle study with work commitments.

The normal assessment profile for each of the modules D1, D2, D3, D4, D6 and D7 will involve students undertaking one summative assessment submission equivalent to between 2,000-3,000 words per module. This will be followed by an end of semester examination. In order to ensure that the learning outcomes of each module are addressed, assignment briefs will be sent to academic institutions prior to the commencement of courses. Assignment briefs issued in August/September each year are only valid for January examination sitting. Those issued in December/January will be valid for June examination sitting (deferral policy applies). Completed assignments will be required by CQI before the individual can sit the examination.

5.2.2 D5 project

All internally assessed assignments and the D5 project will be moderated by the CQI before the final marks are issued.

D5 projects will contain between 7,000 and 10,000 words. The content is outlined in the module specification.

5.3 End of module examination

The examinations for modules D1, D2, D3, D4, D6 and D7 will be held twice a year in January and June.

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5.3.1 Module examination (external assessment)

The module examinations will be set and marked by the CQI.

Examination results will be posted to students within one week of the CQI awarding committee meeting. Examination results will be communicated using the grading system outlined below.

Mark	Grade	Descriptor
0-39	Fail	F
40-59	Pass	P
60-74	Merit	M
75+	Distinction	D

5.3.2 Students wishing to sit examinations

Examination fees will be set by the CQI and communicated to all academic establishments in advance.

There will be no limit to the number of re-sit examinations per student. Students who have successfully completed all coursework, but who fail the examination may carry forward their coursework mark for a maximum of two successive exam sittings. Relevant assignments have to be submitted before sitting examinations (interruption of studies and deferral policies apply). Students who have not successfully completed all coursework for a module may not carry forward any coursework marks for that module.

5.3.3 Appeals

The CQI operates a full and independent appeals procedure. Information is available on the CQI website at www.thecqi.org

5.4 Award

Each module will be graded and certificated individually.

ONLY students who successfully complete all six modules, within a six year time frame, will be eligible for the award of CQI Diploma in Quality. This will not be graded. The CQI Awarding Body confers the award of Diploma in Quality. In order to confirm the intellectual rigour of the qualification, and its recognition by the CQI, Diploma in Quality graduates will each receive a certificate signed by the deputy director general.

5.5 Progression

5.5.1 Employment progression

Successful students will be able to use the designatory letters DipQ after their name which may enhance their career prospects and professional recognition.

Possible employment areas and career development could be the following: Quality Assurance Manager, Quality Manager, Business Improvement Manager, Business Systems Manager, Senior Quality Engineer, Quality Management Specialist/Consultant.

5.5.2 Qualification progression

On successful completion of the award students may wish to continue their studies for a masters degree. The CQI Centres of Excellence have endorsed the CQI Diploma in Quality as an entry-level qualification for some of the following programmes:

- MSc Quality Management
- MA Customer Services Management
- MSc Process Systems Engineering
- MSc Total Quality Management
- MSc Management of Quality Excellence

The Open University has given accreditation for this award. Students will be exempt from year one on selected honours degree courses.

In addition students may apply for other qualifications at different universities. The onus will be on the

student to demonstrate what has been attained by their studies to date and how this relates to the course they wish to study.

There is also a vocational progression to complete the NVQ Level 4 in Quality Management which should accept this qualification as some form of exemption from the full qualification.

5.5.3 Professional status Students with the appropriate experience will also be eligible to apply for full membership of the CQI to enhance their professional status and use the initials MCQI.

6.0 Teaching strategy

6.1 Learning outcomes The drivers behind the coursework assessment and examination are the learning outcomes. When preparing the course material this should be considered. This is a Level 5 qualification therefore the descriptors of the learning outcomes will reflect this. They are as follows:

- Analyse and interpret complex technical data
- Critically evaluate
- Recommendations
- Critical importance to industry

Past examination papers are published on www.thecqi.org which provide guidance on the type of examination questions that may arise.

6.2 Indicative content The indicative content is guidance for the areas to be addressed which may arise in the examination. These are areas which will be expected to be discussed within the framework of assessment. The way that the questions are approached is governed by the learning outcomes. (See 6.1)
For details of what areas will be addressed by the indicative content the indicative reading list will be used as the basis for the preparation.
Where modules refer to standards please refer to the standards for definitions and interpretations.

6.3 Percentage weighting per assessment Each of the learning outcomes carries the same weighting within the module. For example, if there are five learning outcomes for one module then each will carry a 20 per cent weighting.
The most appropriate form of assessment, eg coursework or examination, will be used for each learning outcome.

6.4 Harvard referencing system When referencing the projects the Harvard referencing system should be used.

Assessment Grid – Modular Assessment Breakdown

CQI level 5 Diploma in Quality (Assurance and Management)

Module	Components/learning outcomes								Total
	1	2	3	4	5	6	7	8	
D1	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	100
D2	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	100
D3	16.5	16.5	16.5	16.5	16.5	17.5			100
D4	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	100
D5	16.5	16.5	16.5	16.5	16.5	17.5			100
D6	16.5	16.5	16.5	16.5	16.5	17.5			100
D7	16.5	16.5	16.5	16.5	16.5	17.5			100

MODULE D1 – PRINCIPLES OF QUALITY AND DATA ANALYSIS

CQI Syllabus (Mandatory module) Level 5

Module D1 – Principles of quality and data analysis

Rationale

This module provides students with a basic understanding of the principles of quality management, standardisation and statistical analysis used in the contemporary management of product and service quality.

Aims

To develop and enhance students' understanding of:

- 1 Concepts of quality assurance systems and control
- 2 A need for the economic control of quality
- 3 The fundamentals of standardisation
- 4 Basic statistical methods used in quality

Learning Outcomes (number in brackets refers to the indicative content)

On successful completion of this module students will be able to:

- 1 Argue and justify the need for quality management as an essential discipline within the management of organisations (1.1) to (1.6)
- 2 Understand and apply methodologies for the collection and reporting of quality costs (2.1) to (2.3)
- 3 Analyse the need to control purchased goods and services (3.1) to (3.4)
- 4 Identify and evaluate quality procedures and techniques used in quality systems, especially during the design and development of products or services (4.1) to (4.5)
- 5 Understand the need to assess product/service reliability and the basic analysis and application of reliability prediction models (5.1) to (5.7)
- 6 Analyse the fundamental need for standardisation and identify the role of standardisation bodies in supporting and developing the use of standards (6.1) to (6.8)
- 7 Argue and justify the need for a factual approach to the management of quality (7.1) to (7.3)
- 8 Analyse and present statistical data (8.1) to (8.9)

Indicative content

1 Quality systems concepts, philosophy and strategy

- 1.1 Definitions of quality, quality assurance and quality control (ref ISO 9000)
- 1.2 The eight principles of quality (ref ISO 9000)
- 1.3 Organisation-wide quality assurance activities
- 1.4 Quality policy development
- 1.5 Processes, documented procedures, work instructions and their preparation
- 1.6 Document control and record keeping

2 Quality costs

- 2.1 Economic justification for quality management
- 2.2 Process cost model (ref BS 6143 Part 1)
- 2.3 Prevention appraisal failure model (ref BS 6143 Part 2)

3 Control of purchased product and supplier evaluation

- 3.1 Strategies for controlling and assessing the quality of purchased product (cross ref 8.7)
- 3.2 Mutually beneficial supplier relationships
- 3.3 The role of quality systems certification (cross ref 6.5)
- 3.4 Supplier evaluation and rating schemes

4 Design and development of products or services

- 4.1 Procedures for review, verification and validation
- 4.2 Use of risk analysis tools eg FMEA (cross ref 5.7)
- 4.3 Standardisation of design including BS 2045 'Preferred numbers'
- 4.4 The role of testing and test procedures/methods
- 4.5 Product certification and type approvals

5 Product/service reliability

- 5.1 Concept of reliability
- 5.2 Bathtub curve
- 5.3 Test methodologies for the assessment of reliability
- 5.4 Strategies for improving reliability eg standardisation, use of redundancy/parallel systems
- 5.5 Calculation of component/system reliability characteristics with respect to time using $R(t)=e^{-\lambda t}$
- 5.6 Calculation of component/system reliability characteristics for series and parallel systems
- 5.7 FMEA

6 Standardisation

- 6.1 Principles of standardisation, concept of voluntary standards and variety reduction
- 6.2 The role of the the British Standard Institution
- 6.3 The role of the International Standards Organisation (ISO) and the European Committee for Standardisation (CEN)
- 6.4 The role of the United Kingdom Accreditation Service (UKAS); the concepts of accreditation and certification
- 6.5 Product and quality system certification
- 6.6 The SI system of units, basic units, derived units, coherent units
- 6.7 Traceability of measurement
- 6.8 The role of the National Physical Laboratory (NPL)

7 Factual approach

- 7.1 The concept of variability
- 7.2 The need for data in supporting decision making
- 7.3 Processes, closed loop control and continual improvement

8 Variability and statistical tools

- 8.1 Continuous and discrete random variables
- 8.2 Probability distributions: normal, binomial and poisson
- 8.3 Process capability studies/calculation of process capability indices Cp and Cpk
- 8.4 Histograms and pie charts
- 8.5 Pareto analysis
- 8.6 Basic statistical process control charts/calculation and use of decision lines for variable and attributes ie mean and range charts, number defective charts and proportion defective charts
- 8.7 Acceptance sampling by attribute; construction and interpretation of operating characteristic curves using statistical tables
- 8.8 Construction and use of ogives
- 8.9 Construction and use of cusum charts

Teaching and learning strategy

The module is designed to have contact time of 45 hours, directed study of 75 hours and independent study of 80 hours. The module delivery shall be outlined to students at the start of each module by an implementation plan.

Assessment requirements

The assessment of this module will contain two elements:

Summative assessment	40%	Examination	60%
Total	100%		

MODULE D I

1 Summative assessment

- 1.1 The summative assessment of student work will be considered within the module and will consist of one assignment, which will be set by the CQI. This is to be marked by the tutor in the first instance against a set scheme and marks submitted to CQI before the examination for moderation.
- 1.2 Assignment briefs will be issued to participating centres twice a year – August/September for January examination sitting and December/January for June sitting.
- 1.3 The minimum pass mark for this assessment is 40 per cent.

2 Examination

- 2.1 Examinations will be held at dates determined by the CQI in January and June.
- 2.2 Examination papers will be set and marked by the CQI.
- 2.3 The minimum pass mark for the examination is 40 per cent.

Awarding criteria

To achieve success in the module, students must pass each assessment. Marks will be accredited fail, pass, merit or distinction.

Indicative reading

Books

- | | |
|---|---|
| Ammerman, M., <i>The Root Cause Analysis Handbook: A Simplified Approach to Identifying, Correcting, and Reporting Workplace Errors</i> Quality Resources, 1998
ISBN: 0527763268 | Kelly, D.L., <i>Applying Quality Management in Healthcare: A Process for Improvement</i> Health Administration Press, 2003
ISBN 1567932061 |
| Bell, R.J. & Goldman, D.T., <i>The International System of Units (SI)</i> , HMSO, 1986
ISBN 0160002141 | McDermott, R. E., Mikulak, R. J., Beauregard, M.R., <i>The Basics of FMEA</i> Quality Resources, 1996
ISBN 0527763209 |
| Bicheno, J., <i>The Quality 75</i> Picsie Books, 2002
ISBN 0954124405 | Mears, P., <i>Quality Improvement Tools and Techniques</i> , McGrawHill, London, 1994/5
ISBN 0070412197 |
| Besterfield, D.H., <i>Quality Control</i> Pearson Prentice Hall, 2004
ISBN 0131131273 | Montgomery, D.C., <i>Introduction to Statistical Quality Control</i> , 3rd Ed. Wiley Press, 1996
ISBN 0471303534 |
| Deming, W.E., <i>Out of the Crisis</i> , 2nd Ed. MIT Centre Press, 2000
ISBN 0262541157 | Oakland J.S., <i>Statistical Process Control: A Practical Guide</i> , Heinemann, 1986
ISBN 0434914843 |
| Feigenbaum, A.V., <i>Total Quality Control</i> , 4th Ed. McGraw-Hill, 2005
ISBN 0070220034 | Tricker, R., <i>MDD Compliance Using Quality Management Techniques</i> Butterworth-Heinemann, 2000
ISBN 0750644419 |
| George, S. & Weimerskirch A., <i>Total Quality Management Strategies & Techniques Proven at Today's Most Successful Companies</i> , 2nd Ed., John Wiley & Sons, 1998
ISBN 0471191744 | |
| Goetsch, D.L. & Davis, S.B., <i>Quality Management: Introduction to Total Quality Management for Production, Processing and Services</i> , 5th Ed. Prentice Hall, 2006
ISBN 0131189298 | <i>Standards</i>
BS 2045 Preferred Numbers
BS 6143: 1992 Parts 1 & 2 Quality Costs
ISO 9000: 2000; ISO 9001: 2000; ISO 9004: 2000
Quality Systems |

MODULE D2 – QUALITY MANAGEMENT

CQI Syllabus (Mandatory module) Level 5

Module D2 – Quality management

Rationale

This module develops students' understanding of the management principles, disciplines and techniques involved in quality within an organisation.

Aims

- 1 To enhance students awareness of the disciplines, systems and techniques of quality management
- 2 To develop an appreciation of customers, clients and markets
- 3 To enable students to apply quality management methods to all activities in the business or organisation
- 4 To evaluate the human dimension of an organisation

Learning Outcomes (number in brackets refers to the indicative content)

On successful completion of this module students will be able to:

- 1 Demonstrate and argue management strategies and the learning organisation (1)
- 2 Understand, interpret and evaluate quality management systems (2)
- 3 Understand, discuss and apply the principles of total quality management (2)(3)
- 4 Appraise produced goods and services through evaluation of customer feedback systems (6)
- 5 Analyse the contribution to quality of the management gurus (7)
- 6 Understand technical complexity and apply quality frameworks and awards as appropriate to specific situations (8)
- 7 Interpret and advise, in outline, on legal requirements relating to quality (5)
- 8 Appraise and recommend improvements of audit programmes to given standards (4)

Indicative content

- 1 Management strategy**
 - 1.1 Principles of management, culture, climate
 - 1.2 Communication and feedback
 - 1.3 Accountability and delegation
 - 1.4 Training and development
 - 1.5 The learning organisation
- 2 Total quality management**
 - 2.1 Principles and techniques of TQM
 - 2.2 Comparison with systems approach
 - 2.3 BS 7850 : Part 1
 - 2.4 BS 7850 : Part 2
- 3 Quality management systems**
 - 3.1 The development of management systems
 - 3.2 ISO 9000:2000 series
- 4 Quality audit**
 - 4.1 Management of audit programmes
 - 4.2 Qualification criteria for auditors
 - 4.3 Auditing
 - 4.4 ISO 19011: 2002
- 5 Law**
 - 5.1 Introduction to rudiments of law
 - 5.2 EC directives and European legislation
 - 5.3 Consumer protection:

- Consumer Protection Act, 1987
 - General Product Regulations, 1994
 - Sale of Goods Act, 1979 (as amended by the Sale and Supply of Goods Act, 1994)
- 5.4 Product recall

6 Customer feedback

- 6.1 Customer/client satisfaction
- 6.2 Customer liaison and feedback systems
- 6.3 Performance measures
- 6.4 Stakeholder analysis
- 6.5 National and international surveys

7 Management gurus

- 7.1 G Taguchi
- 7.2 S Shingo
- 7.3 K Ishikawa
- 7.4 P Crosby
- 7.5 WE Deming
- 7.6 J Juran

8 Quality frameworks and awards

- 8.1 Excellence Model and awards
- 8.2 Malcolm Baldrige Award
- 8.3 Deming Prize
- 8.4 Investors in People
- 8.5 Charter Mark

Teaching and learning Strategy

The module is designed to have contact time of 45 hours, directed study of 75 hours and independent study of 80 hours.

The module delivery shall be outlined to students at the start of each module by an implementation plan. Where national standards are referenced in the indicative content students will be required to know these for assessment purposes.

Assessment requirements

The assessment of this module will contain two elements:

Summative assessment	40%
Examination	60%
Total	100%

1 Summative assessment

- 1.1 The summative assessment of student work will be considered within the module and will consist of one assignment, which will be set by the CQI. This is to be marked by the tutor in the first instance against a set scheme and marks submitted to the CQI before the examination for moderation.
- 1.2 Assignment briefs will be issued to participating centres twice a year – August/September for January examination sitting and December/January for June sitting.
- 1.3 The minimum pass mark for this assessment is 40 per cent.

2 Examination

- 2.1 Examinations will be held at dates determined by the CQI in January and June.
- 2.2 Examination papers will be set and marked by the CQI.
- 2.3 The minimum pass mark for the examination is 40 per cent.

Awarding Criteria

To achieve success in the module, students must pass each assessment. Marks will be accredited fail, pass, merit or distinction.

Indicative reading

Bicheno, J., *The Quality 75*
Picsie Books, 2002
ISBN 0954124405

Oakland, John S., *Total Quality Management*
Butterworth & Heinemann, 1993
ISBN 0750609931

Reeves, R. & Pritchard, E., *Quality Assurance and the Law*
Butterworth-Heinemann, 1999
ISBN 0750641762

Summers, D., *Quality*, 4th Ed.
Prentice Hall, 2005
ISBN 013118931X

Tricker, R., *ISO 9001:2000 in Brief*
Butterworth-Heinemann, 2000
ISBN 0750648147

MODULE D3 – TOOLS AND TECHNIQUES

CQI Syllabus (Mandatory module) Level 5

Module D3 – Tools and techniques

Rationale

This module provides students with an understanding of the tools and techniques of quality, encouraging and allowing an exploration of the applicability and effectiveness of different quality tools and techniques within the design, manufacture and use of products and services.

Aims

- 1 To enhance students' awareness of the disciplines, tools and techniques of quality improvement
- 2 To enable students to evaluate and recommend tools and techniques for varying situations
- 3 To enable students to select, apply and recommend appropriate quality tools and techniques to all activities in the business or organisation

Learning Outcomes (number in brackets refers to the indicative content)

On successful completion of this module students will be able to:

- 1 Demonstrate and present an argument for the understanding of the tools and techniques of quality improvement (1)(2)(3)(4)(5)
- 2 Evaluate and recommend the applicability of tools and techniques of quality (1)(2)(3)(4)(5)
- 3 Select and apply appropriate quality tools in different circumstances (1)(2)(3)(4)(5)
- 4 Appraise the effectiveness of individual applications to specific circumstances (1)(2)(3)(4)(5)
- 5 Analyse the contribution to quality of the tools and techniques in design and production (3)
- 6 Understand and develop the relationship between an organisation and its suppliers (6)

Indicative content

- 1 Process improvement**
 - 1.1 Kaizen
 - 1.2 5S methodology
 - 1.3 Value analysis
 - 1.4 Overall equipment effectiveness
 - 1.5 Failure mode and effects analysis (FMEA)
 - 1.6 Poka Yoke
 - 1.7 Process capability (C_p , C_{pk})
- 2 Improvement techniques**
 - 2.1 Quality circles
 - 2.2 Gemba Gembutsu
 - 2.3 Muda
 - 2.4 Balanced scorecard
 - 2.5 Six sigma
- 3 Quality by design**
 - 3.1 Taguchi design of experiments
 - 3.2 Ishikawa's seven tools of quality
 - 3.3 Quality function deployment (QFD)
- 4 Analysis and mapping techniques**
 - 4.1 IDEF0
 - 4.2 Fault tree analysis
 - 4.3 Nominal group technique

- 4.4 Flowchart
- 4.5 Benchmarking

- 5 Optimisation techniques**
- 5.1 MRP
- 5.2 MRP II
- 5.3 Just in time (JIT)
- 5.4 Total productive maintenance

- 6 Suppliers and distribution**
- 6.1 Supplier partnerships
- 6.2 Supplier associations
- 6.3 Integrated supply

Teaching and learning strategy

The module is designed to have contact time of 45 hours, directed study of 75 hours and independent study of 80 hours.

The module delivery shall be outlined to students at the start of each module by an implementation plan.

Students will be expected to perform the calculations necessary in areas of the indicative content. They will then be required to use this data to show evidence of attaining the learning outcomes.

Assessment requirements

The assessment of this module will contain two elements:

Summative assessment	40%
Examination	60%
Total	100%

1 Summative assessment

- 1.1 The summative assessment of student work will be considered within the module and will consist of one assignment, which will be set by the CQI. This is to be marked by the tutor in the first instance against a set scheme and marks submitted to CQI before the examination for moderation.
- 1.2 Assignment briefs will be issued to participating centres twice a year – August/September for January examination sitting and December/January for June sitting.
- 1.3 The minimum pass mark for this assessment will be 40 per cent

2 Examination

- 2.1 Examinations will be held at dates determined by the CQI in January and June.
- 2.2 Examination papers will be set and marked by the CQI.
- 2.3 The minimum pass mark for the examination will be 40 per cent.

Awarding criteria

To achieve success in the module, students must pass each assessment. Marks will be accredited fail, pass, merit or distinction.

Indicative reading

Books

Gygi, C., DeCarlo, N. & Williams, B., *Six Sigma for Dummies*
Hungry Minds Inc, U.S., 2005
ISBN 0764567985

Antony, J., *Design of Experiments for Engineers and Scientists*
Butterworth Heinemann, 2003
ISBN 0750647094

Kaplan, R. S., Norton, D. P. & Lowes, A., *Balanced Scorecard: Translating Strategy into Action*
Harvard Business School Press, 1996
ISBN 0875846513

Murdoch, J., & Barnes, J.A., *Statistical Tables for Science, Engineering, Psychology, Business, Management and Finance*
Palgrave Macmillan, 1998
ISBN 0333558596

Shingo, S. & Dillon, A.P. (Translator), *ZQC: Source Inspection and the Poka-Yoke System*
Productivity Press, 1995
ISBN 0915299070

Vorley, G. & Tickle, F., *Quality Management Tools and Techniques*
Quality Management & Training (publications), 2002
ISBN 1904302041

Standards

BS 7850-1:1992 Total quality management. Guide to management principles Current issue
BS 7850-2:1994, ISO 9004-4:1993 Total quality management. Guidelines for quality improvement
Current issue

MODULE D4 – COMMUNICATION AND PROJECT MANAGEMENT

CQI Syllabus (Mandatory module) Level 5

Module D4 – Communication and project management

Rationale

The first half of this module intends to enhance the students' ability to become more effective communicators by developing the transferable skills of communication and presentation. The second half of the module introduces the student to the techniques and applications of project management.

Aims

- 1 To provide students with a broad view of communication theory
- 2 To develop the transferable skills of communication and presentation
- 3 To provide students with an understanding of the methods used in project management
- 4 To enable students to apply quality in project management

Learning Outcomes (number in brackets refers to the indicative content)

On successful completion of this module students will be able to:

- 1 Demonstrate an understanding of the key concepts of communication theory (1)
- 2 Identify and apply the principles of effective communication to enhance communication practice internal and external to the organisation (1)
- 3 Select, evaluate and apply primary and secondary research methods to appropriate circumstances (2)
- 4 Present information effectively in both written and oral formats (2)
- 5 Understand group dynamics and able to interact and lead a group effectively (2)
- 6 Understand the nature and context of project management in specific circumstances (3)
- 7 Apply and appraise appropriate project management and project planning techniques in given circumstances(3)(4)
- 8 Understand technical content and apply project management quality standards (5)

Indicative content

1 Communication

- 1.1 Theories, models and essential terms
- 1.2 Barriers to communication
- 1.3 Messages, media and channels
- 1.4 Using language and using images
- 1.5 Powers of persuasion, motivation and change

2 The organisational dimension

- 2.1 Information gathering and research activities
- 2.2 Analysis and presentation of data
- 2.3 Quantitative and qualitative data
- 2.4 Report writing
- 2.5 Making presentations
- 2.6 Group dynamics and communication

3 The nature and context of project management

- 3.1 Project definition
- 3.2 The project environment
- 3.3 Projects and company organisation structures

- 3.4 Project life-cycle
- 3.5 Work breakdown structures (WBS)
- 3.6 Control of projects
- 3.7 Project reviews

4 Project planning

- 4.1 Planning concepts
- 4.2 Managing the planning process
- 4.3 Network diagrams (Activity on Arrow A-o-A) (Activity on node A-o-N)
- 4.4 Critical path analysis (CPA)
- 4.5 Programme evaluation and review technique (PERT)

5 Quality in project management

- 5.1 BS 10006:2003
- 5.2 BS 6079-1:2002
- 5.3 BS 6079-2:2000
- 5.4 BS 6079-3:2000

Teaching and training strategy

The module is designed to have contact time of 45 hours, directed study of 75 hours and independent study of 80 hours.

The module delivery shall be outlined to students at the start of each module by an implementation plan.

Where national standards are referenced in the indicative content students will be required to know these for assessment purposes.

Assessment requirements

The assessment of this module will contain two elements:

Summative assessment	40%
Examination	60%
Total	100%

- 1 Summative assessment
 - 1.1 The summative assessment of student work will be considered within the module, and will consist of one assignment, which will be set by the CQI. This is to be marked by the tutor in the first instance against a set scheme and marks submitted to CQI before the examination.
 - 1.2 Assignment briefs will be issued to participating centres twice a year – August/September for January examination sitting and December/January for June sitting.
 - 1.3 The minimum pass mark for this assessment will be 40 per cent.
- 2 Examination
 - 2.1 Examinations will be held at dates determined by the CQI in January and June.
 - 2.2 Examination papers will be set and marked by the CQI.
 - 2.3 The minimum pass mark for the examination will be 40 per cent.

Awarding Criteria

To achieve success in the module, students must pass each assessment. Marks will be accredited fail, pass, merit or distinction.

Indicative research/reading

Journal(s)

International Journal of Project Management

Books

Brown, A., *Organisational Culture*, 2nd revEd.

FT Prentice Hall, 1998

ISBN 0273631470

Lock, D., *Project Management*

Gower, 2003,

ISBN 0566085518

Lockyer, K. & Gordon, J., *Project Management and Project Network Techniques*, 7th Ed.

FT Prentice Hall, 2005

ISBN 0273693786

Maylor, H., *Project Management*, 3rd Ed.

FT Prentice Hall, 2002

ISBN 0273655418

Stanton, N., *Mastering Communication*, 4th revEd.

Palgrave Macmillan, 2004

ISBN 1403917094

MODULE D5 – QUALITY PROJECT

CQI Syllabus (Mandatory module) Level 5

Module D5 – Quality project

Rationale

The D5 project is designed to enable students to explore, analyse and evaluate a quality related issue(s) that they have encountered in their working environment or have read within the extant quality management literature. As such this module brings together concepts, tools and techniques encountered within the CQI Diploma as a means to accomplish the D5 project. The module therefore allows students to demonstrate not only the knowledge they have gained during their programme of study but also the facility for them to integrate and apply concepts, best practice and quality management models either to inform organisational practice and/or personal learning of the subject area.

It is highly recommended that students complete the module D4 Communication and Project Management prior to starting the project. This will enable students to plan and present their projects in a professional manner.

Aims

- 1 To provide students with an opportunity to undertake independent work using a range of investigatory research based and reflective practice skills
- 2 To provide an opportunity for students to utilise and synthesise a range of concepts, tools and techniques encountered during their course of study
- 3 To develop the students critical awareness and analytical skills within the context of organisational best practice
- 4 To enable students to demonstrate effective written communication skills in the presentation of a professional project report
- 5 To enable students to demonstrate an understanding of the subject matter being studied by engaging in scholarly activity that has practical utility for either organisational learning and/or personal development

Learning outcomes

- 1 To plan, design and instigate a quality related project from conception to realisation by deciding on the various strategies of undertaking an individual project
- 2 To analyse and synthesise theoretical and management perspectives in the completion of the project
- 3 To critically analyse data and report the outcomes of a quality related project to fellow professionals
- 4 To evaluate, analyse, synthesise and interpret data and/or reflective practice as a means to offer valid conclusions for organisational development and/or personal learning
- 5 To critically reflect on conclusions reached as a result of undertaking the project and to offer recommendations for future organisational development and/or personal learning
- 6 To evaluate the learning, either organisational and /or personal, on the completion of the project

Indicative content

General

- 1 Students should choose a project based on a quality related topic.
- 2 Students are required to submit a project proposal via their education centre. This will be sent for comment to the D5 principal examiner who will comment on the suitability of the topic and subject area. It is incumbent on the student to heed the advice given by the principal examiner. They should ensure that they are pursuing the correct type of project to meet their needs for the completion of the project.

- 3 The project should take no longer than one calendar year to complete. If extra time is required students must request an extension from the CQI before this can be granted.

CHOOSING A PROJECT

To assist candidates to prepare for the D5 project it is advised that they consult the requirements of the module and decide an appropriate project which fulfils the requirements of either: organisational research, organisational practice; or desk-based research. The following provides guidance on the types of projects available for candidates to pursue. It must be stressed that whichever project is undertaken it has to have a suitable scope/focus in order to meet but not exceed the word limit.

1. Organisational research

This follows a traditional small-scale research project and is suitable for those who have access to primary and secondary data sources. This type of project requires data analysis procedures to be used and the interpretation of data to be made as a means to draw valid and informed conclusions.

Types of project could be:

 - The investigation of problem(s) or issue(s): This type of project could investigate peoples' perceptions of the introduction of a quality initiative, the management of performance measures or the relationship of performance and quality outputs (i.e. does a better managed workforce lead to the reduction in defective output?).
 - An evaluation study: The evaluation of quality tools and techniques, a change in processes a quality initiative. This type of research attempts to determine the success, cost effectiveness, gaps resulting from improvement in the effectiveness of existing or new initiatives or change processes (evaluative research). This type of research can use qualitative, quantitative or mixed strategy/methodology in its design.

Types of research design:

 - A qualitative piece of research which investigates a change process or the implementation of a quality initiative (an interpretive approach) that uses 'soft data' collection and analysis approaches and procedures (i.e. phenomenological, ethnographic, case study or action research approach),
 - A quantitative piece of research which investigates performance measurement or a correlation type of study (a positivist approach) that uses 'hard data' collection and analysis approaches and procedures (ie experiments, large surveys, correlation studies).
 - A mixed strategy/methodology piece of research which combines both qualitative and quantitative approaches within the same study.

2. Organisational practice

This type of project is a critique of a project, quality initiative or process that the candidate is or has been involved with in their organisation.

 - As such this type of project is suitable for candidates who have participated in 'real life' projects and initiatives – it thus emphasises the 'practitioner in the workplace' perspective.
 - The candidate should not collect primary and secondary sources of data or undertake any type of data analysis.
 - As such this type of project is a critical analysis and reflection of the phenomena of interest. The learning that the candidate has assimilated during the conduct of this type of project is also a central feature of this type of project.

In essence this type of project follows the same format and style of the organisational research project. It is suitable for those who do not have access to an organisation in which to conduct their project.

 - This type of project requires data analysis procedures to be used and the interpretation of data as a means to draw valid and informed conclusions. However, it differs from the organisational research project in that the candidate is not basing their research within a 'live' organisational context.
 - Therefore this is a piece of research that utilises the collection of secondary data only ie

documentary and historical sources that already exist (a hermeneutics approach – text interpretation).

Types of project could be:

- The focus upon a particular organisation of interest using the case study research approach or it could be a study of a contemporary quality phenomenon or issue of interest to the student.
- As in the case of the organisational research project this type of project could be evaluative in its focus.

3. Desk-based research Types of research design
This type of project research design could be qualitative, quantitative or of a mixed strategy/methodology in its design depending upon the approach the candidate wishes to take.

Teaching and learning strategy

The module is designed to have tutor contact time of 30 hours, directed study of 135 hours and independent learning study of 75 hours. At the commencement of the module students should be issued by the centre with a copy of the Project Guidelines. This document outlines what is required from the student and gives assistance regarding what is expected by the CQI for the completion of the project.

Assessment requirements

1. The assessment will be made at the end of the project.
2. Initial assessment and marking of the project will be undertaken by the education centre where the student is enrolled using the specified marking criteria for the appropriate project.
3. Projects that do not follow one of the prescribed project types will be returned without a grade.
4. The pass mark for each type of project is 40 per cent.
5. Projects that conform to one of the prescribed project types will be submitted to the CQI for moderation.
6. The CQI's decision will be final (usual appeals process applies)

Awarding criteria

Projects will be awarded the following grades: fail, pass, merit, distinction.

Indicative reading

Bolton, G., *Reflective Practice Writing and Professional Development*, 2nd Ed., SAGE Publications, 2005, ISBN 1412908124

Bryman, A. & Bell, E., *Business Research Methods* 2nd revEd., Oxford University Press, 2007 ISBN 0199284989

Collis, J. & Hussey, R., *Business Research*, 2nd Ed., Palgrave Macmillan, 2003, ISBN 0333983254

Creswell, J.W., *Research Design: Qualitative, Quantitative and Mixed Approaches*, 2nd Ed. SAGE Publications, 2002, ISBN 0761924426

Denscombe, M., *The Good Research Guide*, 3rd Ed., Open University Press, 2007, ISBN 0335220223

Saunders, M., Lewis, P. & Thornhill, A., *Research Methods for Business Students*, 3rd Ed. FT Prentice Hall 2006, ISBN 0273701487

MODULE D6 – QUALITY AND ENVIRONMENTAL MANAGEMENT

CQI Syllabus (Mandatory module) Level 5

Module D6 – Quality and environmental management

Rationale

This module provides students with an understanding of the interactions of quality management systems and environmental management systems, and the application of these management systems in industry.

Aims

- 1 To enhance students' awareness of the disciplines, and techniques of quality and environmental management
- 2 To enable students to understand the development of environmental management systems
- 3 To identify the interface between ISO 14000, EMAS and other management systems
- 4 To enable students to evaluate and interpret environmental management system techniques and apply them in an industrial environment
- 5 To enable students to appraise and report on an industrial activity with regard to possible environmental effects

Learning Outcomes (number in brackets refers to the indicative content)

On successful completion of this module students will be able to:

- 1 Understand technical content and historical development of environmental management systems, and the development of the standards BS 7750, ISO 14000, EMAS and ISO 9000 (1)
- 2 Compare and contrast the old and new versions of the standards
- 3 Analyse and interpret the interfaces between the standards and the implications for use (1)
- 4 Appraise environmental techniques in an industrial environment, including waste minimisation, energy management, and pollution control (2)
- 5 Analyse the risks, costs and benefits to an organisation of applying environmental management systems (3)
- 6 Analyse the impact business processes have on emissions to atmosphere, discharges to the water systems and the effects of land contamination (3)
- 7 Assess if such processes could result in significant short-term or long-term harm to the environment (3)

Indicative content

1 The technical concepts of management systems

- 1.1 Accredited certified management systems
- 1.2 Assessment of environmental aspects and impacts
- 1.3 European eco management and audit scheme

2 The impetus for the development of environmental management

- 2.1 Regulatory pressure
- 2.2 Green marketing
- 2.3 Consumer awareness
- 2.4 Stakeholder analysis
- 2.5 Environmental reporting at business, local, national and international level
- 2.6 Preparatory environmental review

3 The principles of environmental management applied in a quality assurance function

- 3.1 Documentation and control strategy

- 3.2 Determination of significance of environmental effects
- 3.3 Environmental audit
- 3.4 Emissions monitoring (effluent and plume dispersion)

Teaching and learning strategy

The module is designed to have contact time of 45 hours, directed study of 75 hours and independent study of 80 hours.

The module delivery shall be outlined to students at the start of each module by an implementation plan.

Where national standards are referenced in the indicative content students will be required to know these for assessment purposes.

Assessment requirements

The assessment of this module will contain two elements:

Summative assessment	40%
Examination	60%
Total	100%

1 Summative assessment

- 1.1 The summative assessment of student work will be considered within the module, and will consist of one assignment, which will be set by the CQI. This is to be marked by the tutor in the first instance against a set scheme and submitted to CQI before the examination.
- 1.2 Assignment briefs will be issued to participating centres twice a year – August/September for January examination sitting and December/January for June sitting.
- 1.3 The minimum pass mark for this assessment is 40 per cent

2 Examination

- 2.1 Examinations will be held at dates determined by the CQI in January and June.
- 2.2 Examination papers will be set and marked by the CQI.
- 2.3 The minimum pass mark for the examination is 40 per cent.

Awarding criteria

To achieve success in the module, students must pass each assessment. Marks will be accredited fail, pass, merit or distinction.

Indicative reading/research

Websites

Institute of Environmental Management and Assessment www.iema.net
Environment Agency www.environment-agency.gov.uk
EMAS UK www.emas.org.uk
EU DGXI <http://ec.europa.eu/environment>

Journal(s)

The ENDS Report – Institute of Environmental Management and Assessment Journal of Environmental Management Environmental Assessment

Books

Beaumont, J., Whitaker, B., & Pederson, L., *Managing the Environment*
Butterworth-Heinemann, 1993
ISBN 0750615745

Cleaver, B.A., *Environmental Management Systems for SMEs*
JL Publishing Ltd., 1999
ISBN 0953556301

Humphrey, N., and Hadley, M., *Environmental Auditing*
Poole, Palladian Law Publishing, 2000
ISBN 190255826X

Roberts, H., & Robinson, G., *ISO 14001 EMS Implementation Handbook*
Butterworth-Heinemann, 1998
ISBN 0750640200

Sheldon, C., & Yoxon, M., *Installing Environmental Management Systems*
Earthscan, London, 1999
ISBN 1853835757

MODULE D7 – INFORMATION TECHNOLOGY AND QUALITY MANAGEMENT

CQI Syllabus (Mandatory module) Level 5

Module D7 – Information technology and quality management

Rationale

This module provides students with an understanding of the application of information technology (IT) within quality management systems. The module also develops students' understanding of the principles and techniques of quality management in an IT environment.

Each student must be:

- Competent in the use of and have direct access to a computer
- Familiar with the internet and have access to the internet
- Familiar with the concepts and principles of quality management

Aims

- 1 To provide students with the concepts of IT and management Information
- 2 To develop an appreciation of the application and control of IT within a quality environment
- 3 To develop an understanding of the role of quality management in the development of IT systems and software
- 4 To enhance students' awareness of the statutory and regulatory issues associated with the storage, and archiving and use of information and the use of IT systems

Learning Outcomes (number in brackets refers to the indicative content)

On successful completion of this module the student will be able to:

- 1 Critically evaluate the historic development of, and need for, advances in Information Technology and their potential impact on quality management and management information (1), (6)
- 2 Direct and manage the use and application of IT hardware and software for the management of quality (2)
- 3 Critically evaluate a range of software applications to support the management of quality and related issues of business management (3)
- 4 Instruct others on the application of quality management principles to the development of software (4)
- 5 Appraise, analyse and manage appropriate measures for safeguarding information (5)
- 6 Manage health and safety issues relating to the use of computers (5)

Indicative content

1 Information technology management

- 1.1 History and development of management information systems
- 1.2 Network management and maintenance
- 1.3 Communication issues (information access and security)
- 1.4 Internet, intranet and e-commerce
- 1.5 Disaster recovery

2 IT in quality management

- 2.1 General application of IT to quality management (links to ISO 9001: 2000)
- 2.2 Quality management databases
- 2.3 Commercially available applications (eg Triangle: Achiever Plus)
- 2.4 Creating and using a database for calibration, customer complaints
- 2.5 Audit, corrective and preventive action systems
- 2.6 The management of documents
- 2.7 Records, backup and archiving

3 IT in systems management

- 3.1 Selection and evaluation of software
- 3.2 Systems integration issues (environment, health and safety etc)
- 3.3 MRP and ERP systems
- 3.4 Bespoke software (SPC, six sigma, FMEA etc)
- 3.5 Barcode and EDI systems

4 Software development

- 4.1 Software lifecycle
- 4.2 TickIT, ISO 9001 etc
- 4.3 Software project management
- 4.4 Configuration management
- 4.5 Software testing
- 4.6 Software reliability

5 Legal issues

- 5.1 Data protection
- 5.2 Health and safety (display screen, RSI etc)
- 5.3 Risk management
- 5.4 Computer misuse (case studies)
- 5.5 Viruses
- 5.6 Information security (ISO 17799 etc)

6 Latest developments and their impact

- 6.1 Digital communications (for example: video conferencing)
- 6.2 Virtual learning

Teaching and learning strategy

This module is designed to have contact time of 45 hours, directed study of 75 hours and independent study of 80 hours.

The module delivery shall be outlined to students at the start of each module by an implementation plan.

Where national standards are referenced in the indicative content students will be required to know these for assessment purposes.

Assessment plan

The assessment of this module will contain two elements:

Summative assessment	40%
Examination	60%
Total	100%

1 Summative assessment

- 1.1 The summative assessment of student work will be considered within the module and will consist of one assignment, which will be set by the CQI. This is to be marked by the tutor in the first instance against a set scheme and marks submitted to CQI before the examination for moderation.
- 1.2 Assignment briefs will be issued to participating centres twice a year – August/September for January examination sitting and December/January for June sitting.
- 1.3 The minimum pass mark for this assessment will be 40 per cent

2 Examination

- 2.1 Examinations will be held at dates determined by the CQI in January and June
- 2.2 Examination papers will be set and marked by the CQI.
- 2.3 The minimum pass mark for the examination will be 40 per cent.

Awarding criteria

To achieve success in the module, students must pass each assessment. Marks will be accredited fail, pass, merit or distinction.

Indicative reading/research

Books

Ginac, F.P., *Customer Oriented Software Quality Assurance*
Prentice Hall, 1997
ISBN 0135714648

Peltier, T.R., *Information Security Risk Analysis*, 2nd Ed.
Auerbach, 2005
ISBN 0849333466

Zimmerman, S.M. & Icenogle, M.L., *Statistical Quality Control Using Excel*
McGraw-Hill Education, 1999
ISBN 087389393x

Bocij, P. et al; Edited by Greasley,A, *Business Information Systems: Technology Development and Management for the E-Business*, 3rd Ed.
FT Prentice Hall, 2005
ISBN 0273688146

Websites

Legislation
www.hmso.gov.uk

Configuration management
www.cmtoday.com/yp/configuration_management.html

Software quality
www.tickit.org

Standards

ISO 9001:2000 QMS requirements
ISO 17799:2005
TickIT

CQI Education
The Chartered Quality Institute
12 Grosvenor Crescent
London SW1X 7EE
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E: education@thecqi.org
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Chartered Quality Institute