WM288-15 Quality Control & Project Management

26/27

Department
WMG
Level
Undergraduate Level 2
Module leader
Rinkal Desai
Credit value
15
Module duration
14 weeks
Assessment
100% coursework
Study locations
University of Warwick main campus, Coventry Primary
Distance or Online Delivery

Description

Introductory description

This module provides the fundamental knowledge in management and quality, relevant to Degree Apprenticeship standards S0023, ST0024, ST0025 and ST0027

This module will enable participants to employ statistical techniques to minimise process variation. Participants will gain an appreciation of how these tools are used to establish standards, provide a holistic framework to produce products and services with minimal variation, as well as conformance to established standards or specifications.

This module will also allow participants to explore the project landscape and evaluate principles, methodologies and techniques used in industry to execute, manage and effectively deliver projects. Participants will discuss the importance of effective planning, monitoring and controlling projects in order to ensure they are successfully delivered within time, cost and scope constraints.

This module is linked to C1, C8, C11, C14 and C15 of AHEP4.

LO1, C1
LO2: C14

LO3: C15
LO4: C8, C11

Module web page

Module aims

Participants will develop an understanding of inspection and reduction of variability in processes as well as an appreciation of the techniques of quality improvement.
Participants will discuss the importance of effective planning, monitoring and controlling projects in order to ensure they are successfully delivered within time, cost and scope constraints.

This module will enable students to apply key concepts on the 30 cat stream specific modules.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Quality Control

- Using Normal Distribution to model processes
- Identify variation in output
- Improve process quality
- Analysis of Control
- Specifications
- Process Capability
- Variable vs Attribute Data
- Fraction defective
- Demerits

Project Management

- Engineering Project Management:
- Characteristics of a project
- Project management methodologies
- Project planning, monitoring and control

Risk Management:

- Introduction to engineering and managing risks
- Risk management principles
- Risk diagnostic and analysis
- Risk treatment/reduction

Ethics, equality,
diversity and
inclusion:

- Diversity in engineering
- Importance of inclusive design (ergonomic design, inclusive product/projects design for disabilities
- Reasoned ethical
  choices informed by professional
  codes of conduct

Learning outcomes

By the end of the module, students should be able to:

- Calculate statistical process parameters to improve quality and industrial processes. (AHEP4 - C1)
- Discuss quality improvement methods with regards to a relevant industrial project/process/product/system (AHEP4 - C14)
- Apply engineering project management and change management principles in a commercial context (AHEP4 - C15)
- Argue the importance of ethical reasoning and inclusive approaches in engineering projects (AHEP4 - C8, C11)

Indicative reading list

Reading lists can be found in Talis

Specific reading list for the module

Subject specific skills

1. Collate and use a range of data sources and supporting documentation to support projects (S3 in ST0025, ST0023 & ST0024)
2. Select the best method for collating and conveying complex information using a range of data sources and supporting documentation (S2 in ST0023)
3. Observe, record and draw accurate and auditable conclusions from data and/or developmental or test evidence (S5 in ST0023, ST0025, ST0024 & ST0027)
4. Identify areas for improvement and lead continuous improvement activities such as improving safety, quality, technology solutions, operational processes, training and development, equipment performance or cost key performance indicators (KPIs) (S12 in ST0023 & S14 in ST0027)
5. Identify areas for improvement and lead continuous improvement activities in the operation and performance of the system or component (S14 in ST0024 & ST0025)
6. Select, use and apply approved problem-solving methods to solve complex problems and determine appropriate solutions or actions such as Define, Measure, Analyse, Improve, and Control (DMAIC), Failure Mode Effects Analysis (FMEA) or Plan-Do-Check-Act (PDCA). S2 in ST0024 & ST0025
7. Apply processes for project or programme management including outcomes such as escalation, audit or risk management and risk mitigation (S7 in ST0024)

8. Identify resources, such as digital tools or technologies, human, equipment, materials or data, to complete design and development projects or programmes of work. (S9 in ST0024)
9. Complete project documentation checks throughout the activity and report non-conformances. (S15 in ST0024)

Transferable skills

1. Problem Solving: Apply problem solving skills, information retrieval, and the effective use of general IT facilities
2. Communication: Present arguments, knowledge and ideas, in a range of formats
3. Information Literacy: Critical awareness of how information is gathered, used, managed and synthesised; Understanding of the relative value of different sources and the importance of provenance; The systematic collection, analysis and evaluation of information in the investigation of a topic
4. Professionalism: Aware of how to be efficient and resilient; Manages priorities and time; Self-motivated, setting and achieving goals, prioritising tasks.

Study

Study time

Type	Required
Lectures	10 sessions of 1 hour (7%)
Seminars	5 sessions of 1 hour (3%)
Online learning (scheduled sessions)	15 sessions of 1 hour (10%)
Online learning (independent)	5 sessions of 1 hour (3%)
Other activity	5 hours (3%)
Private study	50 hours (33%)
Assessment	60 hours (40%)
Total	150 hours

Private study description

Guided independent learning.
Online forum and discussion (asynchronous).

Other activity description

Consolidation quizzes (online), reading tasks
Online support / consultancy for the test and for the assignment.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A

	Weighting	Study time	Eligible for self-certification
Assessment component			
Quality Control Test	40%	24 hours	No
This computer based test comprises of a mixture of numerical and discursive questions. The discusrive questions will enable the student to apply the concepts of process control to their workplace (or relevant industrial example) where as the numerical questions are designed to assess the students capability with the process control tools which are introduced in the module.			
Reassessment component is the same			
Assessment component			
Project Management Report	60%	36 hours	Yes (extension)
An individual report based on the application and evaluation of project management concepts, tools and techniques in the workplace.			
Reassessment component			
Project Management Report			No
An individual report based on the application and evaluation of project management concepts, tools and techniques in the workplace.			

Feedback on assessment

Formative feedback given during seminars and revision classes
Written cohort-level summative feedback on Computer-based test.
Written feedback form - individual.

Availability

Courses

This module is Core for:

- Year 3 of UWMS-H7C3 Undergraduate Applied Professional Engineering (Control/Technical Support Engineer)
- Year 3 of DWMS-H7C7 Undergraduate Applied Professional Engineering (Control/Technical Support Engineer) (Degree Apprenticeship)
- Year 3 of UWMS-H7C2 Undergraduate Applied Professional Engineering (Electrical/Electronic Support Engineer)
- Year 3 of DWMS-H7C6 Undergraduate Applied Professional Engineering (Electrical/Electronic Support Engineer) (Degree Apprenticeship)
- Year 3 of UWMS-H7C1 Undergraduate Applied Professional Engineering (Manufacturing Engineer)
- Year 3 of DWMS-H7C5 Undergraduate Applied Professional Engineering (Manufacturing Engineer) (Degree Apprenticeship)
- Year 3 of UWMS-H7C4 Undergraduate Applied Professional Engineering (Product Design and Development Engineer)
- Year 3 of DWMS-H7C8 Undergraduate Applied Professional Engineering (Product Design and Development Engineer) (Degree Apprenticeship)