

646 Principles of Design of Experiments (DOE) in a food environment

SQA Unit Code

H160 04

Level 3

SCQF Level 7

SCQF Credit value 3

Unit Summary

This unit is about understanding the principles and application of Design of Experiments (DOE) as part of your organisation's drive to achieve excellence in food and drink manufacture and/or supply operations. This is important to the productivity and success of manufacture, processing and supply of food and drink within the food supply chain. Understanding current operational practice is central to the implementation of change, improvement, new practice, targets and a performance driven culture.

You will need to understand the principles in adequate depth to provide a sound basis for carrying out the activities to meet the business objectives set out in your achieving excellence strategy. You will need to know how to accurately present findings of analysis to relevant people within the organisation, including senior management. You will need to comply with your company policy for improvement, take responsibility for your actions, and refer any issues outside of the limit of your authority to others.

This unit is for you if your role requires you to analyse the performance of current operational practice in food and drink manufacture or supply. You may be a front line manager or supervisor and/or have responsibilities for all or part of the production/supply process.

In order to be assessed as competent you must demonstrate to your assessor that you can consistently perform to the requirements set out below. Your performance evidence must include at least one observation by your assessor.

You need to know and understand:

Evidence of knowledge and understanding should be collected during observation of performance in the workplace. Where it cannot be collected by observing performance, other assessment methods should be used.

1. How the health, safety and hygiene requirements of a work area can influence the design of experiment improvement technique
2. Design of experiments as an improvement technique in food manufacturing
3. Why we use DOE and how this can benefit an improvement project
4. The importance of determining the scope of an experiment
5. How to complete a DOE project
6. The tools and techniques used in the DOE
7. The data required to carry out the DOE
8. How population and sample size is used in the DOE
9. Alpha risk and Beta risk
10. How to calculate Mean, Median, Mode, Standard Deviation, Range and Variance

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| <ol style="list-style-type: none">11. How graphical display can be used to show main effects and interactions12. The meaning of a population and a sample in terms of the DOE13. Arrays design linked to the design of interactions <p>Levels of authority linked to problem resolution</p> |
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<p>Evidence of performance may employ examples of the following assessment:</p>

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| <ul style="list-style-type: none">• observation• written and oral questioning;• evidence from company systems (e.g. Food Safety Management System)• reviewing the outcomes of work• checking any records of documents completed• checking accounts of work that the candidate or others have written |
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