

Moderators' report

CAMBRIDGE TECHNICALS LEVEL 3 (2016)

APPLIED SCIENCE

**OCR Level 3 Cambridge Technical
in Applied Science**

Certificate: 05879

Extended Certificate: 05847

Foundation Diploma: 05848

Diploma: 05849

Extended Diploma: 05874

Summer 2025 series

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Introduction

Our Moderators' reports are produced to offer constructive feedback on centres' assessment of moderated work, based on what has been observed by the moderation team. These reports include a general commentary of accuracy of internal assessment judgements, identify good practice in relation to evidence collation and presentation and comment on the quality of centre assessment decisions against individual learning objectives. The report also highlights areas where requirements have been misinterpreted and provides guidance to centre assessors on requirements for accessing higher mark bands. Where appropriate, the report will also signpost other sources of information that centre assessors will find helpful.

OCR completes moderation of centre-assessed work in order to quality assure the internal assessment judgements made by assessors within a centre. Where OCR cannot confirm the centre's grades, we may adjust them in order to align them to the national standard. Any adjustments to centre grades can be viewed on the Interchange claim once processed by the moderator. Centres should also refer to their individual centre report provided after moderation has been completed. In combination, these centre-specific documents and this overall report should help to support centres' internal assessment and moderation practice for future series.

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If you have any queries, please contact our Customer Support Centre on 01223 553998 or email support@ocr.org.uk.

General overview

Centres have gained a sound understanding of the requirements of the qualification from training course presented by OCR. Centres have also contacted OCR Support Team and OCR Subject Advisors throughout the year to answer queries be they administrative, assessment or delivery. Centres have used their allocated moderator's feedback for improving assessment.

For moderation to progress, a moderation visit date must be agreed before a claim can be sampled. Before submitting a claim onto Interchange centres should make sure the individual grade being claimed by a candidate is correct. Centres realise that they do not need to make a claim when the whole cohort have completed but are submitting when the candidate is ready. Centres should consider submitting claims well before exam board result deadlines so internal candidate deadlines should follow to allow time for units to be internally assessed before a claim is made.

A strong centre internal verification system maintains the required assessment standards across the whole assessing team. Moderators will request evidence that internal verification takes place.

Most centres ensured the URS sheets were accurately completed. However, not all candidates page numbered their portfolios so when the assessor completed the URS sheet, they could not enter the page numbers for the different criteria onto the URS. This in turn hampers moderation as specific evidence is not easily located. Unit page numbering on the URS becomes more important when units are combined as a project.

Most assessor comments on the URS were personal to the candidate's quality of evidence. However, in a few cases, comments were just a repeat of the criteria.

The assessors should annotate the appropriate evidence in the portfolios. This guidance will indicate if the candidate has achieved the relevant grade criteria i.e. it will indicate to the candidate that the evidence is either missing or needs to be improved. It also helps the moderator if the grades for the various learning outcomes are indicated on the portfolios at the appropriate place.

Verbal presentation by candidates would be useful especially when carrying out investigations and discussions. A verbal presentation or viva would indicate whether AI has been used in evidence. A witness statement giving exactly the competences displayed by the candidate would evidence their practical ability. Again, witnessed audit trails of candidates' online interactive activities could be used to show the breadth and depth of candidates' competence.

All research was well referenced throughout by candidates.

Comments on individual units

Unit 4 – Human physiology

Centres have a good understanding of this unit. Candidates produced evidence that was concise, clear and logically presented using a wide range of formats. Higher performing candidates used strong visualisation to explain scientific concepts.

For LO1, candidates had a sound understanding of the organs that make up the digestive system and how they enable food to be digested and absorbed. Candidates enhanced their information with relevant images. They were able to explain the symptoms of a common disorder related to the digestive system and give a simple diagnosis if a patient presented symptoms. The use of x-ray images supporting the explanation was used by some centres whose candidates were considering a career in Radiology.

For LO2, candidates had a good understanding of the role of the musculoskeletal system in maintaining the structure and movement of the body. They were also able to explain the importance of the role of bone marrow to both the skeletal and immune system. Some candidates used sequenced images to show the movement of sections of the body and joints.

For LO3, candidates take and record basic cardiovascular measurements although not all candidates recorded their measurements in a clear format. A method of evidencing the competence of a candidate's response was to present photographs of the candidates and witness statements. Higher performing candidate responses were able to evaluate readings relevant to body health.

For LO4, to show the practical nature of the learning objective, centres presented evidence for taking measurements related to the respiratory system in several ways such as a sequence of photographs, storyboarding or witness statement. Again, stronger candidate responses were able to evaluate readings relevant to body health.

For LO5, centres tended to produce a straightforward 'texted' approach on why it is important to regulate body fluids. However, this was balanced by the wide range of evidence formats used throughout the whole unit.

For LO6, candidates used detailed examples to explain how the immune system functions when a vaccine is administered thereby preventing infection by certain diseases.

Unit 5 – Genetics

Centres had a good understanding of this unit. A limited range of evidence formats such as text and images tended to be used. Candidates were introduced to a range of scientific meanings and used a variety of resources to explain a range of genetic principles.

Assessment for learning



Stronger candidate responses were able to give greater detail:

- explain the importance of the process of meiosis in inheritance
- illustrate monohybrid and a dihybrid cross
- statistically compare the offspring predicted by genetics cross technique
- illustrated epistasis and gene linkage from the results of genetic crosses
- map using presented data and evaluate the limitations of chromosome mapping
- describe DNA sequencing and evaluate genetic profiling with statistical implications.

For LO1, candidates were able to describe and explain the importance of the process of meiosis in inheritance. They used extended prose to provide sufficient detail to cover the requirements of the assessment criteria.

For LO2, candidates were able to discuss the relationship between genotypes and phenotypes at a molecular and biochemical levels. They were able to demonstrate the chi-squared test (χ^2 -squared test) to compare expected and observed progeny in a cross.

Candidates were able to identify epistasis and were aware that with advances in DNA sequencing and having produced genomes for many species, it is now possible to produce physical maps of the genome.

For LO3, candidates were able to give good descriptions of the principles and advantages of DNA sequencing and the principles of genetic profiling and could evaluated the significance and limitations of genetic profiling techniques.

For LO4, candidates could assess the impact and implication of a DNA sequencing project and its impact, such as the Human Genome Project and then produce a report in terms the public will understand.

Unit 6 – Control of hazards in the laboratory

Centres have a good understanding of the requirements of this unit but did not always recognise the overall aim of the unit so the evidence tended to be compartmentalised.

Assessment for learning



Centres should consider the order when delivering LOs. By introducing LO3 initially, candidates will then be able to see the linkage between all three LOs.

So, teachers start with LO3 with a design brief for a specified containment level lab and explain how the lab is built, the equipment used and the procedures followed to prevent the spread of disease and the risk from hazards. By doing this, candidates will also realise they have to keep to regulations and legislation while considering if the legislation is actually any good.

This links the evidence together and focuses it within a laboratory situation.

For LO1, candidates should explain how organisms reproduce and so increase toxicity, as well as how pathogens are transmitted. By controlling conditions to prevent reproduction and transmission it will reduce risks in a laboratory; this is pertinent to the equipment and procedures within a laboratory. Stronger responses linked prevention to the hazard and so how risk may be minimised. However, candidates did not always focus on categorising hazards in a laboratory situation.

For LO2, a risk assessment is required for a laboratory procedure, and so candidates should be aware of how risk is determined.

Assessment for learning



A risk assessment is simply a means of determining the risk associated with work with a particular hazard. In the workplace, this is most often broken down into five steps.

The methods chosen to control the risks identified by the risk assessment should follow the hierarchical approach which is common to both MHSWR and COSHH.

Candidates should consider how laboratory acquired infections can be prevented as well as the legislation and guidance for working with biological agents and how it influences procedures and practices.

There is an opportunity for centres to explain how the 1974 Health and Safety Act applies to all organisations, whether they are iron works, railways, shops or schools and how pertinent it will be in their future careers.

When evaluating the effectiveness of current legislation and procedures for D1 and D2 candidates could analyse data from infection in various types of laboratory rather than use examples outside of the laboratory.

Candidates do not always seem to realise the detail required for a Level 3 qualification evaluation.

They should consider if there are still incidents happening and, if so, are there more incidents or fewer?

An approach might be research accident incidents before 2011 (when regulations changed due to the Pirbright foot and mouth incident) and those after. Candidates could use examples to support their evidence such as an Animal Health and Veterinary Laboratories Agency (AHVLA), where scientists were handling anthrax when something went badly wrong. They meant to send harmless samples, killed by heat, to labs within the UK, but somehow the tubes got mixed up. Instead of sending out dead material, the anthrax they sent was live and dangerous.

Assessment for learning



There is an opportunity to use quantitative data to support candidate evidence, such as:

Human error

Most human error is skill-based:

- skills error = 68.2%
- rules error = 25.0%
- knowledge error = 3.4%
- % other error = 3.4%.

This is consistent with the national data.

- Potential needle stick or other potential through the skin exposures with other contaminated objects = 47.1%
- Spills, splashes or dropped containers = 42.6%
- Bite/scratch from infected animal = 7.4%
- Centrifuge, shaker, etc. (equipment that could have acted as an aerosol when opened) = 2.9%.

By far, lab workers with potential through the skin exposures and spills-splashes or dropped-objects are the main causes of human error incidents. For the few incidents relating to centrifugations and shakers, most are caused by defective labware such as cracked centrifuge tubes, cracked shaker flasks, or other defective labware, rather than equipment failure.

For LO3, an initial introduction examining the different level of containment laboratory might enhance candidates' approach to compiling evidence. Some candidates' laboratory designs varied with some tending to be general and lack detail as well as explanation on occasions a sketch is presented with no idea of scale. Remember, a laboratory should have adequate space to allow for safe movement. The types of material used could have been included, there needs to be more detail of the materials that would be used for the furniture, flooring, work benches, etc. and how the design could minimise risks.

Others were more detailed, as a scenario had been set so the laboratory was designed with a specific purpose.

Assessment for learning



Ensure assessment of P4 evidence includes comments relating to the design specification of the equipment/materials used in construction to control risks i.e. does the candidate's design control risks which then leads onto procedures needed to reduce risks.

For D3 by listing containment control regulations and control of diseases in a laboratory the relevant legislation will introduce candidates to the idea that in most career situations there are relevant regulations and legislation including the 1974 Health and Safety Act.

Candidates only have to design a single laboratory; it is best that candidates decide on a specific containment level laboratory to design and state the level of containment for that lab.

Unit 7 – Nutrition

Centres have a very good understanding of this unit and used a wide variety of formats when presenting evidence. Candidates were able to outline the components of healthy balanced diets. They also understood the use of energy in the body and able to calculate the basal metabolic rate (BMR).

Practical investigations were undertaken with measurements recorded and analysed. They understood and applied food labelling and then apply this knowledge to dietary nutrition. The higher performing candidate was able to visualise data in the form of relevant charts.

For LO1, candidates had a sound understanding of the components of a healthy balanced diet and produced a variety of formats that would appeal to the public. Although candidates could be more specific and focus on specified professions as well as designated groups when considering diets.

Misconception



Carbohydrates are bad for you.

Fibrous, starchy carbohydrate foods are important for a balanced diet. These foods help you in feeling full and will help in preventing overeating. Dietary guidelines recommend that approximately half our calories come from carbohydrates.

For LO2, candidates understood that energy expenditure is the sum of the basal metabolic rate the thermic effect of food and the energy expended in physical activity. That metabolic processes require energy and the minimum amount of energy your body requires to carry out these chemical processes is called the basal metabolic rate (BMR).

Both practical investigations, finding energy content of a carbohydrate food and calculating the BMR of groups of people, were supported by tabulated results; photographs of candidates undertaking investigations and witness statements supported their practical competence.

For LO3, candidates produced a wide range evidence and detailed examples of conditions relating to dietary needs. A number of candidates produced booklets and leaflets targeting the public which demonstrated a detailed and sympathetic understanding of the subject.

D1 required candidates to recommend and justify nutritional requirements for a specific group of people; some candidates drew on their understanding of prior criteria and created a summary based on it.

For LO4, several centres approached this as a practical investigative activity collecting, analysing and then evaluating food labelling. Some centres also produced and justified labelling for a food product the targeted a specific group of people which summaries the whole unit.

Unit 8 – Cell biology

Those centres that presented Unit 8 had a good understanding of this unit. A limited range of evidence formats such as text and images tended to be used.

For LO1, candidates tended to produce evidence in the form of a PowerPoint presentation which focused on biological membranes, how they are involved in the movement of substances into and out of the cell, and the role of endomembrane systems. Candidates were able to explain how different types of cell chemical and electrical signalling systems work in the human body and how it might become defective.

For LO2, candidates used photographs and labelled images to demonstrate that they could carry out cell staining techniques, and the use of a haemocytometer and oil immersion microscopy. This was supported by witness statements as to the competency of the candidate's skill.

For LO3, candidates building on prior knowledge used a text format to describe and explain the stages of mitosis and cytokinesis, and if mitosis did not proceed properly. A number of centres started by examining prepared slides. They will have already studied certain types of cell structure in Unit 1 Science fundamentals, and now it is helpful to introduce them to some additional detail and the involvement of organelles such as centrioles and microtubules.

For LO4, candidates used a text format in describing the process of cellular differentiation and how genes are involved in this process. Again, using text candidates explained the use, and potential use of stem cells in medicine, explaining the techniques used in the collection and culture of stem cells and how they are then used in stem cell therapies.

Unit 10 – Testing consumer products

Centres carried out the practical investigations within the unit very well. A number of centres approached this unit with a project with linkage between learning objectives whereas some centre treated learning objectives independently.

For LO1, candidates considered carefully which product they researched so that they were able to obtain information so as to fully cover the grade criteria. They appreciated how regulation affects the quality imposed on their product. A number of candidates presented generic information over a range of products and then focused on a specific product.

For LO2, when candidates consider the tests in P2 they should consider the sensitivity, accuracy and reliability of each test. This would then link into M2 as well as support the development of regulations in LO1. Here, a number of centres introduced alternative techniques from the examined Unit 2 when discussing sensitivity and precision.

For LO3, in D1 some candidates linked the results in M3 to establish the comparison of results. Again, candidates can link to P2 (test selected) when considering the accuracy of their results. It is expected that a range of titrimetric techniques are used by the candidate. This learning objective reinforces scientific investigation procedure with measurements and observations should be recorded, in tabular form where appropriate. Measurements should be recorded to the degree of accuracy of the equipment used with candidates being careful in the use of significant figures and decimal places and with the evaluations needing to have depth with a reasoned opinion based on the evidence collected. Candidates should look carefully at using correct science in the evaluations and should also include comments on the validity and reliability of the investigation as well as how it could be improved. A percentage accuracy should also be considered against a given value.

For LO4, candidates carried out the investigations well with good supporting results. Centres should always carry out risk assessments before carrying out practical activities and be aware of chemicals that are not suitable for use in a school laboratory.

For LO5, a number of centres used a range of products from biological washing powder to antimicrobial solutions to test for their effectiveness. While some analysed group results from the investigations within the unit in terms of reliability and precision.

Unit 13 – Environmental surveying

A number of centres combine Units 13 and 14 into a 'project' based around an environmental practical investigation where an environmental survey results supported both units. The environmental investigation could be supported by the Environmental model assignment from Unit 6 which highlights the risks of fieldwork and how those risks can be minimised.

For LO1, candidates, by giving examples which were exemplified with images, were able to describe the impact of both human activities and natural events on the environment and how a human activity has impacted on the environment.

Human activity impact on the environment

Most centres considered a wide range of activities named in the unit specifications.

Increased human activity has led to a range of effects on the environment, such as:

- water shortages
- pollution
- deforestation
- soil erosion and desertification
- loss of biodiversity
- climate change
- sea level rise
- flooding.

Agriculture is a major land use. Around 50% of the world's habitable land has already been converted to farming land. Overall, farmland covers 38% of the world's land area and so has a major impact on the environment.

Candidates used relevant images when describing the impact of natural and human activities on the environment, the higher performing candidate also included relevant data in support of their explanations.

For LO2, candidates carried out an environmental impact assessment on a local area such as a local park or riverbank. There was a good use of photographs describing the location.

For LO3 and LO4, candidates explained how they would collect and analyse environmental data from soil and water. Candidates collected samples from the designated area and then carried out tests such as pH, mineral content, microorganisms.

Assessment for learning



The higher performing candidate clearly set out their approach when undertaking an environmental investigation:

- (a) Set objectives for environmental investigations, i.e.:
 - define the investigation (e.g. what is to be tested)
 - state the experimental hypotheses
 - establish controls of the investigation
 - establish variables to be measured.
- (b) Apply safe working practices in the field and laboratory, i.e.:
 - consider health and safety
 - carry out risk assessments both in the field and in the laboratory.
- (c) Use data collection techniques, i.e.:
 - sampling (e.g. quadrats)
 - aerial (e.g. Google maps)
 - qualitative and quantitative laboratory techniques (e.g. simple chemical tests, chemical flame tests, visual inspections).
- (d) Recording information, i.e.
 - qualitative and quantitative data
 - systematic recording (e.g. logbooks)
 - monitoring of performance against schedule plan.

For LO4, candidates presented outcomes from their environmental investigations and recommending actions to maintain a positive effect on the environment. Higher performing candidates included in their report sufficient material, such as explanation of the techniques used in collection and testing as well as the quality of the data that allowed the audience to make informed judgements. Presentations tended to be a PowerPoint, although a centre did allow candidates to present their report verbally to an audience with assessment supported by a witness statement.

Unit 14 – Environmental management

A number of centres combined Units 13 and 14 into a 'project' based around an environmental practical investigation where an environmental survey result supported both units.

The environmental investigation could be supported by the Environmental Model

For LO1, candidates compared the environmental characteristics of a natural environment to a built-up environment. These tended to be areas near to the centre such as a park and town centre. They went on and presented their comparisons usually in the form of a leaflet that described the principal characteristics of natural and built environments to a group who, while aware of and concerned with environmental matters, would benefit from improved background knowledge and interpretive skills.

For LO2, candidates carried out an environmental investigation, collecting data relevant to pollution control and producing a relevant analysis. This activity was linked to Unit 13. Candidates recorded in a logbook, records of all investigations which included: outcomes and analysis, full records of pollution data, and descriptions of field and laboratory techniques used.

For LO3, candidates produced PowerPoints outlining environmental regulations on the areas that they had investigated which were mainly parks and town centres. They considered environmental protection and planning, air and water quality management and waste handling in relation to investigated site.

For LO4, candidates evaluated the techniques these used when collecting and analysing environmental data commenting on reliability and precision.

For LO5, candidates used their evaluations of the evidence and techniques from LO4 to produce a presentation, usually a PowerPoint that gave conclusions and recommendations on the areas that they had investigated. The higher performing candidate was conscious of their intended audience and adjusted their presentation to communicate to that audience.

Unit 15 – Sustainable and renewable energy

Centres used relevant visualisation in the form of charts and graphs to convey a wide range of quantitative data to produce a concise and easy to follow presentations.

For LO1, candidates produced a discussion paper on how human activities can have an impact on energy consumption. Candidates included in their discussion:

- (a) the impact on the environment of energy production from fossil fuels
- (b) the impact of the use of energy by human activities
- (c) the impact of industrialisation and globalisation on finite resources
- (d) how human behaviour can be modified to reduce the impact of energy consumption.

Information was well supported by quantitative data in the form of graphs and charts which gave the reader a visual interpretation of the data trends.

For LO2, candidates carried out investigations into the energy transfer of wind energy and solar energy. From the recorded data energy efficiency of the energy transfer was calculated. This was expanded on by using secondary data to compare the energy efficiency of a range of energy sources. Again, information was well supported by quantitative data in the form of graphs and charts which gave the reader a visual interpretation of the data trends.

For LO3, candidates produced a report evaluating the contribution that a range of renewable energy technologies which included biological, chemical and physical that could make to energy demand.

For LO4, as the demand for electricity is increasing, candidates considered possible ways of supplying energy to a new community. Candidates produced planning material which presents an analysis of the advantages and disadvantages of possible different energy supply schemes. They considered:

- physical characteristics of the chosen general location
- energy target for the new community
- description of different energy sources available for electrical generation
- general considerations when planning an energy supply
- recommendation analysis.

Unit 18 – Microbiology

Centres have a good understanding of this unit.

For LO1, centres tended to give detailed descriptions with downloaded images but candidates did not always give a size or magnification of the images. A few centres approached the learning objective with a more practical approach where candidates were given a range of slides of microorganisms which they identified giving an analysis of their findings. This was linked to Unit 2 LO4 [Be able to examine and record features of biological samples] with candidates recording relevant data and making biological drawings while using a microscope. This approach gave a greater 'hands-on' scientific approach as candidates would be using Gram staining and DNA extraction methods.

For LO1, the information should be sufficient for a second person to be able to identify an unknown microorganism.

or LO2, candidates gave good descriptions of the use of microorganisms in agriculture but their evaluation of the consequences of the introduction of GM crops tended to be weak in detail and quantitative data. Their approach might be that they have to: 'convince a group to their held belief'.

Assessment for learning



Candidates need to identify the scientific benefits and possible pit falls then decide which outweighs the other; evidence can be extended by considering ethical values.

Candidates could discuss:

- do GM crops harm the environment?
- use of broad-spectrum herbicides
- possible loss of beneficial insects
- effects on soil
- escape of genes into weeds
- survival of herbicide tolerant plants
- cross-pollination
- pesticide resistance
- loss of biodiversity
- help feed the poor
- farming and trade policies
- healthcare benefits
- increasing yields.

For LO3, candidates gave a general overview of the four industries given in the specifications. The naming of relevant microorganism strengthens the detail. The grade criteria requires only one food to be produced – consideration could be given to linking with Unit 21 Product testing techniques. Centres produced a range of food products however some foods allowed a greater depth of knowledge to be shown this was reflected in M4 with some candidates giving little when giving evidence for biochemical processes. Candidates did not always post- test their product to see if optimum conditions have been met.

For LO4, centres were able to give detailed evidence supported with images and the use of case studies to broaden their evidence with summaries from The World Health Organisation, England, the Health and Social Care Act 2008 Code of Practice. The distinction candidate was able to support their evidence with quantitative data and trends supported by graphical evidence.

Unit 19 – Crop production and soil science

Centres have a good understanding of this unit

For LO1, candidates were able to research and describe the crops grown across the UK focusing on their production cycle and yields and how production might vary monthly as climatic conditions alter. To maximise crop production, farmers use a variety of techniques and farming methods, some of which can impact on the wider environment. They need to understand that there is a public debate on which farming methods should be used but should food production take precedence over stewardship of the environment.

For LO2, candidates researched how to maximise commercial plant growth as it is extremely important in ensuring our growing population has enough food. Their focus should be on how plant yields can be maximised, and how the selection of the appropriate commercial plant variety is an important factor but candidates should also consider maintaining the biodiversity of plant species for agriculture while keeping in mind genetic engineering in plants, and how it can be used to introduce desirable genes/characteristics into commercially grown plants.

Soil health

Soil health, which is vital for crop production, is dependent on environmental conditions and farming practices candidates should appreciate how a range of factors can affect crop growth such as mineral nutrients:

- macronutrients: nitrogen, phosphorus, potassium, calcium, magnesium, sulphur
- micronutrients: boron, copper, iron, chloride, manganese, molybdenum, zinc.

For LO3, candidates grow a plant of commercial importance and monitor its growth. The choice of plant might be limited by the time that candidates will have on the timetable and a fast-growing plant, such as radish might be chosen.

For LO4, candidates carry out soil testing. This is important as crop production will depend on the quality of the soil. Chemical indicators can be used to produce data on the soil water and the nutrients within it; physical indicators produce data on the stability of the ground and how it will support the crop physically as well as water drainage within it; biological indicators produce data on biodiversity in the soil (such as earthworms, pests), filtering of water as well as nutrients in organic matter.

Soil testing

Candidates should focus on:

- soil acidity (pH)
- soil organic matter
- mineral nutrients, such as P, K and M
- soil particulates
- soil compaction.

Unit 21 – Product testing techniques

Centres carried out the practical investigations within the unit very well.

Unit linkage

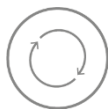
Some centres linked activities across units to produce a project approach, linking testing practicals in Unit 21 to production in Unit 18. Also, the laboratory logbooks used by centres in Unit 2 linking to the other units in the qualification displayed a great understanding of a 'real' scientific approach to learning.

For LO1, candidates considered carefully which product they researched so that they were able to obtain information so as to fully cover the grade criteria. They appreciated how regulation affects the quality imposed on their product. A number of candidates presented generic information over a range of products and then focused on a specific product.

For LO2, when candidates consider the tests in P2 they should consider the sensitivity, accuracy and reliability of each test. This then would link into M2 as well as support the development of regulations in LO1.

For LO3, in D1 some candidates linked the results in M3 to establish the comparison of results. Again, candidates can link to P2 (test selected) when considering the accuracy of their results. It is expected that a range of titrimetric techniques are used by the candidate.

Assessment for learning



The approach should be that all measurements and observations should be recorded, in tabular form where appropriate. Measurements should be recorded to the degree of accuracy of the equipment used with candidates should be careful in the use of significant figures and decimal places with the evaluations needing to have depth with a reasoned opinion based on the evidence collected.

Candidates should look carefully at using correct science in the evaluations and should also include comments on the validity and reliability of the investigation as well as how it could be improved. A percentage accuracy should also be considered against a given value.

For LO4, candidates carried out the investigations well with good supporting results. Centres should always carry out risk assessments before carrying out practical activities and be aware of chemicals that are not suitable for use in a school laboratory.

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- gain a deeper understanding of the marking criteria and how to apply them consistently and accurately
- see examples of student work with commentary and feedback from OCR moderators
- have the opportunity to practise marking and compare your judgements with those of OCR moderators
- receive instant feedback and guidance on your marking and standardisation skills
- be able to track your progress and achievements through the courses.

How can you access our online courses?

Access courses from [Teach Cambridge](#). Teach Cambridge is our secure teacher website, where you'll find all teacher support for your subject.

If you already have a Teach Cambridge account, you'll find the link to the **Online courses** under the **Assessment** or **Training** tab – hover over **Assessment** or **Training** on the horizontal menu and select **Online courses** from the dropdown.

If you don't have a Teach Cambridge account yet, ask your exams officer to set you up – just send them this [link](#) and ask them to add you as a Teacher.

Access the courses **anytime, anywhere and at your own pace**. You can also revisit the courses as many times as you need.

Which courses are available?

We recommend all teachers complete the module on Online courses – NEA for their subject. These courses provide subject-specific information about course content; how to prepare for planning, marking and submitting; and support with understanding the marking criteria.

The subject-specific courses are tailored for each qualification that has non-exam assessment (NEA) units, except for AS Level and Entry Level. They cover the following topics:

- the structure and content of the NEA units
- the assessment objectives and marking criteria for the NEA units
- examples of student work with commentary and feedback for the NEA units
- interactive marking practice and feedback for the NEA units.

We are also developing courses for some of the examined units, which will be available soon.

How can you get support and feedback?

If you have any queries, please contact our Customer Support Centre on 01223 553998 or email support@ocr.org.uk.

We welcome your feedback and suggestions on how to improve the online courses and make them more useful and relevant for you. You can share your views by completing the evaluation form at the end of each course.

Tell us what you think

Your feedback plays an important role in how we develop, market, support and resource qualifications now and into the future. We want you and your students to enjoy and get the best out of our qualifications and resources, but to do that we need your honest opinions to tell us whether we're on the right track or not.

You can email your thoughts to resources.feedback@ocr.org.uk or visit our [feedback page](#) to learn more about how you can help us improve our resources.



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Contact the team at:

☎ 01223 553998

🖥 ocr.org.uk

To stay up to date with all the relevant news about our qualifications, register for email updates at ocr.org.uk/updates

Visit our Online Support Centre at support.ocr.org.uk



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