



# Qualification Specification:

## **OCN NI Level 3 Certificate in Laboratory Skills**

- **Qualification No: 610/1250/6**

## **OCN NI Level 3 Extended Certificate in Laboratory Skills**

- **Qualification No: 610/1251/8**

## **OCN NI Level 3 Diploma in Laboratory Skills**

- **Qualification No: 610/1252/X**



# 1. Specification Updates

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Key changes have been listed below:

| Section        | Detail of change         | Version and date of Issue |
|----------------|--------------------------|---------------------------|
| Qualifications | Extended to 31 July 2032 | V2.0 – May 2026           |
| Specification  | On new format            | V2.0 – May 2026           |
|                |                          |                           |

## 2. Contents

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## 3. Introduction to Open College Network Northern Ireland (OCN NI)

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The Open College Network Northern Ireland (OCN NI) is a UK recognised awarding organisation based in Northern Ireland. We are regulated by CCEA Regulation to develop and award regulated professional and technical (vocational) qualifications from Entry Level up to and including Level 5 across all sector areas. In addition, OCN NI is also regulated by Ofqual to award qualifications in England.

OCN NI is also an educational charity that advances education by developing nationally recognised qualifications and recognising the achievements of learners. We work with centres such as Further Education Colleges, Private Training Organisations, Voluntary & Community Organisations, Schools, SME's and Public Sector bodies to provide learners with opportunities to progress into further learning and/or employment. OCN NI's Strategic Plan can be found on the OCN NI website [www.ocnni.org.uk](http://www.ocnni.org.uk).

For further information on OCN NI qualifications or to contact us, you can visit our website at [www.ocnni.org.uk](http://www.ocnni.org.uk). The website should provide you with details about our qualifications, courses, contact information, and any other relevant information you may need.

### OCN NI Contact Details

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## 4. About this Specification

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This specification details OCN NI's specific requirements for the delivery and assessment of the **OCN NI Level 3 Certificate, Extended Certificate and Diploma in Laboratory Skills**.

This specification will provide guidelines for centres to ensure the effective and correct delivery of these qualifications. OCN NI qualification specifications are based on research and engagement with the practitioner community to ensure they provide appropriate skills and knowledge for learners.

The qualification specification will detail the following aspects of the OCN NI Level 3 Certificate, Extended Certificate and Diploma in Laboratory Skills.

- **Qualification Features:** this includes the key characteristics and features of these qualifications, such as their intended audience, purpose, and credit value.
- **Centre Requirements:** this details the prerequisites and obligations that centres must fulfil to be eligible to deliver and assess these qualifications. These include guidelines on staff qualifications, resources, and required procedures.
- **Structure and Content:** this details the structure and content of the qualifications including units, and any specific content that learners will be required to study.
- **Assessment Requirements:** this details assessment criteria and assessment methods for these qualifications, ensuring that summative assessment approaches are clear.
- **Quality Assurance:** the quality and consistency of delivery and assessment of these qualifications are of paramount importance to OCN NI. The mandatory quality assurance arrangements including processes for internal and external quality assurance that all centres offering these qualifications must adhere to are detailed.
- **Administration:** guidance on the administrative aspects of delivering these qualifications, including registration, certification, and record-keeping.
- Reference to other handbooks and policies as appropriate to the qualifications.

It is important to note that OCN NI will communicate any significant updates or changes to this specification in writing to our centres. Additionally, we will make these changes available on our official website at [www.ocnni.org.uk](http://www.ocnni.org.uk).

To stay current, please refer to the online version of this specification as it is the most authoritative and up-to-date publication. Be aware that downloaded and printed copies may not reflect the latest revisions.

#### 4.1 Additional Support

OCN NI offers a comprehensive range of support services designed to assist centres in meeting the delivery and quality assurance requirements of OCN NI qualifications. These services include:

- **Specimen Assessment Materials**: These booklets are created to assist learners in demonstrating the fulfilment of assessment criteria and organising the quality assurance prerequisites for each individual unit.
- **Qualification Support Pack**: A support pack has been developed to support centres in the delivery of these qualifications. The pack includes planning and assessment templates, guides to best practice, etc.
- **Professional Development for Educators**: OCN NI provides opportunities for professional development tailored to meet the various needs of practitioners and quality assurance staff. Centres can join our training sessions, available in both face-to-face and online formats, or explore a wealth of training materials by visiting [www.ocnni.org.uk](http://www.ocnni.org.uk)
- **OCN NI Subject Advisors**: Our team of subject advisors offers vital information and support to centres. They provide guidance on specification details, non-exam assessment advice, updates on resource developments, and various training opportunities. They actively engage with subject communities through an array of networks to facilitate the exchange of ideas and expertise, to support practitioners to provide quality education programs to learners.

All centres can access information, support and guidance to support the delivery and quality assurance of these qualifications by contacting their designated Business Development Advisor or by contacting us on [Contact Us | OCN NI](#)

## 5. About these Qualifications

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### 5.1 Qualification Regulation Information

OCN NI Level 3 Certificate in Laboratory Skills

Qualification Number: 610/1250/6

OCN NI Level 3 Extended Certificate in Laboratory Skills

Qualification Number: 610/1251/8

OCN NI Level 3 Diploma in Laboratory Skills

Qualification Number: 610/1252/X

Operational start date: 01 August 2022

Review date: 31 July 2032

The qualifications' operational start and end dates define the regulated qualifications' lifecycle. The operational end date is the final date for learner registration, while learners have until the certificate end date to complete the qualifications and receive their certificates.

It is important to note that all OCN NI regulated qualifications are listed on the Register of Regulated Qualifications (RQF), which can be found at [Ofqual Register](#). This register is maintained by Ofqual in England and CCEA Regulation in Northern Ireland. It contains information about qualifications that are regulated and accredited. It is a key resource for learners, employers, and educational institutions to verify the status and recognition of qualifications.

Centres must adhere to administrative guidelines diligently, with special attention to the fact that fees, registration, and certification end dates for the qualification may be subject to changes. It is a centre's responsibility to make itself aware of updates on any modifications to ensure compliance with the latest requirements. OCN NI provides centres with timely updates through various channels including website, newsletters and through this specification. Information on qualification fees can be found on the Centre Login section of the OCN NI website [www.ocnni.org.uk](http://www.ocnni.org.uk).

### 5.2 Sector Subject Area

A subject sector area is a specific category used to classify academic and vocational qualifications. Subject sector areas are part of the educational and qualifications framework to organise and categorise qualifications. The sector subject for these qualifications is:

**Subject Area:** 2.1 Science

**NOS:** [Home - Cogent Skills](#)

### 5.3 Grading

Grading for these qualifications is pass/fail.

### 5.4 Qualifications' Aim and Objectives

#### Qualifications' Aim

The aim of the OCN NI Level 3 Certificate, Extended Certificate and Diploma in Laboratory Skills will enable the learner to gain the skills and knowledge required to use laboratory equipment in order to competently perform testing and analysis activities in a laboratory environment.

#### Qualifications' Objectives

The objectives of the OCN NI Level 3 Certificate, Extended Certificate and Diploma in Laboratory Skills are to enable the learner to gain the following skills and knowledge applicable to different science-based laboratory occupations including:

- working practices
- mathematics for science
- microscopy techniques
- analytical techniques
- practical organic synthesis and laboratory separation techniques
- processing scientific data by statistical analysis
- bio-medical techniques

### 5.5 Target Learners

These qualifications are targeted at learners who wish to develop their laboratory science skills in order to progress into laboratory-based occupations. The qualifications will also support laboratory workers who wish to enhance their current laboratory and science skills.

### 5.6 Entry Requirements

Learners must be at least 16 years of age, have GCSE English and Mathematics or equivalent. Learners should also have a level 2 qualification in a science related discipline and/or two years relevant industry laboratory experience.

### 5.7 Progression

The OCN NI Level 3 suite of Laboratory Skills qualifications will enable learners to progress to higher level science qualifications and/or into science related occupations.

### 5.8 Delivery Language

These qualifications are exclusively available in English. If there is a desire to offer these qualifications in Welsh or Irish (Gaeilge), we encourage you to get in touch with OCN NI. They will assess the demand for such provisions and, if feasible, provide the qualification in the requested language as appropriate.

## 6. Centre Requirements for Delivering these Qualifications

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### 6.1 Centre Recognition

New and existing OCN NI recognised centres must apply for and be granted approval to deliver these qualifications prior to the commencement of delivery.

### 6.2 Qualification Approval

Once a centre has successfully undergone the Centre Recognition process, it becomes eligible to apply for qualification approval. The centre's capability to meet and sustain the qualification criteria will be assessed. Throughout the qualification approval process, OCN NI will aim to ensure that:

- centres possess suitable physical resources (e.g., equipment, IT, learning materials, teaching rooms) to support qualification delivery and assessment
- centre staff involved in the assessment process have relevant expertise and/or occupational experience
- robust systems are in place for ensuring ongoing professional development for staff delivering the qualifications
- centres have appropriate health and safety policies concerning learner equipment use
- qualification delivery by centres complies with current equality and diversity legislation and regulations
- as a part of the assessment process for these qualifications it may be useful for learners to have access to a practical work setting

### 6.3 Centre Staffing

To offer these qualifications centres are mandated to establish the following roles as a minimum, although a single staff member may serve in more than one capacity\*:

- Centre contact
- Programme Co-ordinator
- Assessor
- Internal Quality Assurance (IQA)

\*Note: An individual cannot serve as an IQA for their own assessments.

## 6.4 Tutor Requirements

Tutors responsible for delivering these qualifications are expected to possess a high degree of occupational competency. They should meet the following criteria:

- **Occupational Competency:** Tutors should demonstrate a clear understanding of the subject matter, including up-to-date knowledge. They should also have a minimum of one year's relevant experience in this area. This competence should enable them to effectively impart knowledge and practical skills to learners.
- **Qualifications:** Tutors should hold qualifications at a level that is at least one level higher than the qualification they are teaching. This ensures that they have the necessary academic foundation to provide in-depth guidance and support to learners.

These requirements collectively ensure that learners receive instruction from highly qualified and experienced instructors, thereby enhancing the quality and effectiveness of their educational experience.

## 6.5 Assessor Requirements

The assessment of these qualifications takes place within the centre and is subjected to OCN NI's rigorous quality assurance procedures. The achievement of individual units is based on the criteria defined in each unit.

Assessors play a pivotal role in ensuring the validity and fairness of assessments. They are required to meet the following criteria:

- **Occupational Competency:** Assessors should possess a high degree of occupational competency in the relevant subject matter. This expertise enables them to accurately evaluate and measure a learner's knowledge and skills. Additionally, they should hold qualifications at a level that is at least one level higher than the qualification they are assessing, ensuring their in-depth understanding of the subject matter.
- **Assessment Expertise:** Assessors should have direct or related experience in the field of assessment. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.
- **Assessors Qualification:** Assessors should hold or be currently undertaking a recognised assessor's qualification; or must have attended the OCN NI Assessment Training.
- **Comprehensive Assessment Oversight:** Assessors are responsible for evaluating all assessment tasks and activities comprehensively. They must thoroughly review and assess each element to ensure a fair and accurate representation of a learner's skills and knowledge.

These rigorous requirements uphold the quality and integrity of the qualification's assessment process, ensuring that learners receive a fair and reliable evaluation of their competencies.

## 6.6 Internal Quality Assurer Requirements

The Internal Quality Assurer plays a crucial role in the centre's internal quality assurance processes. The centre must designate a skilled and trained IQA who assumes the role of an internal quality monitor responsible for verifying the delivery and assessment of the qualifications.

The Internal Quality Assurer for these qualifications must meet the following criteria:

- **IQA Expertise:** IQA should have direct or related experience in the field of verification and have at least one year's occupational experience in the areas they are internally quality assuring. This includes knowledge of best practices in designing, conducting, and grading assessments. Their expertise ensures that assessments are both fair and valid.
- **IQA Qualification:** IQA should hold or be currently undertaking a recognised IQA qualification; or must have attended the OCN NI IQA Training.
- **Thorough Evaluation of Assessment Tasks and Activities:** IQA are tasked with conducting in-depth reviews and assessments of all assessment tasks and activities. Their responsibility is to ensure a comprehensive and meticulous oversight of each element to guarantee a just and precise reflection of a learner's abilities and knowledge and to ensure that all assessment and quality assurance requirements are fulfilled.

## 7. Qualification Structure

### 7.1 Qualification Purpose

The **OCN NI Level 3 Certificate, Extended Certificate and Diploma in Laboratory Skills** are unitised qualifications assessed on a pass/fail basis, requiring learners to demonstrate a comprehensive understanding of core laboratory principles and the level of proficiency expected within technical and industrial laboratory environments.

The purpose of these qualifications is to equip learners with the practical skills, scientific knowledge, and safe working practices needed to carry out routine laboratory tasks, operate equipment correctly, follow standard procedures, and record and interpret data with accuracy. Through applied learning and competency-based assessment, the qualifications prepare individuals to contribute effectively to laboratory operations across sectors such as manufacturing, life sciences, environmental testing, and quality assurance. They also provide a strong foundation for progression into higher-level scientific study, apprenticeships, or entry-level technical roles within laboratory-based industries.

### 7.2 Qualification Level

In the context of the OCN NI Level 3 Certificate, Extended Certificate and Diploma in Laboratory Skills it is essential to understand the significance of qualification levels, as they play a pivotal role in assessing the depth and complexity of knowledge and skills required for successful attainment. These qualifications align with Level 3, which signify a higher level of difficulty and intricacy. It's important to note that qualification levels in the educational framework range from Level 1 to Level 8, complemented by three 'entry' levels, namely Entry 1 to Entry 3.

### 7.3 Qualification Size

#### Total Qualification Time (TQT)

This represents the total amount of time a learner is expected to spend to complete the qualification successfully. It includes both guided learning hours (GLH) and independent study or additional learning time.

#### Guided Learning Hours (GLH)

These are the hours of guided instruction and teaching provided to learners. This may include classroom instruction, tutorials, or other forms of structured learning.

| <b>OCN NI Level 3 Certificate in Laboratory Skills</b>          |            |
|---|------------|
| Total Qualification Time (TQT):                                 | 150 hours  |
|   |            |
| Total Credits Required:   | 15 credits |
| Guided Learning Hours (GLH):                                    | 105 hours  |
| <b>OCN NI Level 3 Extended Certificate in Laboratory Skills</b> |            |
| Total Qualification Time (TQT):                                 | 260 hours  |
|   |            |
| Total Credits Required:   | 26 credits |
| Guided Learning Hours (GLH):                                    | 182 hours  |

| OCN NI Level 3 Diploma in Laboratory Skills |            |
|---|------------|
| Total Qualification Time (TQT):             | 520 hours  |
|   |            |
| Total Credits Required:                     | 52 credits |
| Guided Learning Hours (GLH):                | 369 hours  |

## 7.4 How to Achieve the Qualifications

To achieve the **OCN NI Level 3 Certificate in Laboratory Skills** learners must successfully complete a minimum of 15 credits. **\*\*The Work Placement in a Scientific Environment unit is excluded as an option for the Certificate\*\***.

To achieve the **OCN NI Level 3 Extended Certificate in Laboratory Skills** learners must successfully complete a minimum of 26 credits from the following optional units.

To achieve the **OCN NI Level 3 Diploma in Laboratory Skills** learners must complete a minimum of 52 credits from the following optional units.

## 8. Assessment Structure

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These qualifications are assessed through internal assessment and each unit is accompanied by specific assessment criteria that define the requirements for achievement.

### 8.1 Assessment Guidance: Portfolio

The portfolio for these qualifications is designed to provide a comprehensive view of a learner's skills and knowledge. It is a holistic collection of evidence that may include a single piece of evidence that satisfies multiple assessment criteria. There is no requirement for learners to maintain separate evidence for each assessment criterion.

It is essential that the evidence in the portfolio reflects the application of skills in real-world situations. Learners should ensure that they provide multiple examples or references whenever the assessment criteria require it.

### 8.2 Understanding the Units

The units outlined in this specification establish clear assessment expectations. They serve as a valuable guide for conducting assessments and ensuring quality assurance efficiently. Each unit within this specification follows a consistent structure. This section explains the operational framework of these units. It is imperative that all educators, assessors, Internal Quality Assurers, and other personnel overseeing the qualification review and familiarise themselves with this section to ensure a comprehensive understanding of how these units function.

- **Title:** The title will reflect the content of the unit and should be clear and concise.
- **Level:** A unit can have one of six RQF levels: Entry, One, Two, Three, Four or Five. All units within these qualifications are Level 3.
- **Credit Value:** This describes the number of credits ascribed to a unit. It identifies the number of credits a learner is awarded upon successful achievement of the unit. One credit is awarded for the learning outcomes which a learner, on average, might reasonably be expected to achieve in a notional 10 hours of learning.
- **Learning Outcome:** A coherent set of measurable achievements.
- **Assessment Criteria:** These enable a judgement to be made about whether or not, and how well, the students have achieved the learning outcomes.
- **Assessment Guidance and Methods:** These detail the different assessment methods within the unit that may be used.
- **Unit Content:** This provides indicative content to assist in teaching and learning.

## 9. Qualification Summary by Unit

### OCN NI Level 3 Certificate in Laboratory Skills

|  |           |
|--|-----------|
| Total Qualification Time (TQT) for this qualification: | 150 hours |
| Guided Learning Hours (GLH) for this qualification:    | 105 hours |

In order to achieve the OCN NI Level 3 Certificate in Laboratory Skills the learner must successfully complete a minimum of **15 credits**. **\*\*The Work Placement in a Scientific Environment unit is excluded as an option for the Certificate\*\*.**

### OCN NI Level 3 Extended Certificate in Laboratory Skills

|  |           |
|--|-----------|
| Total Qualification Time (TQT) for this qualification: | 260 hours |
| Guided Learning Hours (GLH) for this qualification:    | 182 hours |

In order to achieve the OCN NI Level 3 Extended Certificate in Laboratory Skills , the learner must successfully complete a minimum of 26 credits from the following optional units.

### OCN NI Level 3 Diploma in Laboratory Skills

|  |           |
|--|-----------|
| Total Qualification Time (TQT) for this qualification: | 520 hours |
| Guided Learning Hours (GLH) for this qualification:    | 369 hours |

In order to achieve the OCN NI Level 3 Diploma in Laboratory Skills , the learner must successfully complete a minimum of 52 credits from the following optional units.

| Unit Reference Number      | OCN NI Unit Code | Unit Title   | Credit Value | GLH | Level |
|----------------------------|------------------|--|--------------|-----|-------|
| <a href="#">M/650/2993</a> | CBF833           | Laboratory Working Practices                                     | 5            | 35  | Three |
| <a href="#">R/650/2994</a> | CBF834           | Scientific Mathematics   | 5            | 35  | Three |
| <a href="#">T/650/2995</a> | CBF835           | Additional Scientific Mathematics                                | 5            | 35  | Three |
| <a href="#">Y/650/2996</a> | CBF836           | Microscopy Techniques  | 5            | 35  | Three |
| <a href="#">A/650/2997</a> | CBF837           | Laboratory Analytical Techniques                                 | 6            | 42  | Three |
| <a href="#">D/650/2998</a> | CBF838           | Advanced Laboratory Analytical Techniques                        | 6            | 48  | Three |
| <a href="#">F/650/2999</a> | CBF839           | Practical Organic Synthesis and Laboratory Separation Techniques | 6            | 42  | Three |
| <a href="#">T/650/3000</a> | CBF840           | Processing Scientific Data by Statistical Analysis               | 5            | 40  | Three |
| <a href="#">Y/650/3001</a> | CBF841           | Scientific Project Planning and Delivery                         | 8            | 56  | Three |

|                            |        |  |    |     |       |
|----------------------------|--------|--|----|-----|-------|
| <a href="#">A/650/3002</a> | CBF842 | Biomedical Analysis                        | 5  | 40  | Three |
| <a href="#">D/650/3003</a> | CBF843 | Work Placement in a Scientific Environment | 15 | 105 | Three |

## 10. Unit Content

| Title   | Laboratory Working Practices   |
|---|--|
| Level   | Three  |
| Credit Value  | 5  |
| Guided Learning Hours (GLH)   | 35   |
| OCN NI Unit Code  | CBF833   |
| Unit Reference No   | M/650/2993   |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand health and safety within a laboratory environment. The learner will also be able to complete risk assessments and handle and dispose of relevant materials. |  |
| Learning Outcomes   | Assessment Criteria  |
| 1. Be able to carry out workplace risk assessments.   | 1.1. Summarise how to access information on relevant workplace risks and hazards.<br>1.2. Demonstrate how to identify risks and hazards in the workplace including how risks may be mitigated.<br>1.3. Demonstrate the use of and adherence to required workplace control measures.<br>1.4. Carry out a risk assessment for a given activity or workspace taking appropriate mitigations as required.  |
| 2. Be able to follow health and safety procedures for scientific or technical activities.   | 2.1. Explain how health and safety measures in a given scientific organisation comply with relevant health and safety legislation.<br>2.2. Follow organisational laboratory procedures for a given scientific or technical activity in line with risk assessments.<br>2.3. Summarise the procedures to be followed in the event of incidents or accidents.<br>2.4. Summarise emergency procedures for the organisation identified in AC 2.1. |
| 3. Be able to safely handle and dispose of materials and waste.   | 3.1. Explain the process for the safe storage of materials.<br>3.2. Demonstrate safe and appropriate handling of materials.<br>3.3. Demonstrate safe and appropriate disposal of waste, used and unwanted materials.   |
| 4. Be able to communicate effectively in written format within a scientific workplace.  | 4.1. Produce the following to communicate effectively within a scientific workplace:<br>a) laboratory notebook<br>b) scientific report<br>c) scientific poster   |
| 5. Be able to maintain, calibrate and use scientific instruments.   | 5.1. Maintain at least four scientific instruments<br>5.2. Calibrate safely and accurately the scientific instruments identified in AC 5.1.<br>5.3. Obtain accurate measurements using given methods for each of the scientific instruments identified in AC 5.1.  |

### Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

| Assessment Method                  | Definition   | Possible Content  |
|------------------------------------|--|---|
| Portfolio of evidence              | <p>A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes</p> <p>OR</p> <p>A collection of documents containing work that shows the learner's progression through the course</p> | <p>Learner notes/written work</p> <p>Learner log/diary</p> <p>Peer notes</p> <p>Record of observation</p> <p>Record of discussion</p> |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge   | <p>Record of observation</p> <p>Learner notes/written work</p> <p>Learner log</p>   |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course   | <p>Record of observation</p> <p>Learner notes/written work</p> <p>Tutor notes/record</p> <p>Learner log/diary</p>                     |
| E-assessment                       | The use of information technology to assess learners' work   | <p>Electronic portfolio</p> <p>E-tests</p>  |

| Title   | Scientific Mathematics  |  |
|---|---|--|
| Level   | Three   |  |
| Credit Value  | 5   |  |
| Guided Learning Hours (GLH)   | 35  |  |
| OCN NI Unit Code  | CBF834  |  |
| Unit Reference No   | R/650/2994  |  |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand and be able to apply mathematical concepts to science related problems. |   |  |
| Learning Outcomes   | Assessment Criteria   |  |
| 1. Be able to perform science-based calculations.   | 1.1. Use scientific calculators to perform science-based calculations.<br>1.2. Perform science-based calculations comprising the following:<br>a) International System of Units (SI)<br>b) mathematical prefixes and conversions<br>c) accuracy to given decimal places and significant figures<br>d) use of standard form<br>1.3. Perform science-based calculations comprising fractions, percentages and ratios. |  |
| 2. Be able to apply algebraic concepts and operations.  | 2.1. Apply basic algebraic functions and operations.<br>2.2. Transform algebraic expressions using the important identities.<br>2.3. Solve basic algebraic calculations.  |  |
| 3. Be able to collect, record and evaluate scientific data.   | 3.1. Collect scientific data generated manually and via computers.<br>3.2. Collect and record primary and secondary scientific data.<br>3.3. Identify and calculate errors associated with collection of primary experimental data.<br>3.4. Apply error minimisation methods experimental data.   |  |
| 4. Be able to display and interpret scientific data.  | 4.1. Select the appropriate formats for displaying given scientific data including:<br>a) charts<br>b) histograms<br>c) graphs<br>4.2. Interpret trends in given scientific experimental data.<br>4.3. Calculate mean, mode and median for given scientific experimental data.<br>4.4. Calculate scientific quantities from linear and non-linear graphs obtained from primary data.                                |  |
| Assessment Guidance   |   |  |
| The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.                                |   |  |
| Assessment Method   | Definition  | Possible Content   |
| Portfolio of evidence   | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR  | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |

|                                    |  |  |
|------------------------------------|--|--|
|                                    | A collection of documents containing work that shows the learner's progression through the course  |  |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge | Record of observation<br>Learner notes/written work<br>Learner log                             |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course         | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary |
| E-assessment                       | The use of information technology to assess learners' work   | Electronic portfolio<br>E-tests  |

| Title   | Additional Scientific Mathematics  |  |
|---|--|--|
| Level   | Three  |  |
| Credit Value  | 5  |  |
| Guided Learning Hours (GLH)   | 35   |  |
| OCN NI Unit Code  | CBF835   |  |
| Unit Reference No   | T/650/2995   |  |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand and be able to apply mathematical concepts to science related problems. |  |  |
| Learning Outcomes   | Assessment Criteria  |  |
| 1. Be able to apply algebraic and logarithmic functions and operations to solve scientific mathematical problems.                                       | 1.1. Illustrate how logarithms and algebraic notation may be used to express mathematical problems.<br>1.2. Solve given mathematical science problems using the following:<br>a) logarithms and indices<br>b) algebraic equations<br>c) quadratic equations<br>d) simultaneous equations |  |
| 2. Be able to apply the rules and properties of trigonometric functions to solve scientific mathematical problems.                                      | 2.1. Illustrate how trigonometric functions are derived.<br>2.2. Apply trigonometric function rules and properties to solve scientific mathematical problems.  |  |
| 3. Be able to apply the rules and concepts of calculus to solve scientific problems.  | 3.1. Illustrate the key rules and concepts of calculus and how they may be used to solve mathematical problems including differentiation and integration.<br>3.2. Solve given science problems using differentiation.<br>3.3. Solve given science problems using integration.            |  |
| Assessment Guidance   |  |  |
| The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.                                |  |  |
| Assessment Method   | Definition   | Possible Content   |
| Portfolio of evidence   | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows the learner's progression through the course  | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |
| Practical demonstration/assignment  | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge   | Record of observation<br>Learner notes/written work<br>Learner log   |
| Coursework  | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course   | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary                 |

E-assessment

The use of information  
technology to assess learners'  
work

Electronic portfolio  
E-tests

| Title   | Microscopy Techniques  |
|---|--|
| Level   | Three  |
| Credit Value  | 5  |
| Guided Learning Hours (GLH)   | 35   |
| OCN NI Unit Code  | CBF836   |
| Unit Reference No   | Y/650/2996   |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand how to apply microscopy techniques. |  |
| Learning Outcomes   | Assessment Criteria  |
| 1. Be able to prepare, use, and store microscopes including preparation of specimens.                               | 1.1. Demonstrate how to care for and use different microscopes and associated equipment including: <ol style="list-style-type: none"> <li>checking microscopes and equipment operate as required</li> <li>correctly setting up and using</li> <li>cleaning and preparation for storage</li> <li>storing appropriately</li> <li>requesting maintenance if issues identified</li> </ol> 1.2. Make slides and apply staining protocols to the preparation of specimens. |
| 2. Be able to safely prepare media aseptically, sterilise, disinfect and dispose of materials and specimens.        | 2.1. Carry out the following microscopy activities: <ol style="list-style-type: none"> <li>prepare media aseptically</li> <li>sterilize and disinfect materials and specimens</li> <li>dispose of cultures, specimens and related materials</li> </ol>   |
| 3. Be able to carry out microscopy for specimen examination.  | 3.1. Set up and use a light microscope to count and measure cells in a given specimen.<br>3.2. Set up and use a light microscope to observe structures of microorganisms under magnification normally and using an oil immersion lens.<br>3.3. Calculate the total magnification for a given specimen.<br>3.4. Produce three accurate, labelled biological drawings of the structures of microorganisms observed in AC 3.2.  |
| 4. Be able to carry out aseptic techniques to culture micro-organisms.  | 4.1. Apply aseptic techniques competently to culture micro-organisms including inoculation and preparation of growth media and measuring of microbial growth.  |

### Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

| Assessment Method                  | Definition  | Possible Content   |
|------------------------------------|---|--|
| Portfolio of evidence              | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows the learner's progression through the course | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge  | Record of observation<br>Learner notes/written work<br>Learner log   |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course  | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary                 |
| E-assessment                       | The use of information technology to assess learners' work  | Electronic portfolio<br>E-tests  |

| Title   | Laboratory Analytical Techniques   |
|---|--|
| Level   | Three  |
| Credit Value  | 6  |
| Guided Learning Hours (GLH)   | 42   |
| OCN NI Unit Code  | CBF837   |
| Unit Reference No   | A/650/2997   |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand analytical techniques required in a laboratory. |  |
| Learning Outcomes   | Assessment Criteria  |
| 1. Be able to prepare solutions, samples and serial dilutions.  | 1.1. Carry out the preparation of different solutions and samples including: <ol style="list-style-type: none"> <li>calculating and weighing out of required masses</li> <li>preparing standard solutions accurately</li> </ol> 1.2. Carry out the preparation of different serial dilutions including calculation of serial dilution factors.<br>1.3. Explain the difference between primary and secondary standards. |
| 2. Be able to determine the melting point and boiling point of samples.   | 2.1. Measure and record the following: <ol style="list-style-type: none"> <li>boiling point of a liquid sample</li> <li>the melting point of a solid sample</li> </ol> 2.2. Analyse the boiling and melting points identified in AC 2.1 to the respective purities of each sample.   |
| 3. Be able to carry out and evaluate volumetric analysis techniques.  | 3.1. Carry out volumetric analysis using the following laboratory techniques competently: <ol style="list-style-type: none"> <li>pipetting</li> <li>micro-pipetting</li> <li>use of a burette</li> <li>titration</li> </ol> 3.2. Evaluate the limitations of the volumetric analysis techniques applied in AC 3.1.   |
| 4. Be able to perform basic chromatographic analysis.   | 4.1. Perform chromatographic analysis competently using paper chromatography and thin layer chromatography (TLC) to obtain reliable and valid results.<br>4.2. Prepare a developing chamber.<br>4.3. Separate plant pigments using TLC.<br>4.4. Separate amino acids by paper chromatography.<br>4.5. Determine retention factor (R <sub>f</sub> ) for given experimental samples.                                     |
| 5. Be able to carry out calorimetry.  | 5.1. Apply calorimetry techniques competently to measure the phase change of a given substance.<br>5.2. Create a cooling curve from measurements made in AC 5.1 and calculate cooling rate.<br>5.3. Analyse the accuracy of measurements obtained in AC 5.1 identifying possible sources of error.   |

|                                      |  |
|--------------------------------------|--|
| 6. Be able to carry out colorimetry. | 6.1. Prepare at least six different concentrations from a standard solution and carry out absorptivity measurements.<br>6.2. Create a calibration curve from measurements made in AC 6.1.<br>6.3. Calculate unknown concentration of sample. |
|--------------------------------------|--|

#### Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

| Assessment Method                  | Definition  | Possible Content   |
|------------------------------------|---|--|
| Portfolio of evidence              | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows the learner's progression through the course | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge  | Record of observation<br>Learner notes/written work<br>Learner log   |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course  | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary                 |
| E-assessment                       | The use of information technology to assess learners' work  | Electronic portfolio<br>E-tests  |

| Title   | Advanced Laboratory Analytical Techniques   |                  |
|---|---|------------------|
| Level   | Three   |                  |
| Credit Value  | 6   |                  |
| Guided Learning Hours (GLH)   | 48  |                  |
| OCN NI Unit Code  | CBF838  |                  |
| Unit Reference No   | D/650/2998  |                  |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand to how use advanced laboratory analytical techniques. |   |                  |
| Learning Outcomes   | Assessment Criteria   |                  |
| 1. Be able to carry out absorptivity and concentration measurements and associated calculations and plotting of graphs.               | 1.1. Perform absorptivity measurements using colorimetry or ultraviolet (UV) analysis for different samples requiring colouring or additives.<br>1.2. Illustrate absorptivity and concentration from measurements obtained in AC 1.1 in a calibration curve.<br>1.3. Calculate concentration of unknown sample in a matrix.   |                  |
| 2. Be able to carry out infrared spectroscopy.  | 2.1. Explain how infrared spectra arise.<br>2.2. Carry out infrared spectroscopy including sample preparation.<br>2.3. Determine functional groups present through analysis of wave-numbers on given spectra.   |                  |
| 3. Be able to analyse data from elemental analysis and mass spectroscopy.   | 3.1. Describe the operation of a mass spectrometer.<br>3.2. Calculate empirical formula from percentage elemental composition.<br>3.3. Identify the molecular ion peak.<br>3.4. Calculate the molecular formula.<br>3.5. Identify the main fragmentation ions from mass spectrum.   |                  |
| 4. Be able to interpret Nuclear Magnetic Resonance (NMR) spectra.   | 4.1. Explain the principles of NMR and production of NMR spectra.<br>4.2. Illustrate the relationship between chemical shift and shielding.<br>4.3. Determine the number of chemically equivalent protons or carbon atoms in a molecule.<br>4.4. Illustrate the relationship between area under peak to the number of atoms in the molecule giving rise to the peak.<br>4.5. Interpret simple splitting patterns.<br>4.6. Demonstrate structure elucidation for simple molecules. |                  |
| 5. Know how to analyse high-performance liquid chromatography (HPLC) and gas chromatography (GC) chromatograms.                       | 5.1. Explain the principles of HPLC and GC chromatography.<br>5.2. Illustrate how to determine the concentration of an analyte by GC and HPLC.  |                  |
| Assessment Guidance   |   |                  |
| The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.              |   |                  |
| Assessment Method   | Definition  | Possible Content |

|                                    |   |  |
|------------------------------------|---|--|
| Portfolio of evidence              | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows the learner's progression through the course | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge  | Record of observation<br>Learner notes/written work<br>Learner log   |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course  | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary                 |
| E-assessment                       | The use of information technology to assess learners' work  | Electronic portfolio<br>E-tests  |

|   |   |  |
|---|---|--|
| Title   | Practical Organic Synthesis and Laboratory Separation Techniques  |  |
| Level   | Three   |  |
| Credit Value  | 6   |  |
| Guided Learning Hours (GLH)   | 42  |  |
| OCN NI Unit Code  | CBF839  |  |
| Unit Reference No   | F/650/2999  |  |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand how to carry out the preparation and purification of organic products. The learner will also be able to demonstrate laboratory separation techniques. |   |  |
| <b>Learning Outcomes</b>  |   | <b>Assessment Criteria</b>   |
| 1. Be able to prepare and test the purity of an organic liquid.   | 1.1. Prepare an organic liquid competently using appropriate techniques.<br>1.2. Test the purity of a given organic liquid and draw conclusions, relating to purity and yield and what may have impacted on purity and yield.   |  |
| 2. Be able to prepare and test the purity of organic solid.   | 2.1. Prepare an organic solid competently using appropriate techniques.<br>2.2. Test the purity of an organic solid and draw conclusions, relating to purity and yield and what may have impacted on purity and yield.  |  |
| 3. Be able to carry out filtration.   | 3.1. Carry out the separation of insoluble solids from solvents using gravity and vacuum filtration.  |  |
| 4. Be able to carry out distillation.   | 4.1. Assemble and use distillation apparatus competently for the following applications:<br>a) separating a solvent from a solution by simple distillation<br>b) separating two miscible liquids with a close boiling point by fractional distillation<br>c) measuring boiling points |  |
| 5. Be able to carry out reflux.   | 5.1. Assemble and use reflux apparatus and techniques competently to produce an organic compound.   |  |
| 6. Be able to carry out crystallization and recrystallization.  | 6.1. Separate a partially soluble solid from a solution by crystallization competently.<br>6.2. Purify a solid by recrystallisation competently.  |  |
| <b>Assessment Guidance</b>  |   |  |
| The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.  |   |  |
| <b>Assessment Method</b>  | <b>Definition</b>   | <b>Possible Content</b>  |
| Portfolio of evidence   | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows the learner's progression through the course   | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |

|                                    |  |  |
|------------------------------------|--|--|
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge | Record of observation<br>Learner notes/written work<br>Learner log                             |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course         | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary |
| E-assessment                       | The use of information technology to assess learners' work   | Electronic portfolio<br>E-tests  |

| Title  | Processing Scientific Data by Statistical Analysis  |  |
|--|---|--|
| Level  | Three   |  |
| Credit Value   | 5   |  |
| Guided Learning Hours (GLH)  | 40  |  |
| OCN NI Unit Code   | CBF840  |  |
| Unit Reference No  | T/650/3000  |  |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand how to display data and carry out appropriate statistical analysis of scientific data. |   |  |
| Learning Outcomes  | Assessment Criteria   |  |
| 1. Be able to display data in an appropriate format.   | 1.1. Display given data appropriately and accurately in each of the following formats:<br>a) tables<br>b) charts<br>c) graphs   |  |
| 2. Be able to produce linear graphs and determine line equations and coefficient of determination ( $R^2$ ) value.   | 2.1. Display given data with a linear trend on a graph.<br>2.2. Carry out regression analysis to determine the equation of the line and $R^2$ value for the graph displayed in AC 2.1.<br>2.3. Interpret results of regression analysis carried out in AC 2.2.  |  |
| 3. Be able to carry out statistical calculations.  | 3.1. Calculate the mean, median and mode for a given set of data.<br>3.2. Calculate the variance, standard deviation and co-efficient of variance for a given set of data.<br>3.3. Use the variance, standards deviation and co-efficient of variance calculated in AC 3.2 to determine precision.<br>3.4. Calculate the range and standard error of the mean for a given set of data.<br>3.5. Calculate absolute and relative error for data set identified in AC 3.4<br>3.6. Determine the confidence interval for a given set of data. |  |
| 4. Be able to perform statistical tests on scientific data.  | 4.1. Perform a t-test on given data collected from a given scientific experiment.<br>4.2. Perform a chi-squared test to support a scientific hypothesis.<br>4.3. Interpret results from given statistical tests undertaken in ACs 4.1 and 4.2.<br>4.4. Carry out an appropriate correlation method to investigate data collected from the scientific experiment in AC 4.1.<br>4.5. Interpret results of correlation methods applied in AC 4.4.  |  |
| Assessment Guidance  |   |  |
| The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.   |   |  |
| Assessment Method  | Definition  | Possible Content   |
| Portfolio of evidence  | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR  | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |

|                                    |  |  |
|------------------------------------|--|--|
|                                    | A collection of documents containing work that shows the learner's progression through the course  |  |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge | Record of observation<br>Learner notes/written work<br>Learner log                             |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course         | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary |
| E-assessment                       | The use of information technology to assess learners' work   | Electronic portfolio<br>E-tests  |

| Title  | Scientific Project Planning and Delivery  |
|--|---|
| Level  | Three   |
| Credit Value   | 8   |
| Guided Learning Hours (GLH)  | 56  |
| OCN NI Unit Code   | CBF841  |
| Unit Reference No  | Y/650/3001  |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to plan, conduct and report on a given scientific project. |   |
| Learning Outcomes  | Assessment Criteria   |
| 1. Be able to carry out a literature search and review to produce a scientific project proposal.                             | 1.1. Carry out a literature search and review into a given scientific area.<br>1.2. Analyse the outcomes of literature search and review undertaken in AC 1.1 to develop a scientific project proposal.   |
| 2. Be able to develop a plan for a practical scientific project.   | 2.1. Develop a project plan for a practical scientific project based on project proposal developed in AC 1.2 to include: <ul style="list-style-type: none"> <li>a) timeline</li> <li>b) health &amp; safety</li> <li>c) risk assessments</li> <li>d) contingency planning</li> <li>e) methodology</li> <li>f) resources and equipment</li> <li>g) recording and presenting results</li> </ul>   |
| 3. Be able to safely carry out a practical scientific project.   | 3.1. Carry out the practical scientific project in line with plan developed in AC 2.1 using appropriate safe working practices.<br>3.2. Collect, analyse and record results obtained from project carried out in AC 3.1 using an accurate, methodical and scientific approach.<br>3.3. Evaluate data obtained in AC 3.2, selecting and applying appropriate data analysis techniques to increase accuracy, reliability and validity.  |
| 4. Be able to review the practical scientific project.   | 4.1. Analyse results obtained from applying data analysis techniques in AC 3.3 using an appropriate scientific methodology.<br>4.2. Develop and present a report on findings and conclusions, using correct and appropriate scientific terminology, protocol and formatting and drawing valid conclusions.<br>4.3. Evaluate the conclusions in conjunction with others including any limitations, identifying possible areas for improvement, and recommendations for further investigation . |

### Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

| Assessment Method                  | Definition  | Possible Content   |
|------------------------------------|---|--|
| Portfolio of evidence              | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows the learner's progression through the course | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge  | Record of observation<br>Learner notes/written work<br>Learner log   |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course  | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary                 |
| E-assessment                       | The use of information technology to assess learners' work  | Electronic portfolio<br>E-tests  |

| Title  | Biomedical Analysis  |  |
|--|--|--|
| Level  | Three  |  |
| Credit Value   | 5  |  |
| Guided Learning Hours (GLH)  | 40   |  |
| OCN NI Unit Code   | CBF842   |  |
| Unit Reference No  | A/650/3002   |  |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand how to undertake the biomedical analysis of specimens. |  |  |
| Learning Outcomes  | Assessment Criteria  |  |
| 1. Be able to safely carry out diagnostic blood tests.   | 1.1. Explain the principles underpinning, procedures and reasons for carrying out blood tests.<br>1.2. Explain the importance of determining red blood cell counts and blood typing in haematology.<br>1.3. Demonstrate how to safely handle specimens and carry out the following blood tests:<br>a) determining red blood cell count using a haemocytometer<br>b) determining the blood type of a blood sample<br>1.4. Record the outcomes of tests undertaken in AC 1.3 in an appropriate format. |  |
| 2. Be able to carry out microscopic analysis of tissue slides.   | 2.1. Explain what is meant by histology and its importance in the diagnosis of disease.<br>2.2. Prepare different slides for microscopic analysis.<br>2.3. Carry out the microscopic analysis of the slides prepared in AC 2.2.<br>2.4. Record the outcomes of analysis undertaken in AC 2.3 in an appropriate format.   |  |
| 3. Be able to carry out urine analysis.  | 3.1. Explain the principles underpinning, procedures and reasons for carrying out urine analysis.<br>3.2. Explain the importance of carrying out urine analysis in the preliminary diagnosis of illness or disease.<br>3.3. Carry out the following urine tests safely including specimen preparation for:<br>a) visual analysis of urine samples<br>b) biochemical analysis<br>c) microscopic analysis<br>3.4. Record outcomes of the analysis undertaken in AC 3.3 in an appropriate format.       |  |
| Assessment Guidance  |  |  |
| The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.               |  |  |
| Assessment Method  | Definition   | Possible Content   |
| Portfolio of evidence  | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows   | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |

|                                    |  |  |
|------------------------------------|--|--|
|                                    | the learner's progression through the course   |  |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge | Record of observation<br>Learner notes/written work<br>Learner log                             |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course         | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary |
| E-assessment                       | The use of information technology to assess learners' work   | Electronic portfolio<br>E-tests  |

| Title   | Work Placement in a Scientific Environment   |
|---|--|
| Level   | Three  |
| Credit Value  | 15   |
| Guided Learning Hours (GLH)   | 105  |
| OCN NI Unit Code  | CBF843   |
| Unit Reference No   | D/650/3003   |
| <i>Unit purpose and aim(s):</i> This unit will enable the learner to understand the professional, personal and interpersonal skills required in a scientific workplace. |  |
| Learning Outcomes   | Assessment Criteria  |
| 1. Be able to demonstrate appropriate workplace behaviours.   | <p>1.1. Explain the importance of and demonstrate the following workplace behaviours:</p> <ul style="list-style-type: none"> <li>a) appearance</li> <li>b) attendance</li> <li>c) punctuality</li> </ul> <p>1.2. Demonstrate compliance with workplace health and safety policies and procedures including:</p> <ul style="list-style-type: none"> <li>a) Health and Safety at Work (Northern Ireland) Order 1978</li> <li>b) Control of Substances Hazardous to Health Regulations (Northern Ireland) 2003 (COSHH (NI))</li> <li>c) relevant workplace risk assessments</li> <li>d) use of personal protective equipment (PPE)</li> <li>e) safe manual handling</li> <li>f) emergency procedures</li> <li>g) housekeeping in accordance with organisational standard operational procedures</li> <li>h) adherence to internal and external regulatory requirements</li> </ul> |
| 2. Be able to work independently in a professional scientific environment.  | <p>2.1. Demonstrate working independently in a professional scientific environment including:</p> <ul style="list-style-type: none"> <li>a) carrying out given tasks using appropriate organisational skills and attention to detail</li> <li>b) good hand-eye coordination</li> <li>c) competent and accurate use of technical equipment</li> <li>d) identification, organisation and use of resources effectively</li> <li>e) application of scientific skills and techniques appropriate to the tasks identified above</li> <li>f) maintenance of accurate work records</li> </ul> <p>2.2. Analyse, interpret and evaluate data including identification of results requiring further investigation or advice of other staff.</p>   |

3. Be able to work collaboratively in a professional scientific environment.

3.1. Demonstrate effective team working in a professional scientific environment including:

- working harmoniously
- flexibility
- support of others
- effective use of verbal and written communications
- active participation in continuous business performance improvement

#### Assessment Guidance

The following assessment method/s may be used to ensure all learning outcomes and assessment criteria are fully covered.

| Assessment Method                  | Definition  | Possible Content   |
|------------------------------------|---|--|
| Portfolio of evidence              | A collection of documents containing work undertaken to be assessed as evidence to meet required skills outcomes<br>OR<br>A collection of documents containing work that shows the learner's progression through the course | Learner notes/written work<br>Learner log/diary<br>Peer notes<br>Record of observation<br>Record of discussion |
| Practical demonstration/assignment | A practical demonstration of a skill/situation selected by the tutor or by learners, to enable learners to practise and apply skills and knowledge  | Record of observation<br>Learner notes/written work<br>Learner log   |
| Coursework                         | Research or projects that count towards a learner's final outcome and demonstrate the skills and/or knowledge gained throughout the course  | Record of observation<br>Learner notes/written work<br>Tutor notes/record<br>Learner log/diary                 |
| E-assessment                       | The use of information technology to assess learners' work  | Electronic portfolio<br>E-tests  |

## 11. Quality Assurance of Centre Performance

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### 11.1 Internal Assessment

When delivering and assessing these qualifications, centres must align with stakeholders' expectations and address learners' needs by implementing a practical and applied programme. Centres have the flexibility to customise programmes to meet local requirements and establish connections with local employers and the broader vocational sector.

The Assessor should work with the Internal Quality Assurer to ensure that the assessment is planned in line with OCN NI requirements. Assessment Plans must be developed and approved by the Internal Quality Assurer prior to the delivery of the qualification.

All units within these qualifications must undergo internal assessment. Learners must provide evidence that they have appropriately met all assessment criteria required for that grade.

The assessment format for all units involves a task conducted after the delivery of the unit's content, or part of it, if multiple tasks are used. Tasks may exhibit in various forms, encompassing practical and written types. Please refer to 'OCN NI's Assessment Definitions Guide' for additional details.

A task constitutes a distinct activity completed independently by learners, separated from teaching, practice, exploration, and other activities guided by tutors. Tasks are assigned to learners with a specified start date, completion date, and explicit requirements for the evidence to be produced. Some tasks may include observed practical components and require diverse forms of evidence.

A valid assignment will enable a clear and formal assessment outcome, which meets the requirements of the assessment criteria. Assessment decisions are based on the specific assessment criteria given in each unit and set at each grade level. The way in which individual units are written provides a balance of assessment of understanding, practical skills and vocational attributes appropriate to the purpose of qualifications.

It is the Assessor's role to ensure that learners are appropriately prepared for assessment, this begins from induction onwards. Assessors should ensure that learners understand how assessment tasks are used to determine the award of credit, the importance of meeting assessment timelines, and that all learners work must be independently created, where source documents are used this should be appropriately referenced, learners should be aware of what would constitute plagiarism and the possible consequences.

When conducting the assessment, Assessors must ensure they do not provide direct input, instructions or specific feedback which may compromise the authenticity of the work submitted.

Once the Assessor has authenticated the learners work, they must transparently demonstrate the rationale behind their assessment decisions. Once a learner completes all assigned tasks for a unit, the Assessor will allocate a grade for the unit. Refer to the 'Unit Grading Matrix' for additional information on the grading process.

Once the Assessor has completed the assessment process for the task, the assessment decision is recorded formally, and feedback is provided to the learner. The feedback should show the learner the outcome of the assessment decision, how it was determined or where the criteria has been met, it may indicate to the learner why achievement of the assessment criteria has not been met. It must be clear to the learner that this Assessment outcome is subject to verification.

For further information on assessment practice, please see the 'OCN NI Centre Handbook'. Assessment Training is also available and can be booked through the OCN NI Website.

## 11.2 Internal Quality Assurance

The role of the Internal Quality Assurer is to ensure appropriate internal quality assurance processes are carried out. The Internal Quality Assurer must oversee that assessments are conducted in accordance with relevant OCN NI policies, regulations, and this specification.

The Internal Quality Assurer must ensure assessments are fair, reliable, and uniform, thereby providing a consistent standard for all learners.

Internal Quality Assurers are required to provide constructive feedback to Assessors, identifying areas of strength and those that may require improvement. This feedback contributes to the ongoing professional development of Assessors.

Contributing to the standardisation of assessment practices within the centre is an important function of this role. This entails aligning assessment methods, grading criteria, and decision-making processes to maintain fairness and equity.

Internal Quality Assurers will actively engage in the sampling and monitoring of assessments to ensure the consistency and accuracy of assessment decisions. This process helps identify trends, areas for improvement, and ensures the robustness of the overall assessment system.

For further information on Internal Quality Assurance practice, please see the 'OCN NI Centre Handbook'. Internal Quality Assurance Training is also available and can be booked through the OCN NI Website.

### 11.3 Documentation

For internal quality assurance processes to be effective, the internal assessment and Internal Quality Assurance team needs to keep effective records.

- The programme must have an assessment and Internal Quality Assurance plan. When producing a plan, they should consider:
  - the time required for training and standardisation activities
  - the time available to undertake teaching and carry out assessment,
  - consider when learners may complete assessments and when quality assurance will take place
  - the completion dates for different assessment tasks
  - the date by which the assignment needs to be internally verified
  - sampling strategies
  - how to manage the assessment and verification of learners' work so that they can be given formal decisions promptly
  - how resubmission opportunities can be scheduled.

The following documents are available from OCN NI and document templates can be found in the Centre Login section of the OCN NI website [www.ocnni.org.uk](http://www.ocnni.org.uk):

- A1 – Learner Assessment Record per Learner
- Learner Authentication Declarations
- Records of any reasonable adjustments applied for and the outcome – please see 'OCN NI's Reasonable Adjustments and Special Consideration Policy' for further information
- M1 Internal Quality Assurance Sample Record
- M2 Feedback to Assessor
- Records of any complaints or appeals

### 11.4 External Quality Assurance

All OCN NI recognised centres are subject to External Quality Assurance. External quality assurance activities will be conducted to confirm continued compliance with the CCEA Regulation General Conditions of Recognition, OCN NI terms and conditions and the requirements outlined within this qualification specification.

The External Quality Assurer is assigned by OCN NI. The External Quality Assurer will review the delivery and assessment of these qualifications. This will include, but is not limited to, the review of a sample of assessment evidence and evidence of the internal quality assurance of assessment and assessment decisions. This will form the basis of the External Quality Assurance report and will help OCN NI determine the centre's risk.

The role of the External Quality Assurer serves as an external overseer of assessment quality, working to uphold consistency, compliance, and continuous improvement within the assessment process. Their role is crucial in ensuring that assessments are valid, reliable, fair, and aligned with the required standards and regulations.

For further information on OCN NI Centre Assessments Standards Scrutiny (CASS) Strategy, please see the OCN NI Centre Handbook.

## 11.5 Standardisation

As a process, standardisation is designed to ensure consistency and promote good practice in understanding and the application of standards. Standardisation events:

- make qualified statements about the level of consistency in assessment across centres delivering a qualification
- make statements on the standard of evidence that is required to meet the assessment criteria for units in a qualification
- make recommendations on assessment practice
- produce advice and guidance for the assessment of units
- identify good practice in assessment and Internal Quality Assurance

Centres offering these qualifications must carry out internal standardisation activities prior to the claim for certification.

Centres offering units of an OCN NI qualification must attend and contribute assessment materials and learner evidence for standardisation events if requested.

OCN NI will notify centres of the nature of sample evidence required for standardisation events (this will include assessment materials, learner evidence and relevant Assessor and Internal Quality Assurer documentation). OCN NI will make standardisation summary reports available and correspond directly with centres regarding event outcomes.

## 12. Administration

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### 12.1 Registration

A centre must register learners for these qualifications within 20 days of commencement of the delivery of the programme.

For further information on learner registration please see the OCN NI Centre Handbook and the QuartzWeb Manual, available through the Centre Login section of the OCN NI website. Administration training is also available and can be booked through [www.ocnni.org.uk](http://www.ocnni.org.uk).

### 12.2 Certification

Once all internal quality assurance activities have been successfully completed, the centre can claim certification for the learner(s).

Certificates will be issued to centres within 20 working days from completion of a satisfactory external quality assurance activity, if appropriate, alternatively from the submission of an accurate and complete marksheet.

It is the responsibility of the centre to ensure that certificates received from OCN NI are held securely and distributed to learners promptly and securely.

For further information on the uploading of results please see the QuartzWeb Manual for guidance, administration training is also available and can be booked through [OCN NI](#)

### 12.3 Charges

OCN NI publishes all up-to-date qualification fees in its Fees and Invoicing Policy document. Further information can be found on the centre login area of the OCN NI website.

### 12.4 Equality, Fairness and Inclusion

OCN NI's are committed to ensuring all learners have an equal opportunity to access our qualifications and assessment, and that our qualifications are awarded in a way that is fair to every learner.

OCN NI is committed to making sure that:

- learners with a protected characteristic are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve for undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers

For information on reasonable adjustments and special considerations please see the OCN NI Centre Handbook and Reasonable Adjustments and Special Considerations Policy held in the back office of the OCN NI website.

## **12.5 Retention of Evidence**

OCN NI has published guidance for centres on the retention of evidence. Details are provided in the OCN NI Centre Handbook and can be accessed via the OCN NI website.

**OCN NI Level 3 Certificate in Laboratory Skills**

**Qualification Number: 610/1250/6**

**OCN NI Level 3 Extended Certificate in Laboratory Skills**

**Qualification Number: 610/1251/8**

**OCN NI Level 3 Diploma in Laboratory Skills**

**Qualification Number: 610/1252/X**

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