

Specification of Competency Standards
for the Testing, Inspection and Certification Industry
Unit of Competency

Functional Area - Testing Operations

Title	Perform chemical analysis on food
Code	105781L5
Range	This unit of competency (UoC) covers the abilities to carry out various chemical tests independently to analyse the nutrients, ingredient composition, preservatives and additives of foods and critically evaluate the compliance of food against regulatory requirements in testing laboratories. This UoC also includes the identification and quantification of chemical contaminants in food products.
Level	5
Credit	4 (For Reference Only)
Competency	<p>Performance Requirements</p> <p>1. Possess knowledge of various tests for analysing food nutrients, chemical composition of common food and beverages, food preservatives and additives, and chemical contaminants in food</p> <ul style="list-style-type: none"> • Explain the functional structures and properties of proteins, lipids, carbohydrates, vitamins, minerals and fibre. • Identify the chemical composition of food and search for appropriate test methods that can determine their chemical composition. • Describe the properties of common food additives and preservatives and identify appropriate methods for their identification and quantification. • Determine possible chemical food contaminants (e.g. heavy metals and pesticides) and their detection methods. • Specify local food safety ordinance and food labelling regulations and describe their implications for nutritional claims. • Identify international standards (e.g. Codex Alimentarius) and regulatory requirements on foods. • Employ the principles and concepts related to instrument performance check and operation, material preparation and testing of foods. • Describe the sampling and sub-sampling procedures for food testing. • Outline the steps in identifying and quantifying the analytes of food testing to give results in appropriate accuracy, precision, uncertainty and units. • Apply the concepts of uncertainty and instrument calibration to food testing. <p>2. Perform chemical analysis on food</p> <ul style="list-style-type: none"> • Evaluate the test request and sample characteristics. • Apply appropriate test method/standard in compliance with requirements of the test request and sample characteristics. • Select appropriate analytical instrument according to the test method/standard. • Carry out routine performance check of the selected analytical instrument according to manufacturer's instruction and/or relevant standard to ensure it is ready for food testing. • Set up the selected analytical instrument and optimise its performance by using appropriate calibration standards and adjusting instrumental operating parameters to suit sample and test requirements. • Evaluate the appropriateness of the sample for food testing. • Carry out appropriate test on the analyte in the food sample independently by measuring analyte response for standards, validation and quality control checks, and the sample. • Conduct sufficient measurements to record accurate and reliable test data with appropriate accuracy, precision and units. • Evaluate test results critically to confirm the compliance of food sample.

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	<p>3. Exhibit professionalism</p> <ul style="list-style-type: none"> • Troubleshoot analytical procedures or analytical instruments in case of any atypical observations/data/results being identified during sample analysis or performance check. • Ensure integrity and confidentiality of laboratory data and information by observing the code of conduct of the laboratory.
Assessment Criteria	<p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> • select and apply suitable test method/standard and analytical instrument for food testing by analysing the test request from the customer, • set up, optimise and operate the analytical instrument independently to carry out chemical analysis on food product independently according to the test method/standard and sample characteristics, • evaluate test results critically for the compliance of food product against relevant standards and regulatory requirements.
Remark	<p>Practitioners are required to have prior knowledge of the following UoCs:</p> <ul style="list-style-type: none"> • Apply atomic spectrometric