2016 Suite

OCR
Oxford Cambridge and RSA

Cambridge **TECHNICALS LEVEL 3**

APPLIED SCIENCE

QUALIFICATION HANDBOOK

Cambridge TECHNICALS 2016

OCR Level 3 Cambridge Technical Certificate in Applied Science (05879)
OCR Level 3 Cambridge Technical Extended Certificate in Applied Science 05847)
OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science 05848)
OCR Level 3 Cambridge Technical Diploma in Applied Science (05849)
OCR Level 3 Cambridge Technical Extended Diploma in Applied Science (05874)
First teaching from September 2016
Version 5 - December 2018

ocr.org.uk/science

About this handbook

The information we've provided in this handbook is correct at the time we produced it. Occasionally we may update it so please check the qualification webpages for the most up-to-date information.

Staff involved in delivering these qualifications must have access to and understand the requirements in this handbook.

For information on how to administer these qualifications please follow the link to OCR's Administration area, www.ocr.org.uk/administration/. You'll find all the details about how the qualifications run, what you need to do and when. It covers everything from becoming an OCR centre, to making entries, claiming certificates, special arrangements and contacting us for advice.

About us

OCR is a leading UK awarding body we're part of the Cambridge Assessment Group, a department of the University of Cambridge.

We are a not-for-profit organisation so success is measured through the impact and reach of our activities and the scale of our contribution to helping people realise their aspirations.

We work in partnership with teachers, employers, higher education and government to develop general and vocational qualifications that will equip students of all abilities, with the knowledge and skills they need to reach their full potential.

Thank you

We've worked with centres, employers and higher education institutions to design these qualifications.

Thank you to everyone who provided support and feedback as we developed the new Cambridge Technicals in Business. Particular thanks go to those of you who helped us shape these qualifications by so generously giving your own time to share your advice and experiences.

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1 Qualifications overview

Size and purpose at a glance

This suite is made up of five qualifications and they share some common units.

Units 1, 2, 3, 22, and 23 are assessed by exam and marked by us.

The remaining units are internally assessed by your centre staff and moderated by OCR.

OCR Level 3 Cambridge Technical Certificate in Applied Science

180 GLH equivalent to one AS level in terms of size	**2 mandatory units:** • Unit 1 (90 GLH) • Unit 2 (90 GLH)	It will provide learners with the opportunity through applied learning to develop core principles and specialist knowledge and understanding required in the science sector.

OCR Level 3 Cambridge Technical Extended Certificate in Applied Science

360 GLH equivalent to one A level in terms of size	**5 mandatory units:** • Units 1 and 2 (each 90 GLH) • Units 6, 18 and 21 (each 60 GLH)	It will provide learners with the opportunity through applied learning to develop the core specialist knowledge, skills and understanding required in the science sector.

OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science

540 GLH equivalent to one and a half A levels in terms of size	**7 mandatory units** • Units 1 and 2 (each 90 GLH) • Unit 3 (120 GLH) • A further 4 mandatory units from within a selected pathway, (each unit is 60 GLH)	It will provide learners with the opportunity through applied learning to develop a broad range of skills and understanding required in the science sector. They will develop further skills by completing units from a specialist pathway. There are three specialist endorsed pathways: • Human science • Environmental science • Food science

OCR Level 3 Cambridge Technical Diploma in Applied Science

720 GLH
equivalent to two A levels in terms of size.
	10 units:
	• 6 mandatory units
	  o Units 1and 2 (each 90 GLH)
	  o Unit 3 (120glh)
	  o A further 3 mandatory units from one of the selected endorsed pathway (each 60 GLH).
	• A choice of 4 further optional units from within the selected endorsed pathway (each 60 GLH).
		It will provide learners with the opportunity, through applied learning, to develop core skills and understanding required in the science sector.
		They will develop further skills by completing units from a specialist pathway. There are three specialist endorsed pathways:
		• Human science
		• Environmental science
		• Food science

OCR Level 3 Cambridge Technical Extended Diploma in Applied Science

1080 GLH
equivalent to three A levels in terms of size
	15 units:
	• 13 mandatory units:
	  o Units 1 and 2 (each 90 GLH)
	  o Unit 3 (120GLH)
	  o Units 4, 5, 6, 7, 8, 13, 14 and 16 (each 60 GLH)
	• A choice of 2 optional units from 11, 15, 17, 18, 19 and 20 (each 60 GLH)
		It will provide learners with the opportunity, through applied learning, to develop core skills and understanding required by the science sector.
		They will develop further skills by completing optional units. It contains a broad choice of optional units to allow flexibility in the choice of science sectors and future career pathways.

You'll find the units and supporting documents for these qualifications on our website.

OCR Level 3 Cambridge Technical Certificate in Applied Science at a glance

Qualification number	603/0394/3	**OCR Entry code**	05879
First registration date	01/09/16	**Approved age range**	16–18, 19+
Guided Learning Hours (GLH)	180	**UCAS points**	You'll find further information on the UCAS website.
Total Qualification Time (TQT)	250	**Performance information**	See Section 2 performance information
Exam sessions each year	January and June	**Eligible for funding**	It's designed to meet the funding requirements of a 16–19 study programme.

Entry requirements	There are no formal entry requirements for this qualification. It is recommended that learners will have achieved science qualifications at level 2, e.g. GCSEs in Science subjects or equivalent level 2 vocational science qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.
This qualification has been designed	• For learners who are on a 16–19 study programme • To meet the Department for Education's characteristics for an Applied General qualification.
This qualification is suitable for learners	• Who want to gain a level 3 qualification to support further study in Further Education (FE) • Who want to progress to Higher Education (HE) in Science • Who want to progress into science-related apprenticeships

Qualification structure	Learners must achieve a total of 2 mandatory units.

Assessment method/model	Units 1 and 2 are assessed by exam and marked by us.
Grading	Examined units are graded Near-Pass, Pass, Merit and Distinction. Internally assessed units are graded Pass, Merit and Distinction. The qualification is graded Pass, Merit, Distinction, Distinction*

Examination resits	Learners can resit an examined unit twice before they complete the qualification.
Repeat submission of learner's work	If you and the learner feel they haven't performed at their best during the assessment, the learner can, at your discretion, improve their work and resubmit it to you for assessment. You must follow our requirements on authenticity and feedback in section 8.

Statement of purpose

Who is the OCR Level 3 Cambridge Technical Certificate in Applied Science for?

Overview

The Level 3 Certificate in Applied Science has been developed for learners aged 16+, who wish to maintain an element of science in a broader study programme and will provide a good introduction into the more vocational applications of science. It is recommended that learners will have achieved science qualifications at level 2, e.g. GCSEs in Science subjects or equivalent level 2 vocational science qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.

The main purpose of the qualification is to develop the theory of scientific principles and practical techniques which, when taken with other complementary science-based qualifications, will prepare them to progress to higher education or employment in the science sector.

They will learn to carry out experiments safely and accurately which will better prepare them to progress to higher education or employment in areas related to laboratory science such as Life Sciences, Biological Science and Environmental Science.

The Level 3 Certificate in Applied Science is equivalent in size to 0.5 of an A level. It should fill approximately one third of the learners timetable. This allows for the study of additional vocational or academic qualifications alongside it, for example OCR Cambridge Technicals in Engineering or Health and Social Care, GCE A level Geography, Physics, Biology or Chemistry which it supports.

What does this qualification cover?

This qualification contains 2 mandatory units as follows:

- Science Fundamentals
- Laboratory Techniques

We have worked with HEIs and employers who have helped us include the knowledge, understanding and skills that they are looking for such as:

- knowledge and understanding of fundamental biological, chemical and physical principles underlying laboratory science;
- transferrable skills necessary to perform laboratory techniques in the workplace (a laboratory can be considered anywhere where you are applying laboratory skills such as field work, environmental surveys, etc);

Is this qualification right for my learners?

This qualification is part of a suite of Cambridge Technicals in Science at Level 2 (Cambridge Technical Level 2 Certificate/Extended Certificate/Diploma in Science) and Applied Science at Level 3. Normally you would take one of the OCR Level 3 Cambridge Technicals in Applied Science because you had already successfully gained Level 2 qualifications in a similar or related subject but there are no formal entry requirements for these qualifications.

This is one of five qualifications available in the OCR Level 3 Cambridge Technicals in Applied Science suite:

- OCR Level 3 Cambridge Technical Certificate in Applied Science 180GLH (equivalent to one AS Level)
- OCR Level 3 Cambridge Technical Extended Certificate in Applied Science 360GLH (equivalent to one A Level)
- OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science 540GLH (equivalent to 1.5 A Levels)
- OCR Level 3 Cambridge Technical Diploma in Applied Science 720GLH (equivalent to two A levels)
- OCR Level 3 Cambridge Technical Extended Diploma in Applied Science 1080GLH (equivalent to 3 A Levels)

The Extended Certificate will develop skills, knowledge and understanding to perform laboratory techniques. This qualification will complement a study programme containing other science or STEM related qualifications including those from other vocational sectors such as Sport or Health and Social Care.

The Foundation Diploma expands on these fundamental skills, allowing learners to develop a further range of skills, knowledge and understanding required for research and analytical techniques in the development of products or processes relevant to environmental, food or human science. They may take this as a one year full-time course of study or take it alongside another area of study that complements it as part of a two year full-time study programme.

The larger Diploma provides a wider range of optional units allowing learners to further specialise in specific fields. This qualification typically makes up two-thirds of a 16-19 study programme and may be taken alongside other qualifications giving breadth to their study programme.

The Extended Diploma will require learners to collect, analyse, evaluate and present primary data. They will evaluate their chosen analytical techniques to improve the quality and collection of data. They will conclude their studies by completing a 'Scientific Research Project' which will bring together all knowledge and understanding gained in the theoretical units. It is best suited to learners who wish to progress to HE in the applied science sector.

The majority of career opportunities in this sector are at degree level, and to gain employment learners will mostly likely need to progress from this qualification into higher education or an apprenticeship programme. Once suitably qualified, they may progress into related jobs likely at more junior levels at first such as laboratory technician, food development technician, conservation wardens before undertaking further study to progress onto more senior roles such as water quality expert, environmental manager, microbiologist. Examples of employers who offer opportunities for suitably qualified individuals include: conservation organisations; the Environment Agency; water companies; waste management companies; DEFRA; food producers; pharmaceutical companies, the NHS and local authorities.

OCR Level 3 Cambridge Technical Extended Certificate in Applied Science at a glance

Qualification number	601/7458/4	**OCR Entry code**	05847
First registration date	01/09/16	**Approved age range**	16–18, 19+
Guided Learning Hours (GLH)	360	**UCAS points**	You'll find further information on the UCAS website.
Total Qualification Time (TQT)	540	**Performance information**	See Section 2 performance information
Exam sessions each year	January and June	**Eligible for funding**	It's designed to meet the funding requirements of a 16–19 study programme.

Entry requirements	There are no formal entry requirements for this qualification. It is recommended that learners will have achieved science qualifications at level 2, e.g. GCSEs in Science subjects or equivalent level 2 vocational science qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that learners have grade 4/C or above in Maths and English GCSE.
This qualification has been designed	• For learners who are on a 16–19 study programme • To meet the Department for Education's characteristics for an Applied General qualification.
This qualification is suitable for learners	• Who want to gain a level 3 qualification to support further study in Further Education (FE) • Who want to progress to Higher Education (HE) in Science related subjects • Who want to progress into science-related apprenticeships.

Qualification structure	Learners must achieve a total of 5 mandatory units

Assessment method/model	Units 1 and 2 are assessed by exam and marked by us. Your centre staff will internally assess all the other units and we will moderate them.
Grading	Examined units are graded Near-Pass, Pass, Merit and Distinction. Internally assessed units are graded Pass, Merit and Distinction. The qualification is graded Pass, Merit, Distinction, Distinction*

Examination resits	Learners can resit an examined unit twice before they complete the qualification.
Repeat submission of learner's work	If you and the learner feel they haven't performed at their best during the assessment, the learner can, at your discretion, improve their work and resubmit it to you for assessment. You must follow our requirements on authenticity and feedback in section 8.

Statement of purpose

Who is the OCR Level 3 Cambridge Technical Extended Certificate in Applied Science for?

Overview

The Level 3 Extended Certificate in Applied Science has been developed for learners aged 16+, who enjoy the sciences and want to learn how to apply their skills, knowledge and understanding in ways that are relevant to work. It is recommended that learners starting this qualification will have achieved science qualifications at level 2, e.g. GCSEs in Science subjects or equivalent level 2 vocational science qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.

The main purpose of the qualification is to develop the scientific principles and practical techniques which, when taken with other complementary science-based qualifications, will prepare learners to progress to higher education or employment in areas related to food, human or environmental science. They will learn to carry out experiments safely and accurately when testing products to yield results that can be used to inform the next stage in a scientific process.

Learners will also have the opportunity to collect and analyse primary data. This will better prepare them to progress to higher education or employment in areas related to laboratory science such as Life Sciences, Biological Science and Environmental Science.

The Level 3 Extended Certificate in Applied Science is the same size as one GCE A level. It should fill approximately one thirds of a learner's timetable. This allows for the study of additional vocational or academic qualifications alongside it, for example OCR Cambridge Technicals in Engineering or Health and Social Care, GCE A level Geography, Physics, Biology or Chemistry. The Extended Certificate in Applied Science also complements these other qualifications as it provides the practical laboratory skills that employers and universities are looking for.

What does this qualification cover?

Every learner will study five mandatory units which focus on the laboratory techniques and scientific principles:

- Science Fundamentals
- Laboratory Techniques
- Control of Hazards in the Laboratory
- Product Testing Techniques
- Microbiology

We have worked with HEIs and employers who have helped us include the knowledge, understanding and skills that they are looking for such as:

- knowledge and understanding of fundamental biological, chemical and physical principles underlying laboratory science;

- transferrable skills necessary to perform laboratory techniques in the workplace (a laboratory can be considered anywhere where you are applying laboratory skills such as field work, environmental surveys etc.);
- ability to learn in work-related contexts;
- skills for independent learning and development.

Is this qualification right for my learners?

This qualification is part of a suite of Cambridge Technicals in Science at Level 2 (Cambridge Technical Level 2 Certificate/Extended Certificate/Diploma in Science) and Applied Science at Level 3. Normally the learner would take one of the OCR Level 3 Cambridge Technicals in Applied Science because they had already successfully gained Level 2 qualifications in a similar or related subject but there are no formal entry requirements for these qualifications.

This is one of five qualifications available in the OCR Level 3 Cambridge Technicals in Applied Science suite:

- OCR Cambridge Technical Certificate in Applied Science 180GLH (equivalent to 0.5 of an A Level)
- OCR Level 3 Cambridge Technical Extended Certificate in Applied Science 360GLH (equivalent to one A Level)
- OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science 540GLH (equivalent to 1.5 A Levels)
- OCR Level 3 Cambridge Technical Diploma in Applied Science 720GLH (equivalent to two A levels)
- OCR Level 3 Cambridge Technical Extended Diploma in Applied Science 1080GLH (equivalent to three A levels)

The smaller Certificate will develop the theory of scientific principles and practical techniques and learners would take this alongside other complementary science-based qualifications and will prepare them for progression onto the larger sized qualifications in the suite or other similar Level 3 qualifications.

The Foundation Diploma expands on these fundamental skills, allowing learners to develop a further range of skills, knowledge and understanding required for research and analytical techniques in the development of products or processes relevant to environmental, food or human science. They may take this as a one year full-time course of study or take it alongside another area of study that complements it as part of a two year full-time study programme.

The larger Diploma provides a wider range of optional units allowing learners to further specialise in specific fields. This qualification typically makes up two-thirds of a 16-19 study programme and may be taken alongside other qualifications giving breadth to the study programme.

The Extended Diploma will require learners to collect, analyse, evaluate and present primary data. They will evaluate their chosen analytical techniques to improve the quality and collection of data. They will conclude your studies by completing a 'Scientific Research Project' which will bring together all knowledge and understanding gained in the

theoretical units. It is best suited to learners who wish to progress to HE in the applied science sector.

The majority of career opportunities in this sector are at degree level, and to gain employment you will mostly likely need to progress from this qualification into higher education or an apprenticeship programme. Once suitably qualified, you may progress into related jobs likely at more junior levels at first such as laboratory technician, food development technician, conservation wardens before undertaking further study to progress onto more senior roles such as water quality expert, environmental manager, microbiologist. Examples of employers who offer opportunities for suitably qualified individuals include: conservation organisations; the Environment Agency; water companies; waste management companies; DEFRA; food producers; pharmaceutical companies, the NHS and local authorities.

OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science at a glance

Qualification number	601/7460/2	**OCR Entry code**	05848
First registration date	01/09/16	**Approved age range**	16–18, 19+
Guided Learning Hours (GLH)	540	**UCAS points**	You'll find further information on the UCAS website.
Total Qualification Time (TQT)	720	**Performance information**	See Section 2 performance information
Exam sessions each year	January and June	**Eligible for funding**	It's designed to meet the funding requirements of a 16–19 study programme.

Entry requirements	There are no formal entry requirements for this qualification. It is recommended that learners will have achieved science qualifications at level 2, e.g. GCSEs in Science subjects or equivalent level 2 vocational science qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.
This qualification has been designed	• For learners who are on a 16–19 study programme • To meet the Department for Education's characteristics for an Applied General qualification.
This qualification is suitable for learners	• Who want to gain a level 3 qualification to support further study in Further Education (FE) • Who want to progress to Higher Education (HE) in Science related subjects • Who want to progress into science-related apprenticeships.

Qualification structure	Learners must achieve a total of 7 mandatory units. The selection of centre assessed units will depend on the chosen pathway.

Assessment method/model	Units 1, 2 and 3 are assessed by exam and marked by us. Your centre staff will internally assess all the other units and we will moderate them.
Grading	Examined units are graded Near-Pass, Pass, Merit and Distinction. Internally assessed units are graded Pass, Merit and Distinction. The qualification is graded PP, PM, MM, MD, DD, DD*, D*D*

Examination resits	Learners can resit an examined unit twice before they complete the qualification.
Repeat submission of learner's work	If you and the learner feel they haven't performed at their best during the assessment, the learner can, at your discretion, improve their work and resubmit it to you for assessment. You must follow our requirements on authenticity and feedback in section 8.

Statement of purpose

Who is the OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science for?

Overview

The Level 3 Foundation Diploma in Applied Science has been developed for learners aged 16+, who enjoy the sciences and want to learn how to apply their skills, knowledge and understanding in food, environmental or human science before progressing on take related courses in higher education.

This qualification will give learners the scientific principles and practical techniques to carry out experiments safely and accurately. They will have the opportunity to collect, analyse, evaluate and present primary data. They will also evaluate the analytical techniques to improve the quality and collection of data. This will better prepare them to progress to higher education or employment in areas related to food, human or environmental science.

Learners will apply their skills, knowledge and understanding to tasks or activities that are relevant to how food, environmental or human sciences are used in the workplace. Having an appreciation of how these are used in work will also help to prepare them if continuing their education in this sector.

The Level 3 Foundation Diploma in Applied Science is an Applied General qualification which is equivalent to 1.5 A levels. It should fill approximately two thirds of the timetable or if completed in a year may progress to further learning at Level 3, for example the larger sized Cambridge Technical Diploma or Extended Diploma in Applied Science or OCR Cambridge Technical in Health and Social Care, Cambridge Technical in Engineering, GCE AS/A level Geography, Physics, Biology or Chemistry which it complements in providing the practical laboratory skills that employers and HEIs are looking for.

It is recommended that learners starting this qualification will have achieved science qualifications for example GCSEs in Science subjects at grade 4/C or above or level 2 vocational qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.

What does this qualification cover?

Learners can choose to follow one of three pathways, Food Science, Human Science or Environmental Science.

Everybody will study three units on:

- Science Fundamentals
- Laboratory Techniques
- Scientific Analysis and Reporting

Those taking the Human Science pathway must also take:

- Human physiology
- Genetics
- Control of hazards in the laboratory
- Testing Consumer Products

Those taking the Food Science pathway must also take:

- Control of Hazards in the Laboratory
- Human Nutrition
- Testing Consumer Products
- Food Technology

Those taking the Environmental Science pathway must also take:

- Control of Hazards in the Laboratory
- Environmental Surveying
- Environmental Management
- Waste Management

All units have been written to reflect current science practices. We have worked with employers and HEIs who have helped us to embed these practices and to include the transferable skills that they are looking for in future applicants such as:

- knowledge and understanding of biological, chemical and physical principles underlying laboratory science;
- transferrable skills necessary to perform laboratory techniques in the workplace;
- ability to analyse collected data to solve problems within a laboratory setting;
- ability to take a project based approach to research, analysis and development, linking scientific principles and laboratory techniques;
- ability to learn in work-related contexts;
- skills for independent learning and development.

Is this qualification right for my learners?

This qualification is part of a suite of Cambridge Technicals in Science at Level 2 (Cambridge Technical Level 2 Certificate/Extended Certificate/Diploma in Science) and Applied Science at Level 3. Normally learners would take one of the OCR Level 3 Cambridge Technicals in Applied Science because they had already successfully gained Level 2 qualifications in a similar or related subject but there are no formal entry requirements for these qualifications.

This is one of five qualifications available in the OCR Level 3 Cambridge Technicals in Applied Science suite:

- OCR Level 3 Cambridge Technical Level 3 Certificate in Applied Science 180GLH (equivalent to 0.5 of an A level)
- OCR Level 3 Cambridge Technical Extended Certificate in Applied Science 360GLH (equivalent to one A level)
- OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science 540GLH (equivalent to 1.5 A Levels)

- OCR Level 3 Cambridge Technical Diploma in Applied Science 720GLH (equivalent to two A levels)
- OCR Level 3 Cambridge Technical Extended Diploma in Applied Science 1080GLH (equivalent to three A levels)

The smaller Certificate will develop the theory of scientific principles and practical techniques and learners would take this alongside other complementary science-based qualifications and will prepare them for progression onto the larger sized qualifications in the suite or other similar Level 3 qualifications.

Through the Extended Certificate learners will develop and apply skills, knowledge and understanding to perform laboratory techniques. This qualification will complement a study programme containing other Science or STEM related qualifications including those from other vocational sectors such as Sport or Health and Social Care.

The larger Diploma provides a wider choice in optional units, allowing learners to develop a further range of skills, knowledge and understanding to apply in research and analytical techniques for the development of products or processes relevant specifically to environmental, food or human science.

The extended Diploma includes a research project in which you will gain additional skills in using primary and secondary data to draw their own conclusions and present to a suitable audience. The additional mandatory unit in 'Global Scientific Information' will support research techniques providing practical skills that will help in both University and in future employment.

The majority of career opportunities in this sector are at degree level where learners may take specific degree programmes such as Food Science, Pharmaceuticals or Environmental Science and to gain employment they will mostly likely need to progress from this qualification into higher education or an apprenticeship programme. Once suitably qualified, they may progress into related jobs likely at more junior levels at first such as laboratory technician, food development technician, and conservation wardens before undertaking further study to progress onto more senior roles such as water quality expert, environmental manager, and microbiologist. Examples of employers who offer opportunities for suitably qualified individuals include: conservation organisations; the Environment Agency; water companies; waste management companies; DEFRA; food producers; pharmaceutical companies, the NHS and local authorities.

OCR Level 3 Cambridge Technical Diploma in Applied Science at a glance

Qualification number	601/7461/4	**OCR Entry code**	05849
First registration date	01/09/16	**Approved age range**	16–18, 19+
Guided Learning Hours (GLH)	720	**UCAS points**	You'll find further information on the UCAS website.
Total Qualification Time (TQT)	1070	**Performance information**	See Section 2 performance information
Exam sessions each year	January and June	**Eligible for funding**	It's designed to meet the funding requirements of a 16–19 study programme.

Entry requirements	There are no formal entry requirements for this qualification. It is recommended that learners will have achieved science qualifications at level 2, e.g. GCSEs in Science subjects or equivalent level 2 vocational science qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.
This qualification has been designed	• For learners who are on a 16–19 study programme • To meet the Department for Education's characteristics for an Applied General qualification.
This qualification is suitable for learners	• Who want to gain a level 3 qualification to support further study in Further Education (FE) • Who want to progress to Higher Education (HE) in Science related subjects • Who want to progress into science-related apprenticeships.

Qualification structure	Learners must achieve a total of 10 units consisting of 6 mandatory units and a minimum of 4 optional units from within a specific pathway

Assessment method/model	Units 1, 2 and 3 are assessed by exam and marked by us. Your centre staff will internally assess all the other units and we will moderate them.
Grading	Examined units are graded Near-Pass, Pass, Merit and Distinction. Internally assessed units are graded Pass, Merit and Distinction. The qualification is graded PP, PM, MM, MD, DD, DD*, D*D*

Examination resits	Learners can resit an examined unit twice before they complete the qualification.
Repeat submission of learner's work	If you and the learner feel they haven't performed at their best during the assessment, the learner can, at your discretion, improve their work and resubmit it to you for assessment. You must follow our requirements on authenticity and feedback in section 8.

Statement of purpose

Who is the OCR Level 3 Cambridge Technical Diploma in Applied Science for?

Overview

The Level 3 Diploma in Applied Science has been developed for learners aged 16+, who enjoy the sciences and want to learn how to apply their skills, knowledge and understanding in food, environmental or human science before progressing on take related courses in higher education.

This qualification will give learners the scientific principles and practical techniques to carry out experiments safely and accurately. Learners will have the opportunity to collect, analyse, evaluate and present primary data. They will also evaluate the analytical techniques to improve the quality and collection of data. This will better prepare them to progress to higher education or employment in areas related to food, human or environmental science.

The learner will apply their skills, knowledge and understanding to tasks or activities that are relevant to how food, environmental and human sciences are used in the workplace. Having an appreciation of how these are used in work will also help to prepare them for continuing their education in this sector.

The Level 3 Diploma in Applied Science is an Applied General qualification which is equivalent to two GCE A levels. It should fill approximately two thirds of a learner's timetable. This allows for the study of additional vocational or academic qualifications alongside it, e.g. OCR Cambridge Technical in Health and Social Care, Cambridge Technical in Engineering, GCE AS/A level Geography, Physics, Biology or Chemistry which it complements in providing the practical laboratory skills that employers and Universities are looking for.

It is recommended that learners starting this qualification will have achieved science qualifications for example GCSEs in Science subjects at grade 4/grade C or above or level 2 vocational qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/grade C or above in Maths and English GCSE.

Learners can choose to follow one of three pathways, food science, human science or environmental science.

Everybody will study three units on:

- Science Fundamentals
- Laboratory Techniques
- Scientific analysis and reporting

Those taking the Food Science pathway must also take:

- Control of Hazards in the Laboratory
- Testing Consumer Products
- Food Technology

Those taking the Environmental Science pathway must also take:

- Control of Hazards in the Laboratory
- Environmental Surveying
- Environmental Management

Those taking the Human Science pathway must also take:

- Genetics
- Control of Hazards in the Laboratory
- Testing Consumer Products

All learners take a further four units that are relevant to their pathway from a range of optional topics. The choice available depends on the pathway but might include:

- Human Physiology
- Human Nutrition
- Waste Management
- Microbiology
- Crop Production and Soil Science
- Sustainable and Renewable Energy
- Conservation of Biodiversity
- Cell Biology
- Drug Development

All units have been written to reflect current science practices. We have worked with employers and HEIs who have helped us to embed these practices and to include the transferable skills that they are looking for in future applicants such as:

- knowledge and understanding of biological, chemical and physical principles underlying laboratory science;
- transferrable skills necessary to perform laboratory techniques in the workplace;
- ability to analyse collected data to solve problems within a laboratory setting;
- ability to take a project based approach to research, analysis and development, linking scientific principles and laboratory techniques;
- ability to learn in work-related contexts;
- skills for independent learning and development.

Is this qualification right for my learners?

This qualification is part of a suite of Cambridge Technicals in Science at Level 2 (Cambridge Technical Level 2 Certificate/Extended Certificate/Diploma in Science) and Applied Science at Level 3. Normally learners would take one of the OCR Level 3 Cambridge Technicals in Applied Science because they had already successfully gained Level 2 qualifications in a similar or related subject but there are no formal entry requirements for these qualifications.

This is one of five qualifications available in the OCR Level 3 Cambridge Technicals in Applied Science suite:

- OCR Level 3 Cambridge Technical Level 3 Certificate in Applied Science 180GLH (equivalent to 0.5 of an A level)
- OCR Level 3 Cambridge Technical Extended Certificate in Applied Science 360GLH (equivalent to one A level)
- OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science 540GLH (equivalent to 1.5 A levels)
- OCR Level 3 Cambridge Technical Diploma in Applied Science 720GLH (equivalent to two A levels)
- OCR Level 3 Cambridge Technical Extended Diploma in Applied Science 1080GLH (equivalent to three A levels)

The smaller Certificate will develop the theory of scientific principles and practical techniques and learners would take this alongside other complementary science-based qualifications and will prepare them for progression onto the larger sized qualifications in the suite or other similar Level 3 qualifications.

Through the Extended Certificate learners will develop and apply skills, knowledge and understanding to perform laboratory techniques. This qualification will complement a study programme containing other Science or STEM related qualifications including those from other vocational sectors such as Sport or Health and Social Care.

The Foundation Diploma expands on these fundamental skills, allowing learners to develop a further range of skills, knowledge and understanding required for research and analytical techniques in the development of products or processes relevant to environmental, food or human science. They may take this as a one year full-time course of study or take it alongside another area of study that complements it as part of a two year full-time study programme.

The Extended Diploma includes a research project in which you will gain additional skills in using primary and secondary data to draw their own conclusions and present to a suitable audience. The additional mandatory unit in 'Global Scientific Information' will support research techniques providing practical skills that will help in both University and in future employment.

The majority of career opportunities in this sector are at degree level where learners may take specific degree programmes such as Food Science, Pharmaceuticals or Environmental Science and to gain employment they will mostly likely need to progress from this qualification into higher education or an apprenticeship programme. Once suitably qualified, they may progress into related jobs likely at more junior levels at first such as laboratory technician, food development technician, and conservation wardens before undertaking further study to progress onto more senior roles such as water quality expert, environmental manager, and microbiologist. Examples of employers who offer opportunities for suitably qualified individuals include: conservation organisations; the Environment Agency; water companies; waste management companies; DEFRA; food producers; pharmaceutical companies, the NHS and local authorities.

OCR Level 3 Cambridge Technical Extended Diploma in Applied Science at a glance

Qualification number	603/0695/6	**OCR Entry code**	05874
First registration date	01/09/16	**Approved age range**	16–18, 19+
Guided Learning Hours (GLH)	1080	**UCAS points**	You'll find further information on the UCAS website.
Total Qualification Time (TQT)	1570	**Performance information**	See Section 2 performance information
Exam sessions each year	January and June	**Eligible for funding**	It's designed to meet the funding requirements of a 16–19 study programme.

Entry requirements	There are no formal entry requirements for this qualification. It is recommended that learners will have achieved science qualifications at level 2, e.g. GCSEs in Science subjects or equivalent level 2 vocational science qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.
This qualification has been designed	• For learners who are on a 16–19 study programme • To meet the Department for Education's characteristics for an Applied General qualification.
This qualification is suitable for learners	• Who want to gain a level 3 qualification to support further study in Further Education (FE) • Who want to progress to Higher Education (HE) in Science related subjects • Who want to progress into science-related apprenticeships.

Qualification structure	Learners must achieve a total of 15 units consisting of 13 mandatory units and a minimum of 2 optional units.

Assessment method/model	Units 1, 2, 3, 22 and 23 are assessed by exam and marked by us. Your centre staff will internally assess all the other units and we will moderate them.
Grading	Examined units are graded Near-Pass, Pass, Merit and Distinction. Internally assessed units are graded Pass, Merit and Distinction. The qualification is graded PPP, MPP, MMP, MMM, DMM, DDM, DDD, D*DD, D*D*D, D*D*D*

Examination resits	Learners can resit an examined unit twice before they complete the qualification.
Repeat submission of learner's work	If you and the learner feel they haven't performed at their best during the assessment, the learner can, at your discretion, improve their work and resubmit it to you for assessment. You must follow our requirements on authenticity and feedback in section 8.

Statement of purpose

Who is the OCR Level 3 Cambridge Technical Extended Diploma in Applied Science for?

Overview

The Level 3 Extended Diploma in Applied Science has been developed for learners aged 16+, who enjoy the sciences and want to learn how to apply their skills, knowledge and understanding in science before progressing on to take related courses in higher education.

This qualification will give learners the scientific principles and practical techniques to carry out experiments safely and accurately. They will also have the opportunity to collect, analyse, evaluate and present primary data across a broad range of topics. They will evaluate your chosen analytical techniques to improve the quality and collection of data and will conclude their studies by completing a 'Scientific Research Project' in a topic that will bring together all knowledge and understanding gained in the theoretical units plus allowing some specialism focusing on the key synoptic task of 'Testing Consumer Products'. Carrying out research is fundamental to science in both University and in the workplace and this will better prepare them to progress to higher education or employment in areas related to food, human or environmental science.

Learners will apply their skills, knowledge and understanding to tasks or activities that are relevant to how food, environmental and human sciences are used in the workplace. Having an appreciation of how these are used in work will also help to prepare them for continuing your education in this sector.

The Level 3 Extended Diploma in Applied Science is an Applied General qualification which is equivalent to three GCE A levels. It should fill approximately a full two year learning programme and will provide learners with a broad choice of optional units to allow flexibility in their choice of science sectors and will not restrict them in their choice of HEI courses.

It is recommended that learners will have achieved science qualifications for example GCSEs in Science subjects at grade 4/C or above or level 2 vocational qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/C or above in Maths and English GCSE.

What does this qualification cover?

This qualification contains 13 mandatory units as follows:

- Science fundamentals
- Laboratory techniques
- Scientific analysis and reporting
- Human physiology
- Genetics
- Control of hazards in the laboratory
- Human nutrition

- Cell biology
- Environmental surveying
- Environmental management
- Waste management
- Global scientific information
- Scientific research techniques

Plus a further two units from:

- Drug development
- Sustainability and renewable energy
- Food Technology
- Microbiology
- Crop production and soil science
- Conservation of biodiversity

All units have been written to reflect current science practices. We have worked with employers and HEIs who have helped us to embed these practices and to include the transferable skills that they are looking for in future applicants such as:

- knowledge and understanding of biological, chemical and physical principles underlying laboratory science;
- transferrable skills necessary to perform laboratory techniques in the workplace;
- ability to analyse collected data to solve problems within a laboratory setting;
- ability to take a project based approach to research, analysis and development, linking scientific principles and laboratory techniques;
- understanding of dealing with large amounts of scientific data, knowledge of the functionality of information and how data is stored and processed by organisations.
- ability to learn in work-related contexts;
- skills for independent learning and development including research techniques and presentation skills.

Is this qualification right for my learners?

This qualification is part of a suite of Cambridge Technicals in Science at Level 2 (Cambridge Technical Level 2 Certificate/Extended Certificate/Diploma in Science) and Applied Science at Level 3. Normally learners would take one of the OCR Level 3 Cambridge Technicals in Applied Science because they had already successfully gained Level 2 qualifications in a similar or related subject but there are no formal entry requirements for these qualifications.

This is one of five qualifications available in the OCR Level 3 Cambridge Technicals in Applied Science suite:

- OCR Cambridge Technical Certificate in Applied Science 180GLH (equivalent to 0.5 of an A Level)
- OCR Level 3 Cambridge Technical Extended Certificate in Applied Science 360GLH (equivalent to one A Level)
- OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science 540GLH (equivalent to 1.5 A Levels)
- OCR Level 3 Cambridge Technical Diploma in Applied Science 720GLH (equivalent to two A levels)

OCR Level 3 Cambridge Technical Extended Diploma in Applied Science 1080GLH (equivalent to three A levels)The smaller Certificate will develop the theory of scientific principles and practical techniques and learners would take this alongside other complementary science-based qualifications and will prepare them for progression onto the larger sized qualifications in the suite or other similar Level 3 qualifications.

The Extended Certificate will develop skills, knowledge and understanding to perform laboratory techniques. This qualification will complement a study programme containing other Science or STEM related qualifications including those from other vocational sectors such as Sport or Health and Social Care.

The Foundation Diploma expands on these fundamental skills, allowing learners to develop a further range of skills, knowledge and understanding required for research and analytical techniques in the development of products or processes relevant to environmental, food or human science. They may take this as a one year full-time course of study or take it alongside another area of study that complements it as part of a two year full-time study programme.

The larger Diploma provides a wider range of optional units allowing learners to further specialise in specific fields. This qualification typically makes up two-thirds of a 16-19 study programme and may be taken alongside other qualifications giving breadth to the study programme.

The majority of career opportunities in this sector are at degree level, and to gain employment you will mostly likely need to progress from this qualification into higher education or an apprenticeship programme. Once suitably qualified, you may progress into related jobs likely at more junior levels at first such as laboratory technician, food development technician, and conservation wardens before undertaking further study to progress onto more senior roles such as water quality expert, environmental manager, and microbiologist. Examples of employers who offer opportunities for suitably qualified individuals include: conservation organisations; the Environment Agency; water companies; waste management companies; DEFRA; food producers; pharmaceutical companies, the NHS and local authorities.

2 About these qualifications

Introduction	This handbook contains what you need to know about the planning, delivery and assessment of these qualifications. Information about the administration of these qualifications, including an overview is available on our website www.ocr.org.uk/administration/.
Qualification size	The size of the qualification is described in terms of Guided Learning Hours (GLH) and Total Qualification Time (TQT). GLH indicates the approximate time (in hours) that the learner will be supervised during any teaching, learning or assessment activities. We have worked with people who are experienced in delivering business qualifications to determine what content needs to be taught and how long it will take to deliver. TQT is comprised of two elements: GLH, and an estimate of the number of hours a learner will reasonably spend on any unsupervised learning or assessment activities (including homework) so they can successfully achieve their qualification. The 2 unit Certificate needs 180 GLH. The 5 unit Extended Certificate needs 360 GLH. The 7 unit Foundation Diploma needs 540 GLH. The 10 unit Diploma needs 720 GLH. The 15 unit Extended Diploma needs 1080 GLH.
How does it fit into a 16–19 study programme?	The Certificate (180 GLH) is designed for learners who are interested in science but wish to keep their options open take other qualifications alongside a one year programme. The Extended Certificate (360 GLH) is designed for learners who want a broader introduction to vocational science. The Foundation Diploma (540 GLH) is designed for learners who want to specialise in a particular vocational area. The programme could be taken over one or two academic years. The Diploma (720 GLH) is designed to be the substantive part of a 16–19 study programme and is designed for learners who want to specialise in a particular vocational area. It can be complemented by other vocational or academic qualifications or non-qualification elements. (By non-qualification elements we mean tutorials, mentoring, work experience, sport, drama, extra-curricular activities, etc.).

	The Extended Diploma (1080 GLH) is designed to be a two year study programme. Its size means it is ideal for learners wanting a full-time course that specialises in the science sector and who intend to progress to higher education. You should make sure you tell learners the title and level of the qualification they've been entered for and that Oxford Cambridge and RSA Examinations (OCR) is the awarding body for their chosen qualification.
Is there a learner entry requirement?	No, to take these qualifications learners don't need any specific knowledge or skills related to the qualification. Learners should be aged 16 or over.
Do learners need specific prior learning?	It is recommended that learners will have achieved science qualifications for example GCSEs in Science subjects at grade 4/grade C or above or level 2 vocational qualifications, e.g. OCR Level 2 Cambridge Technical in Science. It is also recommended that they have grade 4/grade C or above in maths and English GCSE. We recommend you carry out an initial assessment to make sure learners are capable of reaching the required standards of the qualification they intend to work towards.
How are these qualifications delivered?	You're free to deliver these qualifications using any mode of delivery that meets the needs of your learners. Whichever mode of delivery you decide to use, you must make sure learners have appropriate access to the resources they will need to develop the skills, understanding and knowledge and to complete the assessments. We recommend you reference teaching and development of subject content and associated skills to real life situations, and case studies.
What are the subject knowledge requirements for our centre staff?	Tutors must have the relevant level of subject knowledge and skills to deliver these qualifications.
Are there specific resource requirements for my centre?	No, there are no specific requirements. **Health and safety** Please also make sure your learners are provided with appropriate physical resources, such as protective equipment and/or clothing, wherever this is appropriate. You and your centre must take care and follow all health and safety requirements and quality assurance procedures specific to each practical activity. You must make sure the appropriate health and safety policies are in place for

	equipment used by learners, even if the equipment isn't specified in the unit content. **Assessment** Your centre must provide appropriate examination facilities for learners that comply with the Joint Council of Qualifications (JCQ*) Instructions for Conducting Examinations.*
How are these qualifications assessed?	These qualifications are assessed using a combination of: • external assessment, which we set and mark • internal assessment, where the tutor assesses learners' work which we externally moderate.
How are these graded?	Each examined unit achieved will be graded Near-Pass, Pass, Merit or Distinction. Each internally assessed unit achieved will be graded as Pass, Merit or Distinction. Learners who don't achieve at least a Near-Pass or a Pass in a unit will be unclassified. A learner must get at least: • a Near-Pass for each examined unit, and • a Pass for each internally-assessed unit to be awarded the qualification they have entered for. Qualifications are graded using a Pass, Merit, Distinction, Distinction* (and Unclassified) structure. You'll find full details about the rules for achieving a qualification and about grading in section 10 'How to calculate the qualification grade'.
Availability and funding	These qualifications are designed to meet the funding requirements of a 16–19 study programme and 19–23 entitlement. To check if these qualifications are approved for delivery and funding in your country you must visit the following websites for the latest information: England • Register of Regulated Qualifications – for England and Northern Ireland • Department for Education Section 96 – for confirmation of the approval of qualifications to be delivered to specific age ranges. • Education and Skills Funding Agency for funding education and training for children, young people and adults in England

	Wales • Qualifications in Wales database (QiW) - for information on approved and designated qualifications in Wales including funding Northern Ireland • Register of Regulated Qualifications – for England and Northern Ireland • NIEFQAN – Approval of qualifications by the Department of Education in Northern Ireland • Department for the Economy for public funding in Northern Ireland Use the Qualification Number (QN) when you're looking for information on qualification eligibility for public funding. If you have any queries about funding for these qualifications email us at funding@ocr.org.uk.
Delivery in Wales and Northern Ireland	Learners in Wales and Northern Ireland shouldn't be disadvantaged by terms, legislation or aspects of government that are different from those in England. Where such situations might occur, we've used neutral terms so learners may apply whatever is appropriate and current to their own situation.
Language	These qualifications and any associated assessment materials are available in English only. Only answers provided in English will be assessed.
Performance information	We've designed these qualifications to meet the Department for Education requirements for qualifications in the Applied General category of the 16 to19 performance tables. You'll find information on: • performance tables for England on the Department for Education website • performance points for Northern Ireland on the Department of Education website • performance measures for Wales on Qualifications in Wales database (QiW). If you have any queries about this performance information then please email ims@wales.gsi.gov.uk.

Are these qualifications recognised in the UCAS tariff tables?	Yes. You'll find further information on the UCAS website. It's always important for learners to check individual course requirements when applying to university.
Last entry date	These qualifications will continue to be available for entries and certification until we decide they need to be withdrawn. If we're going to withdraw a qualification we'll set an end date for entries and certification and we'll tell you what the arrangements are for the last date to enter learners and make claims for certificates. When we set end dates, you'll be able to see these on the Register of Regulated Qualifications and the Qualifications in Wales database (QiW). If an end date is not specified, it's because the qualification is still available.

3 Qualification resources, support and useful links

Our aim is to provide you with the information and support you need to deliver these qualifications.

Qualification resources available on our website

Guide to Examinations

This has been produced to help prepare learners for examinations. It focusses on understanding exam structures and formats and the way learners can support their performance in exams.

Delivery guide

Each unit delivery guide contains a range of lesson ideas with associated activities you can use with your learners. We've structured the guide by learning outcome so you can see how each activity helps learners cover the specification. The guide also explains key terms and common misconceptions.

Lesson elements

These are task sheets with accompanying teacher instructions. Each lesson element offers you a creative way of encouraging your learners to engage with the topic, with individual and group exercises, research activities and the opportunity to develop English and Maths skills.

Resources links

For some of the units there is an e-resource that provides you with links to a range of teaching and learning websites and materials for each unit.

Skills guides

We've written skills guides for you and your learners. They can help review or refresh skills in a variety of areas including:

- managing projects
- research
- referencing (good practice in acknowledging the work of other authors and avoiding accusations of plagiarism)
- command verbs
- examinations.

You can find these on our website http://www.ocr.org.uk/i-want-to/skills-guides/.

Project approach to delivery

This resource will show you how you can set a laboratory skills -related project so that you can deliver the content in a holistic manner.

Rules of combination calculator

This tool helps you and your learners to make sure that the right number and combination of units is chosen for a selected pathway.

Progress tracker

This tool helps you track your learners' progress through their chosen units.

Sample assessment materials

We only provide sample assessment materials for the externally assessed units. This is because we set the assessment for these units. Sample assessments show you what the assessment will look like, and you can use them as practice materials. Each year we'll make the exams from the previous year available as practice papers.

You can download sample assessment materials and, eventually, past papers from our website at www.ocr.org.uk.

Model assignments

We'll provide model assignments for mandatory internally assessed units. These can be:

- used as they are to assess your learners
- modified to suit your local or regional environment
- used as a guide to help you design your own assignments.

Assignment checking service

You can develop your own assessment for internally assessed units.

We provide an optional assignment checking service for Cambridge Technicals centres. If you use this service we'll check that the assignment you've designed covers the grading criteria in the unit and allows every learner to reach the highest grade if they demonstrate they have the associated level of knowledge, understanding and skills.

You can find more information about this service (including the price) on the CPD Hub.

Advisory support

If you are delivering, or intend to deliver, Cambridge Technicals, but would like some additional support, you can take advantage of our Advisory Support services.

Advisory Support covers a variety of topics such as: entry and assessment administration, qualification structure, assessment methods, teaching and learning materials, and delivery ideas.

Support includes downloadable teaching and assessment materials, videos, telephone or WebEx conversation, live on-line training, and face to face CPD.

CPD Hub

We provide face-to-face courses and live online training events (webinars) where you can benefit from information, advice and guidance from subject experts and network with fellow professionals. We'll also produce presentations and films that provide detailed information and feedback about specifications, grading criteria and candidate performance in past sessions.

Find out about all our current courses on the CPD Hub www.cpdhub.ocr.org.uk.

Online community

To share and swap ideas for delivery, post questions, support other tutors, suggest ideas for employer engagement, share links to other teaching and learning resource and more, visit our online community http://social.ocr.org.uk/.

Useful documents and links

Key OCR documents

Units
These are separate documents that you'll find on the qualification page of our website.

Candidate Authentication Statement for OCR Cambridge Technicals
Learners must sign this statement to confirm that the work they've submitted for assessment is their own. The form is completed when work is submitted for assessment and it can cover more than one unit. Every unit of the learner's qualification must be listed on a Candidate Authentication statement; there doesn't have to be a separate form for each unit.

Unit Recording Sheets (URS)
You complete this form to record and justify your assessment decisions. You must fill in a URS for each unit a learner completes and make this available with the work during visiting moderation.

Witness Statement
You should use this form when you've observed a learner as part of their assessment. Use it to testify or corroborate what has actually been observed by you.

For more information, see 'Witness Statements' in section 8.

Other useful documents and links

OCR publications	*What is malpractice?* Administration area, https://www.ocr.org.uk/administration/. You'll find all the information you need for the administration of these qualifications, including key dates for taking exams.
JCQ publications	*Access Arrangements and Reasonable Adjustments* *A guide to the special consideration process* *Instructions for Conducting Examinations* *Suspected Malpractice in Examinations and Assessments* Find these at https://www.jcq.org.uk/
Regulation and regulatory documents:	Regulatory documents - find these at: https://www.gov.uk/guidance/regulatory-document-list Register of Regulated Qualifications – for England and Northern Ireland Qualifications in Wales database (QiW) - for information on approved and designated qualifications in Wales including funding

4 How these qualifications are structured

These qualifications are made up of units which can feature in one or more of the qualifications in the Applied Science suite.

While learners don't have to achieve the other units in any particular order it's worth noting that the content in mandatory Unit 1 underpins the learning in other units.

In the pathways Food Science and Human Science, in both the Foundation Diploma and Diploma, Unit 10 Testing Consumer Products is a key synoptic unit. This unit provides the opportunity to practically assess the other units from within the pathway. In the Environmental Science pathway, the key synoptic unit is Unit 14 Environmental Management.

Units 22 and 23 in the Extended Diploma should be taken as the final unit as learners will draw on their skills, knowledge and understanding acquired through other units and apply what they have learned. This provides opportunities for synoptic assessment and enhancing the applied nature of the qualification.

You must consider the relationship between the units when you plan the learning programme. To help you with your delivery planning most units highlight opportunities for applying learning across units (see Appendix B).

When combining units for the chosen qualification, it's your responsibility to make sure the rules for the qualification are followed.

OCR Level 3 Cambridge Technical Certificate in Applied Science (180 GLH)

For this qualification learners must achieve two mandatory units.

Key to units for this qualification:

M = Mandatory — Learners must achieve these units

E = External assessment — We set and mark the exam

I = Internal assessment — You assess this and we moderate it

Unit no.	Unit title	Unit ref. no. (URN)	Guided learning hours (GLH)	How are they assessed?	Mandatory or optional
1	Science fundamentals	D/507/6148	90	E	**M**
2	Laboratory techniques	H/507/6149	90	E	**M**

To achieve this qualification all learners must successfully master the mandatory content which is shown in the table above by an **M**. It contributes 100% to the qualification grade.

You can download the units from our qualification webpage.

OCR Level 3 Cambridge Technical Extended Certificate in Applied Science (360 GLH)

For this qualification learners must achieve 5 units.

Units are categorised as mandatory and are 90 GLH and 60 GLH.

You must make sure learners meet the requirements for their chosen pathway. We'll endorse their certificate with the pathway they've achieved.

Key to units for this qualification:

M = Mandatory	Learners must achieve these units
E = External assessment	We set and mark the exam
I = Internal assessment	You assess this and we moderate it

Unit no.	Unit title	Unit ref. no. (URN)	Guided learning hours (GLH)	How are they assessed?	Mandatory or optional
1	Science fundamentals	D/507/6148	90	E	**M**
2	Laboratory techniques	H/507/6149	90	E	**M**
6	Control of hazards in the laboratory	A/507/7047	60	I	**M**
18	Microbiology	D/507/6165	60	I	**M**
21	Product testing techniques	L/508/1426	60	I	**M**

To achieve this qualification all learners must successfully master the mandatory content in each specialist pathway which is shown in the table above by an **M**. It contributes 100% to the qualification grade.

You can download the units from our qualification webpage.

OCR Level 3 Cambridge Technical Foundation Diploma in Applied Science (540 GLH)

For this qualification learners must achieve 7 units.

Units are categorised as mandatory and are 60, 90 and 120 GLH.

Key to units for this qualification:

M = Mandatory	Learners must achieve these units
E = External assessment	We set and mark the exam
I = Internal assessment	You assess this and we moderate it

Unit no.	Unit title	Unit ref. no. (URN)	Guided learning hours (GLH)	How are they assessed?	Specialist pathways		
					Human Science	Environmental Science	Food Science
1	Science fundamentals	D/507/6148	90	E	**M**	**M**	**M**
2	Laboratory techniques	H/507/6149	90	E	**M**	**M**	**M**
3	Scientific analysis and reporting	Y/507/6150	120	E	**M**	**M**	**M**
4	Human physiology	D/507/6151	60	I	**M**		
5	Genetics	H/507/6152	60	I	**M**		
6	Control of hazards in the laboratory	A/507/7047	60	I	**M**	**M**	**M**
7	Human nutrition	M/507/6154	60	I			**M**
10	Testing consumer products	F/507/6157	60	I	**M**		**M**
13	Environmental surveying	F/507/6160	60	I		**M**	
14	Environmental management	J/507/6161	60	I		**M**	
16	Waste management	R/507/6163	60	I		**M**	
17	Food technology	Y/507/6164	60	I			**M**

To achieve this qualification all learners must successfully master the mandatory content in each specialist pathway which is shown in the table above by an **M**. It contributes 100% to the qualification grade.

You can download the units from our qualification webpage.

OCR Level 3 Cambridge Technical Diploma in Applied Science (720 GLH)

For this qualification learners must achieve 10 units.

Units are categorised as mandatory and are 60, 90 and 120 GLH.

Key to units for this qualification:

M = Mandatory — Learners must achieve these units
E = External assessment — We set and mark the exam
I = Internal assessment — You assess this and we moderate it

Unit no.	Unit title	Unit ref. no. (URN)	Guided learning hours (GLH)	How are they assessed?	Specialist pathways		
					Human Science	Environmental Science	Food Science
1	Science fundamentals	D/507/6148	90	E	**M**	**M**	**M**
2	Laboratory techniques	H/507/6149	90	E	**M**	**M**	**M**
3	Scientific analysis and reporting	Y/507/6150	120	E	**M**	**M**	**M**
4	Human physiology	D/507/6151	60	I	O		O
5	Genetics	H/507/6152	60	I	**M**		
6	Control of hazards in the laboratory	A/507/7047	60	I	**M**	**M**	**M**
7	Human nutrition	M/507/6154	60	I	O		O
8	Cell biology	T/507/6155	60	I	O		
10	Testing consumer products	F/507/6157	60	I	**M**		**M**
11	Drug development	J/507/6158	60	I	O		
13	Environmental surveying	F/507/6160	60	I		**M**	
14	Environmental management	J/507/6161	60	I		**M**	
15	Sustainability and renewable energy	L/507/6162	60	I		O	
16	Waste management	R/507/6163	60	I		O	O
17	Food technology	Y/507/6164	60	I			**M**
18	Microbiology	D/507/6165	60	I	O	O	O
19	Crop production and soil science	H/507/6166	60	I		O	O
20	Conservation of biodiversity	K/507/6167	60	I		O	

To achieve this qualification all learners must successfully master the mandatory content in each specialist pathway which is shown in the table above by an **M**. It contributes 100% to the qualification grade.

You can download the units from our qualification webpage.

OCR Level 3 Cambridge Technical Extended Diploma in Applied Science (1080 GLH)

For this qualification learners must achieve 15 units.

Units are categorised as mandatory and are 60, 90 and 120 GLH.

Key to units for this qualification:

M = Mandatory — Learners must achieve these units
E = External assessment — We set and mark the exam
I = Internal assessment — You assess this and we moderate it

Unit no.	Unit title	Unit ref. no. (URN)	Guided learning hours (GLH)	How are they assessed?	Mandatory or optional
1	Science fundamentals	D/507/6148	90	E	**M**
2	Laboratory techniques	H/507/6149	90	E	**M**
3	Scientific analysis and reporting	Y/507/6150	120	E	**M**
4	Human physiology	D/507/6151	60	I	**M**
5	Genetics	H/507/6152	60	I	**M**
6	Control of hazards in the laboratory	A/507/7047	60	I	**M**
7	Human nutrition	M/507/6154	60	I	**M**
8	Cell biology	T/507/6155	60	I	**M**
11	Drug development	J/507/6158	60	I	O
13	Environmental surveying	F/507/6160	60	I	**M**
14	Environmental management	J/507/6161	60	I	**M**
15	Sustainability and renewable energy	L/507/6162	60	I	O
16	Waste management	R/507/6163	60	I	**M**
17	Food technology	Y/507/6164	60	I	O
18	Microbiology	D/507/6165	60	I	O
19	Crop production and soil science	H/507/6166	60	I	O
20	Conservation of biodiversity	K/507/6167	60	I	O
22	Global scientific information	L/615/3168	60	E	**M**
23	Scientific research techniques	R/615/3169	120	E	**M**

To achieve this qualification all learners must successfully complete the mandatory content which is shown in the table above by an **M**, and two optional units shown in the table above by an O. The mandatory content contributes 88% to the qualification grade.

You can download the units from our qualification webpage.

5 Preparing for qualification delivery and assessment

Centre and centre assessor responsibilities

Before you plan to seek approval from us to offer these qualifications you must be confident your centre can fulfil all the responsibilities described below.

The quality of the delivery of teaching and the integrity of assessments and quality assurance is paramount. Systems have to be in place so that assessments are fair, valid, reliable, authentic and sufficient. One of the key factors behind valid, fair and reliable assessment is the expertise of those doing the assessment and internal quality assurance.

With this in mind here's a summary of the responsibilities that your centre and centre assessors **must** be able to fulfil:

- there are enough trained or qualified people to:
  - teach and assess the expected number of learners you have in your cohorts
  - internally standardise the number of assessors assessing units you offer
- all teaching staff have the relevant level of subject knowledge and skills to deliver the units you plan to offer and will fully cover the supporting knowledge, understanding and skills requirements for each unit
- any necessary resources are available for teaching and for assessment activities, to give learners every opportunity to meet the requirements of the unit and reach the highest grade possible
- there's a system of standardisation in place so that all assessment decisions for internally assessed units are consistent, fair, valid and reliable. (see 'centre standardisation' in section 8)
- there's enough time for effective teaching, assessment and internal standardisation
- processes are in place to make sure that learners' work is authentic (see 'authenticity of learners' work' in section 8)
- any materials we provide for assessment of internally assessed units cannot be used for practice and then used again, without change, for summative assessment (see section 8)
- for internally assessed units you comply with our requirements for giving feedback to learners (see section 8)
- for internally assessed units that grades are correctly recorded in all records and accurately transcribed to the claim being submitted to us
- exams must be conducted so they comply with the JCQ *Instructions for Conducting Examinations*

- a declaration is made at the point you're submitting any work to us for assessment that confirms:
    - all assessment is conducted according to the specified regulations identified in the Administration area, www.ocr.org.uk/administration/.
    - learners' work is authentic
    - grades have been transcribed accurately when completing our claim documentation
- centre records and learners' work is kept according to the requirements below:
    - learners' work must be kept until after their qualifications have been awarded and any appeals processed. We will not consider any appeals if the centre does not keep the work.
    - internal standardisation and assessment records must be kept securely for a minimum of three years after the date we've issued a certificate for a qualification.

Centre assessors, who are responsible for assessing learners' evidence for internally assessed units, must make sure that:

- learners understand what they need to do to meet the grading criteria and produce valid and sufficient evidence
- learners have access to resources they need to meet the grading criteria and produce evidence
- any assessment guidance is referred to when making assessment decisions
- learners know they must comply with the Data Protection Act when they're producing work for assessment. Learners must not reference another individual's personal details in any evidence produced for summative assessment. It's the learner's responsibility to make sure evidence that includes another individual's personal details is anonymised
- learners' work is authentic
- the learner has completed a Candidate Authentication Statement which covers every unit
- they judge learners' work against the grading criteria we provide for the units
- they record their assessment decisions and justify the grade put forward for moderation using our unit recording sheet (URS) – we provide one for each unit
- they give an appropriate level of feedback to learners and record what feedback has been given as part of the summative assessment
- they liaise with other assessors in the centre to make sure assessment decisions are to the required standard (see 'centre standardisation' in section 8)
- they confirm the unit grade for the learner after internal standardisation (assessors can let the learner know which grade has been given but that it can't be confirmed until after our moderation)
- all relevant evidence is present and reflects centre assessment decisions against the grading criteria (and the candidate authentication statement is available) before the unit is claimed.

Guidance for delivery

The guidance about how to deliver these qualifications isn't exhaustive. You should tailor your delivery so it meets the interests and needs of your learners.

You're free to deliver these qualifications using any mode of delivery that meets the needs of your learners. Whichever mode you use, your learners must have appropriate access to the resources they need to complete their learning and carry out their assignments for assessment.

You should consider the learner's complete learning experience when you're designing learning programmes. These qualifications can be part of a 16–19 study programme and there'll be ways to integrate learning required for other qualifications or to develop and maintain the skills that are essential for further study and work. For example, we know it's important to keep developing English and Maths skills after GCSE. We'll help you with your curriculum planning by signposting opportunities for English and Maths skills practice in the delivery guides for each unit. You can access the delivery guides from the business qualification page of our website.

A project-based approach to teaching and learning is an ideal way to deliver these qualifications holistically and we will help you develop your approach through our resources. We've talked with centres who deliver our qualifications about the benefits of a project-based approach to learning. They've told us:

- it reinforces a synoptic application of skills and knowledge
- it's relevant to and reflective of work
- it makes the process of learning and application more meaningful and motivating.

We've designed these qualifications to facilitate this.

Important information on teaching content in units

(The use of i.e. / e.g. in teaching content)

The teaching content in every unit tells you what you have to teach to make sure learners can access the highest grades.

Anything which follows an i.e. details what you must teach as part of that area of content.

Anything which follows an e.g. is illustrative. Where we use e.g., learners must know and be able to apply relevant examples in their work, although these don't need to be the same ones specified in the unit content.

For internally assessed units you need to make sure that any assignments you create, or any modifications you make to an assignment, don't expect the learner to do more than they've been taught, but must enable them to access the full range of grades as described in the grading criteria.

For externally assessed units, where the content contains i.e. and e.g. under specific areas of content, we'll follow these rules when we set questions for an exam:

- we may ask a direct question about unit content that follows an i.e.
- where we show unit content as an e.g. a direct question will not be asked about that example. Any questions about the area of content will give learners the opportunity to

provide their own examples as the unit has not specified which examples they should be familiar with.

Initial assessment of learners

It's important that you carry out an initial assessment to identify learners' levels of knowledge and understanding and any potential gaps that need to be addressed. This will also:

- help you and the learners to identify the most appropriate qualifications
- allow you to plan the assessment
- help learners understand the best place to start generating evidence.

Prior knowledge and experience

Of course, learners may have already gained a lot of relevant knowledge and experience that you should take into account. This is particularly relevant where they're studying part-time while in work.

Recognition of prior learning (RPL) is the process for recognising learning that never received formal recognition through a qualification or certification. This includes knowledge and skills gained in school, college or university and outside formal learning situations. Evidence can draw on any aspect of a candidate's prior experience including:

- domestic/family life
- education
- training
- work activities
- voluntary activities.

It's important you make it clear to learners that the RPL process is about how they've acquired the knowledge, understanding or skills; it doesn't mean they're exempt from the assessment. In no circumstance does the RPL process mean that any required qualification assessments can be avoided e.g. mandatory exams, practical/theory tests or assignments.

Evidence obtained through the RPL process must be assessed, to the same rigorous quality as evidence obtained through any other process.

RPL allows an individual to avoid unnecessary learning and we encourage the use of it in relation to the internally assessed units. Please let your learners know they can bring forward any relevant learning so it can be assessed against the grading criteria specified in the internally assessed unit(s) they aim to complete.

We ask you to judge the relevance of every aspect of a learner's prior learning (including how current and relevant it is) to the unit being assessed, before we moderate the assessment.

6 Synoptic assessment

Synoptic assessment is a feature of these qualifications and it requires learners to use an appropriate selection of their knowledge, understanding and skills, acquired through all of the units that make up their qualification, in an integrated way and apply them to a key task or tasks.

This helps learners to develop their appreciation and understanding of the connections between the different elements of learning in these qualifications to help make their curriculum meaningful and better prepare them for further education.

Every scientist needs to have a good grasp of a science laboratory and maths in the context of science as a minimum as well as a range of other skills such as being able to conduct tests and to record the results.

The learner will need to develop essential underpinning knowledge and understanding through the mandatory units, Unit 1 Science fundamentals and Unit 2 Laboratory techniques and if learners are taking the Diploma they will also need Unit 3 Scientific analysis and reporting.

(We strongly recommend that learners complete Units 1 and 2 (and for the Diploma candidates Unit 3) before undertaking assessment in other units because these areas of learning will underpin the whole qualification. For example, learners will need to apply laboratory techniques covered in Unit 2 as to be able to complete the unit 8 on how to examine cell structure.)

Learners will also be required to use an appropriate selection of their knowledge, understanding and skills acquired through all of the units that make up their qualification in an integrated way and apply them to a key task or tasks. This helps learners to develop their appreciation and understanding of the connections between the different elements of learning in these qualifications.

For the Extended Certificate the key tasks are contained in the unit Product Testing Techniques.

For the Foundation Diploma and Diploma there are three pathways: Food Science, Environmental Science and Human Science. For each pathway the learner will be required to use skills, knowledge and understanding from the other units taken from across the qualification to key tasks in a specific unit. Their choice of optional units will contribute to setting the context for the key tasks:

- For the Food Science pathway the key tasks are contained in Unit 10 ‘Testing Consumer Products’. If learners take optional units in Human Physiology, Human Nutrition, Waste Management, and Microbiology the type of product they test could be ready made meals to assess nutritional benefits.
- For the Human Science pathway the key tasks are contained in Unit 10 ‘Testing Consumer Products’. If learners take optional units in Human Physiology, Human Nutrition, Cell Biology, and Drug Development the type of product they test could be vitamin and mineral supplements and its benefit on the human system
- For the Environmental Science pathway the key tasks are contained in Unit 14 ‘Environmental management’. If learners take optional units in Sustainability and Renewable Energy, Waste Management, Microbiology and Crop Production and Soil Science and the learner could survey and test the impact of a wind turbine placed close to crop fields and to lead to being able to propose a management plan.

The Extended Diploma includes two additional mandatory units, Unit 22 ‘Global Scientific Information’ and Unit 23 ‘Scientific Research Techniques’. Unit 22 examines how organisations share and use information to further our understanding of physical, chemical and biological phenomena and how this shared knowledge aids the technicians who work in these areas. Unit 23 introduces a range of scientific research techniques and how to use these to answer real questions. Learners will identify key issues and questions and then design investigations to explore them more deeply. Using the skills and knowledge gained through the qualification learner will design and carry out their own scientific research investigations learning the importance of secondary research and how to evaluate it.

It will be possible for learners to make other connections between other units over and above the unit containing the key tasks. We have indicated where these links are in each unit and this may help also with planning teaching and delivery. You should encourage learners to apply their learning across the qualification to help make their curriculum relevant and meaningful, and better prepare them to go on to further study in science.

The tasks will be assessed through an assignment set by us, assessed by you and moderated by us.

Other opportunities for applying learning across units

It will be possible for learners to make other connections between other units over and above the unit containing the key tasks. We have indicated where these links are by using asterisks in the grading criteria (P1*) in each unit and in an overview in Appendix B.

This may also help with planning teaching and delivery.

7 External assessment

Summary of the externally assessed units

Unit 1 Science fundamentals	
90 GLH 2 hours written paper 90 marks OCR set and marked	• comprises short answer questions and questions requiring more extended responses • a scientific calculator may be used
Unit 2 Laboratory techniques	
90 GLH 2 hours written paper 90 marks OCR set and marked	• comprises short answer questions and questions requiring more extended responses • a scientific calculator may be used
Unit 3 Scientific analysis and reporting	
120 GLH 2 hours written paper 90 marks OCR set and marked	• comprises short answer questions and questions requiring more extended responses • a scientific calculator may be used
Unit 22 Global Scientific Information	
60 GLH 1 hour 30 minutes written paper 60 marks OCR set and marked	• comprises short answer questions and questions requiring more extended responses based on a pre-release scenario • a scientific calculator may be used
Unit 23 Scientific Research Techniques	
120 GLH 2 hour written paper 60 marks OCR set and marked	• comprises short answer questions and questions requiring more extended responses based on a pre-release scenario

The pre-release material for Units 22 and 23 will be available from Interchange six weeks before the timetabled examination date.

There are two resit opportunities for each examined unit.

Learning Outcome weightings

Each Learning Outcome (LO) in an externally assessed unit is given a percentage weighting. This reflects the size and demand of the content you need to cover and its contribution to the overall understanding of the unit. You'll find the weightings for each LO in the externally assessed units.

How these units are assessed

These units are available as timetabled examinations. We set the dates.

Achievement at unit level is graded as Near-Pass, Pass, Merit or Distinction based on reaching the required grade boundary marks for each externally assessed unit. If a learner doesn't achieve the mark required for a 'Near-Pass' grade we'll issue an unclassified result for that unit.

We'll assess these qualifications in accordance with the Regulator's General Conditions of Recognition.

Your centre must provide appropriate assessment facilities for learners that comply with the JCQ *Instructions for Conducting Examinations*.

Availability of external assessment

There are two examination series each year in January and June. You can enter your learners for different units in different exam series. You'll find full details in the Administration area, www.ocr.org.uk/administration/.

Resitting external assessment

Learners can resit an examined unit twice before they complete the qualification. We'll use the best unit result to calculate the certification result.

Your centre must make sure that when arranging resit opportunities you don't adversely affect other assessments being taken.

Arranging a resit opportunity is at your centre's discretion. You should only plan resits if it's clear the learner has taken full advantage of the previous assessment opportunity and formative assessment process.

Reporting suspected malpractice

For more information about suspected malpractice see section 8.

8 Internal assessment

Assignments for internal assessment

We recommend using assignments to assess learners for the internally assessed units.

An assignment has a set of related tasks with a common purpose or work-relevant reason for the learner to apply the knowledge, understanding and skills to achieve a unit. It acts as a stimulus to give learners the opportunity to generate evidence that meets the grading criteria.

The common purpose or work-relevant reason could be a scenario, a case study or brief that sets out the circumstances or reasons for completing the tasks. A scenario could describe the requirements that would address a particular challenge (designing a new marketing campaign to achieve an increase in sales) or a case study could be used to inform a proposal (the impacts on a business of poor employee performance to inform how to improve methods of employee motivation).

You are free to create your own assignments to reflect the local or regional needs that are most relevant to your centre. There are more details in the next section.

We'll provide model assignments for the mandatory units that are internally assessed. Our model assignments can be:

- used as they are to assess your learners
- modified to suit your local or regional environment
- used as a guide to help you design your own assignments.

These qualifications are ideal for delivering through a project-based learning programme so you can carry the project-based approach through to the assessment.

Designing your own assignments for internally assessed units

We provide an assignment checking service for Cambridge Technicals centres. When you use this service, we check that the assignment you've designed covers the grading criteria in the unit and allows every learner to reach the highest grade if they demonstrate they have the associated level of knowledge, understanding and skills. You'll find details of how to request this service on our CPD Hub.

When designing assignments you must:

- write tasks in a way that makes it clear to the learner what they must do. Don't structure tasks so they give step-by-step instructions, repeat the learning or themes of the learning, or be so prescriptive or detailed that they give the answer to the learner. Tasks must allow the learner to decide how to approach the task (what they do in what order), meaning that they can apply their learning
- set tasks that reflect the command verbs used in the grading criteria. For example, where we ask for an evaluation the task you set must allow for a qualitative judgement to be made, taking into account different factors and using available knowledge, experience and evidence. There is a command verb glossary on the business qualification page of our website.

- only specify the format of evidence when it's a requirement of the grading criteria or learning outcome. For example, for a unit on marketing where the grading criteria are about messaging, inference and persuasion in text you could ask learners to produce the content of a webpage rather than ask them to create a webpage itself
- avoid the need for excessive amounts of evidence. For example, a report can be a good way to pull together the evidence to meet several grading criteria
- make sure every learner is able to produce their own evidence. For example, if the task is to diagnose a fault in a piece of equipment and learners are given equipment to assess you have to be able to verify that the learner diagnosed the fault themselves. This could mean observing each learner or asking additional questions on how they made the diagnosis. The evidence produced will also need to demonstrate that this is what took place, through the use of witness statements, for example.
- tell learners how long they should expect to spend on each task. This is for guidance, learners must be allowed sufficient time to complete the tasks. The amount of time will vary depending on the nature of the tasks and the ability of individual learners.
- make sure every learner has access to the appropriate resources needed to complete the tasks
- make every effort to make sure materials:
    - support equality and diversity in the language used, in the type of tasks set and in the scenarios provided
    - are free from discrimination and stereotyping of groups or individuals on the basis of, for example, gender, ethnicity, political beliefs, cultural background..

Finally, you don't have to set the same assignment for every learner in the cohort. If a learner has work experience where they can generate evidence towards some or all of a unit you can work with the employer to tailor an assignment and enable that to happen. You can also cover more than one unit in an assignment.

Assignments for practice

You **cannot** use assignments you're going to use for summative assessment as practice materials. (Summative assessment is the assessment of learning; it's a measure of a learner's achievement and you use it as the formal assessment of a learner's knowledge, understanding and skills.)

Changing the context of an assignment will help you to manage this. If a unit calls for the learner to do a cost analysis, a practice task will of course ask them to do this. If you've provided the data they need to analyse for practice then change the data for the summative assessment. If the learner has to generate data about a specific product before analysing it, then change the product to one that will generate different data.

Internal assessment and external moderation: a summary of how it works

The key features of assessment and moderation for the internally assessed units are:

- you can create assignments to assess your learners against the requirements of a unit
- where possible, assessors should draw on learners' work-based opportunities to generate evidence
- assessment of internally assessed units can take place at a time to suit you and your learners
- work for assessment is centre-assessed and assessment decisions are internally standardised within your centre
- your centre's assessment decisions are externally moderated by one of our visiting moderators
- if your centre-assessed work doesn't meet the requirements determined by the learning outcomes and grading criteria of the unit(s), the unit grade(s) will be adjusted.

Your centre will need to identify staff that will act as centre assessors. They must have suitable subject knowledge and experience to be able to make judgements about learners' achievements against the grading criteria of the unit.

You must have an effective system set up for recording assessment decisions, including decisions made during internal standardisation. Assessors must record the feedback given to learners.

You should record your comments on the Unit Recording Sheets which you can download from the qualification webpage.

You must make sure assessment records are fully auditable. Our moderator must be able to see, for each unit, evidence of:

- who assessed the learner
- what was assessed, i.e. the unit evidence
- when the assessment took place
- what feedback was given to the learner
- when centre assessment decisions were internally standardised and by whom
- what feedback was given to the assessor, including if they agree with the assessment decision or not (and why), as well as any action points that need addressing prior to submission for moderation and/or recommendations for future consideration.

Centre standardisation

If your centre has a number of staff acting as assessors for these qualifications, you **must** carry out internal standardisation to make sure all learners' work is assessed consistently to the required standard. We have a guide on how internal standardisation may be approached on our webpages for Cambridge Technicals.

If you're the only assessor in your centre for these qualifications, then it's still advisable to make sure your assessment decisions are internally standardised by someone else either in your centre or another centre. This should be someone who has experience of the nature of these qualifications (e.g. is delivering a similar qualification in another subject) or has relevant subject knowledge. You should ask them to review a sample of the assessments. Please note we are not able to provide information or contact details on centres offering this qualification.

You must keep evidence of your internal standardisation in the centre for the moderator to see.

So there's a consistent approach to internal standardisation, you might decide to nominate an 'Internal Quality Assurer' (IQA).

Whoever is responsible for internal standardisation must make sure all assessors are assessing to the required standard and that all assessment decisions are fair, valid and reliable.

To do this they must:

- advise on interpretation of the standards, including feedback from previous assessments (where relevant)
- co-ordinate assessment practice
- provide advice and support to assessors
- monitor and observe assessment practice to make sure that all assessments are in-line with the required standards
- sample assessments to confirm assessors' judgements across all units and all grades
- make sure feedback is given to all assessors and documented, e.g. records of feedback
- suggest ways in which assessment may be brought into line to meet the required standard
- check that all units and all grades have been included in internal standardisation
- maintain assessment documentation
- organise regular standardisation meetings/activities/events in your centre
- identify assessor development needs
- act as arbitrator for any disagreements in outcomes of assessments, including appeals.

Taking assignments and assessing learners' work

Learners can take assignments for internally assessed units at any time within the study programme. We can moderate your claims for internally assessed units when you're ready.

We'll arrange a date to visit that is suitable for both you and our moderator.

You must plan when you expect your learners to be ready for assessment. Learners can repeat an assignment if they have not performed at their best but you must use your discretion as to whether or not this is in their best interests. We strongly advise that you leave time in your planning in case an assignment needs to be repeated.

Authenticity of learners' work

Every learner must produce their own work independently. You must put in place appropriate mechanisms to make sure that you can be confident that the work you accept as evidence of a learner's achievement is their own.

You must:

- make sure learners and centre assessors understand what constitutes plagiarism and not accept plagiarised work as evidence
- be able to distinguish individual contributions from group work
- use supervision and questioning as appropriate to confirm authenticity
- make sure learners and centre assessors confirm the work is the learner's own.

Plagiarism

Work must be free from plagiarism. Plagiarism is the submission of someone else's work as your own and/or failure to acknowledge a source correctly. Plagiarism makes up a large percentage of cases of suspected malpractice reported to us by moderators. You must make sure you don't accept plagiarised work as evidence.

In line with the policy and procedures of JCQ on suspected malpractice, the penalties applied for plagiarism would usually result in the claim not being allowed.

Plagiarism often occurs innocently when learners don't know that they must reference or acknowledge their sources, or aren't sure how to do so. It's important to make sure your learners understand:

- the meaning of plagiarism and what penalties may be applied
- that they can refer to research, quotations or evidence produced by somebody else but they must list and reference their sources
- quoting someone else's work, even when it's properly sourced and referenced, isn't an indication of understanding. The learner has to 'do' something with that information to show they understand. For example, if a learner has to analyse data from an experiment, quoting data doesn't show that they understand what it means. The learner has to interpret the data and, by relating it to their assignment, say what they think it means.

Group working

Your learners can work collaboratively or in groups to carry out work towards assessment tasks. However, you must make sure that each learner generates their own individual evidence to show they've met the grading criteria.

When working in a group all learners in the group should have a responsibility and/or a role that gives them the opportunity to generate individual evidence for assessment. For example, if the unit requires learners to plan the organisation of an activity, this could be managed in a group discussion. The group discusses ideas for the activity, organisational requirements, roles and responsibilities to complete the activity, etc. All learners must show that they've the skill of planning so **all** members of the group must take part in the discussion. If three members of the group contributed to the discussion and one member took notes but did not contribute to the discussion, their note taking would **not** be considered a contribution towards planning.

Supervision

We recognise that you might not be able to invigilate or directly supervise every learner as they complete their assignment. Learners can complete their assignments in their own time, at the centre or at home. If you can't supervise, you must use enough checks so you're confident the learner's work is authentic. For example you can use questioning to confirm the depth and breadth of their understanding of the topic they've covered in a specific piece of work.

Use of questioning

Asking a learner questions will help you determine if the work is their own. If you haven't been able to supervise the learner, then asking questions, for example, about how they've done the work, what processes they went through to produce it and how they've related that to the assignment, should give you a clear indication as to whether or not they've done the work themselves.

Learner and centre declaration

All learners must complete a declaration to confirm that the work they've submitted is their own. **They must do this to cover every unit**. We provide a Candidate Authentication Statement for you to use for this purpose. You'll find it on our website.

We'll also ask you to confirm this declaration when making a unit claim.

Feedback to learners

You can discuss work-in-progress towards summative assessment with learners to make sure it's being done in a planned and timely manner. It also provides an opportunity for you to check the authenticity of the work. You must intervene if you feel there's a health and safety risk.

Feedback mustn't provide specific advice and guidance that would be construed as coaching as it would compromise the learner's ability to independently perform the task(s) they are doing and constitutes malpractice.

You can annotate your feedback on the learners' original work submitted for assessment or you can record it in your own separate document (whichever method you use it must be available to our moderator).

Your feedback should:

- be supportive, encouraging and positive
- inform the learner of what you've noticed, not what you think (for example if you have observed the learner completing a task you can describe what happened, what was produced and what was demonstrated).

Your feedback can:

- identify that the learner hasn't met the command verb. For example, 'This is only a description, not an evaluation'
- identify what area of work could be improved but not detail how to improve it. You can remind learners about what they were taught but not how to apply it to improve the work.

Your feedback must not:

- be so detailed that it provides a step-by-step guide on what to do
- coach the learner on how to achieve or complete the task
- provide detail on where to find information/evidence.

In other words, your feedback mustn't tell the learner what they need to do to improve their work. The learner needs to think how to apply their learning and your feedback. You mustn't do the work for them.

Taking an assignment for summative assessment

You must provide your learners with the relevant resources they need to do the assignment. This could include:

- specialist equipment
- software
- people/participants
- practical space.

When learners are working on their evidence you can ask questions about what they're doing to encourage them, make sure they understand what the tasks are and check they're making progress. You can't tell them how to complete the tasks in a way that would be tantamount to doing the work for them. You mustn't coach learners when they're doing their assignment for assessment, as this would give them an unfair advantage. Please see the previous section 'Feedback to learners'.

You should set a realistic date for submitting the assignment, having considered the purpose of the unit and how that might affect timescales. We don't specify what the submission time for the assignment should be – we think it's best to leave this decision to your professional judgement.

What evidence is needed to assess a learner?

The learner's evidence should be in an appropriate format to demonstrate their skills, application of knowledge and understanding as specified in the grading criteria for a unit.

You should discuss with learners what the most suitable sources of evidence are. It isn't the quantity of the evidence they've produced that's important - it's the quality and breadth, that they've produced it themselves, and that it meets the grading criteria.

Evidence could be written work, audio/visual recordings, digitally formatted documents, a product or photographs of the product.

Evidence can come from a number of sources. The main ones are:

- outcomes of assignments, tasks or work-based activities (through projects or real work)
- observation of practice
- responses to questions
- witness statements.

Learners should make sure their work is clearly presented, referenced and ordered to help in the assessment.

The same evidence can contribute to more than one unit as long as it clearly meets the relevant grading criteria. For moderation, it must be clear which part of that evidence meets each unit.

Learners mustn't reference another individual's personal details in any evidence produced for summative assessment. It's the learner's responsibility to make sure evidence that includes another individual's personal details is anonymised to comply with the Data Protection Act.

Witness statements

Witness statements can be a useful way of providing supporting evidence where a skill is being used which isn't easily represented in portfolio evidence. They're supplementary evidence of what the learner has done and are to be used in conjunction with other evidence. For example, a witness statement could support evidence of a learner delivering a presentation alongside the actual presentation and speaker notes.

Witness statements should be suitably detailed, for each learner, to enable the centre assessor and our moderator to determine if the grading criteria have been met. You should use the witness statement template available on our website.

Assessing work for (summative) assessment

Once your learners have completed everything they need to do for their assignment, they must submit their work to you to be assessed. You must be convinced, from the evidence presented, that learners can work independently to the required standard.

You must judge or 'mark' the work against the grading criteria for the unit and identify a grade. Please annotate the work to show where the evidence indicates they've achieved

the grading criteria. Your centre must internally standardise the assessment decisions for the cohort and do this before you give feedback to the learner.

When you're confident the learner has demonstrated that they've met all the requirements of the unit, for at least a pass grade, you can submit a claim to us for moderation.

You mustn't add, amend or remove any work after it's been submitted to us for final assessment.

Resubmitting work for (summative) assessment

If you and the learner feel they haven't performed at their best during the assessment, the learner can, at your discretion, improve their work and resubmit it to you for assessment. You must be sure it's in the learner's best interests to re-attempt the assessment.

You should set a realistic date for the resubmission of work having considered the purpose of the unit and what the learner intends to improve. You must record the reasons why you've allowed them to resubmit in your centre's assessment decision records. You must also follow our guidelines on giving feedback and record the feedback you give them on the original work. We monitor the assessment decisions you make.

You mustn't encourage multiple re-submissions of work. Re-submission at the centre assessment stage is intended to allow the learner to reflect on feedback and improve, but not to be an iterative process where they make small modifications through on-going feedback to eventually achieve the desired level.

Reporting suspected malpractice

It is the responsibility of the Head of Centre[1] to report all cases of suspected malpractice involving centre staff or candidates. A JCQ Report of Suspected Malpractice form (JCQ/M1 for candidate suspected malpractice or JCQ/M2a for staff suspected malpractice) is available to download from the JCQ website (www.jcq.org.uk/exams-office/malpractice) and should be completed as soon as possible and emailed to malpractice@ocr.org.uk.

When asked to do so by OCR, Heads of Centres are required to investigate instances of malpractice promptly and report the outcomes to OCR.

Further information regarding reporting and investigating suspected malpractice and the possible sanctions and penalties which could be imposed, is contained in the JCQ publication: *General and Vocational Qualifications – Suspected Malpractice in Examinations and Assessments* which is available from the JCQ website. Centres may also like to refer to the OCR Website for more details.

[1] This is the most senior officer in the organisation, directly responsible for the delivery of OCR qualifications, e.g. the Head Teacher or Principal of a school/college. The Head of Centre accepts full responsibility for the correct administration and conduct of OCR exams

9 External moderation

An OCR visiting moderator externally moderates your assessment decisions.

For details about moderation visits refer to the Administration area, visiting moderation.

External moderation makes sure centres have made the correct assessment decisions. Our moderator will confirm or adjust the grade you've given to a learner's work and provide feedback to you on the decisions they've made.

External moderation of a centre's assessment decisions is achieved through systematic sampling of the work submitted for moderation. The outcome of the sampled moderation will apply to all learners' work submitted for that unit in the claim.

Your centre can have up to two moderation opportunities per academic year (subject to centre activity). We can arrange additional chargeable moderation sessions – for more details refer to the Administration area, www.ocr.org.uk/administration/.

On the basis of the sample taken, our moderator will either **agree** in the main with your centre's assessment decisions or **disagree** with them in relation to particular units.

If the decision is **agree**, your centre's assessment decisions for all learners' work entered for moderation on that occasion, i.e. in the single claim submitted for moderation, will be confirmed by our moderator once moderation is completed.

If the decision is **disagree**, our moderator will provide feedback to your centre. Disagreement is usually down to one of the following:

- work doesn't meet the required standard for the grading criteria claimed by the centre
- assessment in the sample is inconsistent
- some evidence is missing or hasn't been cross-referenced to the grading criteria, so our moderator can't find it
- there's no evidence of assessment having taken place.

Our moderator will prepare a full report that will include comments on the accuracy of assessment and centre actions, if appropriate, for future assessments.

Where the moderator confirms the assessment decisions, they'll submit the claims to us for processing.

10 How to calculate the qualification grade

Grading

Centre-assessed units

These units are assessed by your centre and externally moderated by us.

Each unit has specified grading criteria for Pass, Merit and Distinction.

A summative unit grade can be awarded at Pass, Merit or Distinction:

- to achieve a 'Pass' a learner must have satisfied **all** the 'Pass' grading criteria
- to achieve a 'Merit' a learner must achieve **all** the 'Pass' grading criteria and **all** the 'Merit' grading criteria
- to achieve a 'Distinction' a learner must achieve **all** the 'Pass' grading criteria and **all** the 'Merit' grading criteria and **all** the 'Distinction' criteria.

If a learner doesn't meet all the 'pass' grading criteria, we issue an unclassified result for that unit.

Externally assessed units

We mark and assess all externally assessed units. We mark each one according to a mark scheme, and the mark will determine the grade awarded ('Near-Pass', 'Pass', 'Merit' or 'Distinction'). We determine grade boundaries for each of the externally assessed units each assessment series. If a learner doesn't achieve the mark required for a 'Near-Pass' grade, we issue an unclassified result for that unit.

Qualification

We grade the overall qualification using a structure of Pass, Merit, Distinction, Distinction*.

Learners who don't achieve the required units will be unclassified.

For the larger qualifications (540GLH and above) qualification grades will be a combination of two grades e.g. Merit Pass (see 'Qualification grade tables' later in this section.

If a learner resits an examined unit or resubmits an internally assessed unit, we use the best unit results to calculate the overall grade to make sure they get the best possible grade for their full qualification.

We'll print the pathways achieved on learners' full qualification certificates.

Calculating the qualification grade

To be awarded a full qualification, **a learner must achieve the units required for the qualification with at least:**

- **a Near-Pass grade for the externally assessed units**
- **a Pass grade for all the internally assessed units.**

If they don't do so, they won't be awarded the qualification.

For the Certificate and Extended Certificate

Learners will be awarded a Pass, Merit, Distinction or Distinction* qualification grade determined by the aggregation of points gained through the successful achievement of individual units.

For the Foundation Diploma, Diploma and Extended Diploma

Learners will be awarded a combination of Pass, Merit, Distinction or Distinction* qualification grades determined by the aggregation of points gained through the successful achievement of individual units.

The number of points available for each unit depends on the unit grade achieved.

Points available for unit grade achieved

You'll find details of unit GLH in 'How these qualifications are structured' in section 4.

The table below shows the number of points issued for each grade.

Unit GLH	**Points table for units based on GLH**				
	Near-Pass (R)*	Pass	Merit	Distinction	unclassified
60	12	14	16	18	0
90	18	21	24	27	0
120	24	28	32	36	0

* Near-Pass (R) grade is issued, at unit level, for students who narrowly miss a Pass on externally assessed units.

To calculate the learner's qualification grade

You'll need to add up all the points for the units the learner has achieved, making sure they've covered the appropriate mandatory content for the chosen qualification.

Having calculated the total number of points based on the unit grades you'll check this figure in the qualification grade table, for the relevant qualification, to identify the overall qualification grade. If a learner doesn't achieve the lowest points score required for the qualification, we issue an unclassified result.

Example A
Learner A has taken the units required for the Diploma with one pathway, Environmental Science.

The calculation would be:

Unit	GLH	Grade	Number of points
1	90	Pass	= 21 points
2	90	Merit	= 24 points
3	120	Distinction	= 36 points
6	60	Pass	= 14 points
13	60	Pass	= 14 points
14	60	Merit	= 16 points
15	60	Pass	= 14 points
16	60	Merit	= 16 points
19	60	Merit	= 16 points
20	60	Pass	= 14 points
		Total number of points	= 185 points

In this example, Learner A has an overall qualification grade of a Merit Merit.

Example B

Learner B has taken the units required for the Diploma with one pathway, Food Science.

The calculation would be:

Unit	GLH	Grade	Number of points
1	90	Distinction	= 27 points
2	90	unclassified	= 0 points
3	120	Distinction	= 36 points
4	60	Merit	= 16 points
6	60	Pass	= 14 points
7	60	Distinction	= 18 points
10	60	Merit	= 16 points
16	60	Pass	= 14 points
17	60	Distinction	= 18 points
18	60	Merit	= 16 points
		Total number of points	= 175 points

In this example, while Learner B has enough points to be eligible for a Pass Pass, they wouldn't be awarded it because they hadn't achieved at least a Near-Pass for Unit 2, an unclassified result would be issued.

Example C
Learner C has taken the units required for the Diploma with one pathway, Environmental Science.

The calculation would be:

Unit	GLH	Grade	Number of points
1	90	Pass	= 21 points
2	90	Near-Pass	= 18 points
3	120	Distinction	= 36 points
6	60	Pass	= 14 points
13	60	Pass	= 14 points
14	60	Merit	= 16 points
15	60	Pass	= 14 points
16	60	Merit	= 16 points
19	60	Merit	= 16 points
20	60	Pass	= 14 points
		Total number of points	= 179 points

In this example, Learner C has an overall qualification grade of a Merit Pass.

Qualification grade table
OCR Level 3 Cambridge Technical Certificate (180 GLH)

The table below shows the points ranges and the grades that those ranges achieve.

Points range	Grade	
52 and above	Distinction*	D*
50 – 51	Distinction	D
46 – 49	Merit	M
36 – 45	Pass	P
Below 36	Unclassified	U

Qualification grade table
OCR Level 3 Cambridge Technical Extended Certificate (360 GLH)

The table below shows the points ranges and the grades that those ranges achieve.

Points range	Grade	
104 and above	Distinction*	D*
100 – 103	Distinction	D
92 – 99	Merit	M
72 – 91	Pass	P
Below 72	Unclassified	U

Qualification grade table
OCR Level 3 Cambridge Technical Foundation Diploma (540 GLH)

The table below shows the points ranges and the grades that those ranges achieve.

Points range	Grade	
156 and above	Distinction* Distinction*	D*D*
153 – 155	Distinction* Distinction	D*D
150 – 152	Distinction Distinction	DD
144 – 149	Distinction Merit	DM
138 – 143	Merit Merit	MM
132 – 137	Merit Pass	MP
108 – 131	Pass Pass	PP
Below 108	Unclassified	U

Qualification grade table
OCR Level 3 Cambridge Technical Diploma (720 GLH)

The table below shows the points ranges and the grades that those ranges achieve.

Points range	Grade	
208 and above	Distinction* Distinction*	D*D*
204 – 207	Distinction* Distinction	D*D
200 – 203	Distinction Distinction	DD
192 – 199	Distinction Merit	DM
184 – 191	Merit Merit	MM
176 – 183	Merit Pass	MP
144 – 175	Pass Pass	PP
Below 144	Unclassified	U

Qualification grade table
OCR Level 3 Cambridge Technical Extended Diploma (1080 GLH)

The table below shows the points ranges and the grades that those ranges achieve.

Points range	Grade	
312 and above	Distinction* Distinction* Distinction*	D*D*D*
308 – 311	Distinction* Distinction* Distinction	D*D*D
304 – 307	Distinction* Distinction Distinction	D*DD
300 – 303	Distinction Distinction Distinction	DDD
292 – 299	Distinction Distinction Merit	DDM
284 – 291	Distinction Merit Merit	DMM
276 – 283	Merit Merit Merit	MMM
268 – 275	Merit Merit Pass	MMP
260 – 267	Merit Pass Pass	MPP
216 – 259	Pass Pass Pass	PPP
Below 216	Unclassified	U

11 Certificate and results

Claim a qualification

For the internally assessed units, there are no specific deadlines for claiming the units. However, it's important to make claims only when you're confident the learner has met the requirements for the unit.

For examined units, the assessment is time-tabled and we'll issue results according to the schedule given in the Administration area, www.ocr.org.uk/administration/.

We can only award a qualification and issue a certificate for it once the learner has achieved all the units required for the qualification they've been entered for.

You shouldn't make a claim unless, in the final opinion of your centre, the evidence meets the requirements for certification.

Certificates

We'll put the regulated qualification titles and numbers on learners' certificates.

We'll issue a certificate confirming achievement of the qualification directly to your centre for successful learners. This is an automated process, you don't need to claim or 'cash-in' a full qualification.

Unit certificates will not be issued as standard; however, a unit certificate can be requested by the centre. The unit certificate will be free of charge providing it is claimed within 2 years (24 months) of the learner being entered for the qualification.

If a learner can't complete the full qualification you can print a result slip showing individual unit results, from OCR Interchange, or you can make a specific request for unit certificates.

Refer to the Administration area, certificates, www.ocr.org.uk/administration/ for full details.

Replacement certificates

For details on replacement certificates refer to the Administration area, certificates, www.ocr.org.uk/administration/.

Enquiries about results

Under certain circumstances, you may wish to query the result(s) issued to one or more learners.

To find out more about this, please refer to the JCQ *Post-Results Services* booklet and the Administration area, post results services, www.ocr.org.uk/administration/.

12 Administration and other information

For information on how to administer these qualifications please follow the link to OCR's Administration area, www.ocr.org.uk/administration/.

You'll find all the details about how the qualifications run, what you need to do and when. It covers everything from becoming an OCR centre, to making entries, claiming certificates, special arrangements and contacting us for advice.

Avoidance of bias

We've taken great care in preparing these qualifications to avoid bias of any kind. We've given special focus to the eight strands of the Equality Act with the aim of making sure both direct and indirect discrimination are avoided.

Access arrangements and special consideration

There can be adjustments to standard assessment arrangements on the basis of the individual needs of learners.

It's important that you identify as early as possible whether learners have disabilities or particular difficulties that will put them at a disadvantage in the assessment situation and choose a qualification or adjustment that allow them to demonstrate attainment.

The responsibility for providing adjustments to assessment is shared between your centre and us. Please read the JCQ booklet *Access Arrangements and Reasonable Adjustments* at www.jcq.org.uk.

If you have learners who need a post-examination adjustment to reflect temporary illness, indisposition or injury at the time the assessment was taken, please read the JCQ document *A guide to the special consideration process*.

For more information on access arrangements refer to the Administration area, preparation at www.ocr.org.uk/administration/.

If you think any aspect of these qualifications unfairly restricts access and progression, please email or call our Customer Support Centre.

13 Contacting us

Feedback and enquiries

We aim to provide consistently great customer service and your feedback is invaluable in helping us to achieve our goal. For questions about our qualifications, products and services, please contact the Customer Support Centre. To leave your feedback on the OCR website, people and processes please use our feedback form.

Write to: Customer Suport Centre
OCR
Progress House
Westwood Way
Coventry
CV4 8JQ

Email: vocational.qualifications@ocr.org.uk

Telephone: 024 76 851509

Fax: 024 76 421944

You could also visit our website at www.ocr.org.uk for more information about our qualifications.

Complaints

We are committed to providing a high quality service but understand that sometimes things can go wrong. We welcome your comments and want to resolve your complaint as efficiently as possible. To make a complaint please follow the process set out on our website.

Appendix A Performance descriptors

The performance descriptors indicate the level of attainment associated with Pass, Merit and Distinction grades at Level 3.

They are for use in developing units and assessment criteria, setting assessment materials and determining grade boundaries (where applicable) at awarding meetings. They give a general indication of the levels of attainment likely to be shown by a representative learner performing at these boundaries.

The descriptors must be interpreted in relation to the content in the units and the qualification as a whole; they are not designed to define that content. The grade awarded will depend, in practice, on the extent to which the learner has met the learning outcome(s) overall. Shortcomings in some aspects of the assessment may be balanced by better performance in others.

Level 3 Pass

At Pass, learners show sound knowledge of the basic elements of much of the content being assessed, but find further development and application of their understanding to some more complex problems or less familiar contexts difficult. The most fundamental practical skills are executed effectively but lack refinement, producing functional outcomes.

Level 3 Merit

At Merit, learners show good knowledge and understanding of many elements of the content being assessed, and can regularly apply their understanding to different situations and problems. Some higher order tasks involving detailed explanation, evaluation and analysis may be accessed less readily. Practical skills are more developed than at Pass both in terms of range and quality and generally lead to outcomes which are of good quality as well as being functional.

Level 3 Distinction

At Distinction, learners show thorough knowledge and understanding of many elements of the content being assessed, and apply their understanding to increasingly advanced and complex situations and problems. Detailed explanation, evaluation and analysis are undertaken. A wide range of practical skills including more advanced techniques are demonstrated independently.

Refer to the table that follows for the detailed criteria for Pass, Merit and Distinction.

Pass Learners will be able to:	**Merit** Learners will be able to:	**Distinction** Learners will be able to:
Recall, select and apply knowledge and some understanding of a range of scientific principles and concepts.	Recall, select and apply knowledge and understanding of most scientific principles and concepts, and makes links across units where appropriate.	Recall, select and apply detailed knowledge and understanding of most scientific principles and concepts, and make links across units where appropriate.
Demonstrate an understanding of relevant laboratory skills and when these can be used.	Demonstrate an understanding of relevant laboratory skills and effectively apply them to scientific contexts.	Demonstrate an understanding of the benefits of relevant laboratory skills, including higher level skills, and effectively apply them to scientific contexts.
Apply appropriate numerical techniques to scientific contexts.	Use appropriate numerical and/or non-numerical techniques to partially analyse scientific issues, problems, or opportunities.	Use appropriate numerical and/or non-numerical techniques to analyse complex scientific problems.
Collect relevant and up-to-date scientific information from a limited range of sources.	Select and apply relevant and up-to-date scientific information from a limited range of sources.	Select, apply and analyse relevant and up-to-date information from a range of sources.
Conclusions will be supported with suitable justifications.	Any conclusions made will be sound and will be backed up by a well-developed commentary. There will be evidence of building an argument supported by clear, logical statements.	Any conclusions made will be wholly appropriate and will be backed up by a well-developed and well-reasoned commentary. There will be strong evidence of building an argument supported by relevant, sophisticated statements.
Writing will be coherent. Points are mostly relevant and are explained using some appropriate terminology. There are some errors in grammar, punctuation and spelling.	Writing will be fluent, with well-structured sentences and paragraphs. Points are relevant and are explained using appropriate terminology. There are occasional errors in grammar, punctuation and spelling.	Learners will express complex ideas clearly and fluently. Sentences and paragraphs follow on from one another smoothly and logically. Arguments will be consistently well structured with appropriate use of terminology. There will be few, if any, errors in grammar, punctuation or spelling.

Pass Learners will be able to:	**Merit** Learners will be able to:	**Distinction** Learners will be able to:
Interpret, explain and communicate the results of investigations.	Analyse the results of investigations, demonstrating some understanding of a range of factors that may influence the accuracy of results.	Evaluate the results of investigations, demonstrating an in-depth understanding of a wide range of factors that may influence the accuracy of results.
Communicate effectively using appropriate tools.	Communicate with clarity and influence using appropriate tools.	Communicate, to a range of audiences, with clarity and influence, using a range of appropriate tools and adapting the communication method where necessary.
Review feedback and evidence and draw conclusions, making some suggestions for improvement where applicable.	Analyse and evaluate feedback and evidence, make judgements and draw appropriate conclusions. Suggest appropriate improvements where applicable.	Critically analyse and evaluate feedback and evidence. Demonstrate adaptability and suggest improvements based on evidence and experience.

Appendix B Opportunities for applying learning across units

This identifies opportunities for developing links between teaching and learning with other units in the Applied Science suite.

Links to the other units

		Units Numbers																				
Synopticity from		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 10	Unit 11	Unit 13	Unit 14	Unit 15	Unit 16	Unit 17	Unit 18	Unit 19	Unit 20	Unit 21	Unit 22	Unit 23
	Unit 1				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓		✓	✓	✓
	Unit 2				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Unit 3				✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Unit 4	✓	✓	✓			✓	✓	✓												✓	✓
	Unit 5	✓	✓	✓					✓	✓							✓	✓	✓	✓	✓	✓
	Unit 6	✓	✓		✓				✓	✓	✓	✓		✓		✓	✓	✓		✓	✓	✓
	Unit 7	✓	✓	✓	✓				✓												✓	✓
	Unit 8	✓	✓	✓	✓	✓	✓	✓		✓							✓			✓	✓	✓
	Unit 10	✓	✓	✓		✓	✓		✓		✓				✓	✓	✓	✓			✓	✓
	Unit 11	✓	✓	✓			✓			✓										✓	✓	✓
	Unit 13		✓				✓						✓	✓	✓	✓	✓	✓	✓		✓	✓
	Unit 14	✓	✓	✓			✓					✓		✓	✓	✓	✓	✓	✓		✓	✓
	Unit 15	✓		✓						✓		✓	✓						✓	✓	✓	✓
	Unit 16	✓	✓	✓						✓		✓	✓			✓				✓	✓	✓
	Unit 17		✓				✓			✓		✓	✓		✓		✓	✓		✓	✓	✓
	Unit 18	✓	✓	✓		✓	✓		✓	✓		✓	✓			✓		✓		✓	✓	✓
	Unit 19	✓	✓	✓		✓	✓					✓	✓			✓	✓		✓		✓	✓
	Unit 20			✓		✓						✓	✓	✓				✓			✓	✓
	Unit 21	✓	✓	✓		✓	✓		✓		✓				✓	✓	✓	✓			✓	✓
	Unit 22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
	Unit 23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

The qualifications are made up of units which can feature in one or more of the qualifications in the Applied Science suite.

Units 22 and 23 in the Extended Diploma should be taken as the final units as learners will draw on their skills, knowledge and understanding acquired through other units and apply what they have learned.

While learners don't have to achieve the other units in any particular order it's worth noting that the content in mandatory Unit 1 underpins the learning in other units.

You must consider the relationship between the units when you plan the learning programme. To help you with your delivery planning most units highlight opportunities for applying learning across units.

Appendix C Key updates to this handbook

Section	Title of section	Change	Versions and Date
1	Qualifications at a glance	Updated sections to reflect the introduction of: • the near-pass unit grade for examined units • the unit point values for the near-pass grade • the new minimum number of points required for the qualification grade at Pass. • the additional resit opportunity for examined units	Version 5 December 2018
7	Summary of the externally assessed units, How these units are assessed, Resitting external assessment		
10	Externally assessed units, Qualification, Calculating the qualification grade, Qualification Grade tables		
All sections	Changed names of qualifications	We have renamed them to Cambridge Technicals in Applied Science (formerly 'Laboratory Skills') to reflect the vocational focus and purpose of equipping learners with essential laboratory skills and analytical skills needed to progress to higher education or employment.	Version 4 June 2018
1 4 7 10	Qualification overview How these qualifications are structured External Assessment How to calculate the qualification grade	Added the OCR Level 3 Cambridge Technical Extended Diploma in Laboratory Skills (1080 glh) and two new externally assessed units: 22 Global Scientific Information 23 Scientific Research Techniques Level 3 Cambridge Technical Introductory Diploma in Laboratory Skills was re-titled the Level 3 Cambridge Technical Extended Certificate in Laboratory Skills	Version 3 October 2016
All		Added: • Level 3 Cambridge Technical Certificate in Laboratory Skills • OCR Level 3 Cambridge Technical Foundation Diploma in Laboratory Skills	Version 2 August 2016
1	Qualification overview	Includes: • Size and purpose at a glance • Qualification at a glance	
2	Qualification size, How are these qualifications assessed? Funding	Added TQT, Updated information	

3	MAPS (Managed Assessment Portfolio System)	Removed	
4	How these qualifications are structured	Added 180 and 540 structure	
5	Involving employers in teaching, learning and assessment	Updated information	
	Prior knowledge and experience	Added	
6	Synoptic assessment	Updated information	
8	Reporting suspected malpractice	Added	

To find out more
ocr.org.uk/science
or call our Customer Contact Centre on **02476 851509**

Alternatively, you can email us on **vocational.qualifications@ocr.org.uk**

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