CAMBRIDGE ADVANCED NATIONALS

OCR
Oxford Cambridge and RSA

Specification

LEVEL 3 ALTERNATIVE ACADEMIC QUALIFICATION CAMBRIDGE ADVANCED NATIONAL IN

IT: DATA ANALYTICS

Certificate H019

Extended Certificate H119

For first teaching in 2025

Version 2.0 (June 2024)

Tell us what you think

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

You can email your thoughts to ProductDevelopment@OCR.org.uk or visit the OCR feedback page to learn more about how you can help us improve our qualifications.

Designing and testing in collaboration with teachers and students

Helping young people develop an ethical view of the world

Equality, diversity, inclusion and belonging (EDIB) are part of everything we do

Are you using the latest version of this specification?

The latest version of our specifications will always be on **our website** and may differ from printed versions. We will inform centres about changes to specifications.

Disclaimer

Specifications are updated over time. Whilst every effort is made to check all documents, there may be contradictions between published resources and the specification, therefore, please use the information on the latest specification at all times. Where changes are made to specifications these will be indicated within the document, there will be a new version number indicated, and a summary of the changes. If you do notice a discrepancy between the specification and a resource please contact us at: **resources.feedback@ocr.org.uk**

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Contents

1 Qualifications at a glance

1.1 Qualification structures

Key to units for these qualifications:

EA = External Assessment	We set and mark the exams for these units.
NEA = Non Examined Assessment	We set the assignment for these units. You assess the assignment and we moderate the assessment.
M = Mandatory	Students must complete these units.
O = Optional	Students must complete some of these units.
GLH = Guided Learning Hours	The teacher contact time needed to teach the content, plus the assessment time for the unit.

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate)

For this qualification, students must complete two units:

- One mandatory externally assessed unit
- One mandatory NEA unit

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate)

For this qualification, students must complete five units:

- Two mandatory externally assessed units
- One mandatory NEA unit
- Two optional NEA units

Unit no	Unit title	Unit ref no (URN)	Guided learning hours (GLH)	Assessment method	Certificate	Extended Certificate
F200	Fundamentals of data analytics	R/651/0968	75	E	M	M
F201	Big data and machine learning	T/651/0969	70	E	-	M
F202	Spreadsheet data modelling	D/651/0970	75	N	M	M
F203	Relational database design	F/651/0971	70	N	-	O
F204	Data and the Internet of Everything (IoE)	H/651/0972	70	N	-	O
F205	Data visualisation	J/651/0973	70	N	-	O
F206	Data and digital marketing	K/651/0974	70	N	-	O

1.2 Comparison between the Cambridge Advanced Nationals Qualifications and the Level 3 Cambridge Technicals qualification model

	Area of comparison	Approach used in these Level 3 Cambridge Advanced Nationals qualifications	Approach used in the Level 3 Cambridge Technicals qualification model	Reasons for the change
1	The size of the qualifications	Qualifications are available in two sizes • 150 GLH • 360 GLH The 150 GLH qualification includes nested units from the 360 GLH qualification.	Qualifications are typically available in the following sizes: • 180 GLH • 360 GLH • 540 GLH • 720 GLH • 1080 GLH	For this subject, the Department for Education allows: • a maximum size of 360 GLH for these qualifications. • a maximum of two qualification sizes.
2	Number and duration of external assessments	150 GLH qualification: • One externally assessed unit • Exams are 1 hour 15 360 GLH qualification: • Two externally assessed units • Exams are 1 hour 15	There are no exams in the 2012 qualifications. In the 2016 suite, there is a minimum requirement of 30% external assessment.	It is an Ofqual requirement to have 40% external assessment in these qualifications. The exam design is intended to aid accessibility and encourage student engagement while easing the exam burden for students and timetabling.
3	Format of the exam	Each exam is available in January and June and is paper-based.	Each exam is available in January and June and is mainly paper-based.	It is an Ofqual requirement to have two assessment opportunities per assessment.
4	Setting the NEA assignment	We will set all NEA assignments.	We provide a model assignment, or centres can set their own.	This is a requirement of our Regulator, Ofqual.
5	Lifespan of the assignment	Each assignment will remain live for **two** years, with a new assignment being released every year.	Assignments can be used for a number of years.	This is a requirement of our Regulator, Ofqual.
6	The approach to achieving unit grades on the NEA units and	These take a ‘compensatory’ approach. This means that:	These take a ‘hurdles’ approach. This means students must achieve: • all Pass criteria to achieve a unit Pass	The Cambridge Advanced Nationals qualifications are designed for academic progression. A compensatory approach rewards

	its impact on qualification outcomes	• the unit grade students achieve is based on the **total** number of criteria achieved for that unit. • the total number can come from any combination of the Pass, Merit or Distinction criteria. • students do not have to achieve all criteria for a grade to achieve that grade (e.g. all Pass criteria to achieve a unit Pass). • if students do not achieve enough total criteria for a unit Pass, the criteria they do achieve will still earn uniform marks (UMS) which will count towards their qualification outcome. • The qualification outcome is based on the combined total UMS achieved for all units. This means that students may still pass the qualification if they achieve enough total marks, even if they do not pass all units. Every mark counts!	• all Pass and Merit criteria to achieve a unit Merit. • all Pass, Merit and Distinction criteria to achieve a unit Distinction. • At least a Pass for each NEA unit to achieve the qualification (along with at least a near pass in the examined unit/s).	students for what they can do by combining marks achieved to calculate a qualification outcome.
7	Number of NEA Assessment Criteria	Each NEA unit of the same size has a fixed and consistent number of Pass, Merit and Distinction assessment criteria, within and across qualifications.	The number of Pass, Merit and Distinction assessment criteria differs across units and qualifications.	This is to: • ensure a consistent approach to the awarding of units within each qualification and across qualifications in the suite. • aid familiarity of approach for teachers and students.
8	NEA Assessment Criteria design	There will be 24 assessment criteria for each NEA unit. Each assessment criterion is designed to: • assess one discrete task or activity • provide a yes/no approach to decision-making and achievement	There may be fewer assessment criteria for each unit, but these are typically broader, and may assess several tasks or activities in one criterion.	This is to: • ensure clarity of requirements for students in the form of discrete tasks or activities that they should evidence

				• simplify decision-making for teachers assessing students' work.
9	Introduced Performance Objectives for each unit	Each exam question and each Assessment Criterion in the NEA units is mapped to one of our four performance objectives.	These qualifications do not contain performance objectives.	To aid consistency of approach and demand to exams and assignments over time.
10	Moderation opportunities for the NEA assignments	Moderation is available twice each year in windows	Moderation is available on-demand.	Typically, Level 3 Cambridge Advanced Nationals will be delivered in two years. This allows you the opportunity for two moderation activities in each academic year.
11	Moderation approach	Moderation takes the form of face-to-face or virtual visits between the centre and OCR moderator.	Moderation takes the form of face-to-face or virtual visits between the centre and OCR moderator.	We have kept this the same to reflect the most requested approach to moderation from centres since the pandemic This is to ease the moderation burden on centres, while still providing direct interaction with an OCR moderator.
12	SAMs for NEA	Sample assignments are available for you to use as practice materials with students.	We do not provide sample assignments for practice purposes.	This is to ensure that students have access to sample assessment material for both the EA and NEA units.

2 Why choose OCR?

Choose OCR and you've got the reassurance that you're working with one of the UK's leading exam boards. We've developed our specifications in consultation with teachers, employers, subject experts and higher education institutions (HEIs) to give students a qualification that's relevant to them and meets their needs.

We're part of Cambridge University Press & Assessment. We help millions of people worldwide unlock their potential. Our qualifications, assessments, academic publications and original research spread knowledge, spark curiosity and aid understanding around the world.

We work with a range of education providers in both the public and private sectors. These include schools, colleges, HEIs and other workplaces. Over 13,000 centres choose our A Levels, GCSEs and vocational qualifications including Cambridge Nationals and legacy Cambridge Technicals.

2.1 Our specifications

We provide specifications that help you bring the subject to life and inspire your students to achieve more.

We've created teacher-friendly specifications based on extensive research and engagement with the teaching community. Our specifications are designed to be straightforward to deliver and accessible for students. The design allows you to tailor the delivery of the course to suit your needs.

2.2 Our support

We provide a range of support services to help you at every stage, from preparation to delivery:

- A wide range of high-quality creative resources including resources created by leading organisations in the industry.
- Textbooks and teaching and learning resources from leading publishers. The Cambridge Advanced Nationals page on our website has more information about all the published support for the qualifications that we have endorsed.
- Professional development for teachers to meet a range of needs. To join our training (either face-to-face or online) or to search for training materials, go to the Professional Development page on our website.
- Active Results which is our free results analysis service. It helps you review the performance of individual students or whole groups.
- ExamBuilder which is our free question-building platform. It helps you to build your own tests using past OCR exam questions.
- OCR Subject Advisors, who give information and support to centres. They can help with specification and non examined assessment (NEA) advice, updates on resources developments and a range of training opportunities. They use networks to work with subject communities and share ideas and expertise to support teachers.

2.2.1 More help and support

Whether you are new to OCR or already teaching with us, you can find useful information, help and support on our website. Or get in touch:

support@ocr.org.uk

@ocrexams

01223 553998

2.3 People and Planet

We are part of Cambridge University Press & Assessment, which has clear commitments to champion sustainability, diversity, trust and respect for our people and planet.

We are committed to supporting a curriculum that helps young people develop an ethical view of the world. This enables them to take social responsibility, understand environmental issues and prepare them for the green jobs of the future.

Our equality, diversity, inclusion and belonging principles are that we:

- are respectful and considerate
- celebrate differences and promote positive attitudes to belonging
- include perspectives that reflect the diverse cultural and lifestyle backgrounds of our society
- challenge prejudicial views and unconscious biases
- promote a safe and supportive approach to learning
- are accessible and fair, creating positive experiences for all
- provide opportunities for everyone to perform at their best
- are contemporary, relevant and equip everyone to live and thrive in a global, diverse world
- create a shared sense of identity in a modern mixed society with one humanity

To learn more, including our work on accessibility in our assessment materials, visit our People and Planet page.

2.4 Aims and learning outcomes

Our Cambridge Advanced Nationals in IT: Data Analytics will encourage students to:

- develop key knowledge, understanding and skills, relevant to the subject
- think creatively, innovatively, analytically, logically and critically
- develop valuable communication skills that are important in all aspects of further study and life
- develop transferable learning and skills, such as communication, creativity, critical thinking, independent learning, problem solving and time management, that are important for progression to HE and can be applied to real-life contexts and work situations
- develop independence and confidence in applying the knowledge and skills that are vital for progression to HE and relevant to the ICT practitioners sector and more widely.

2.5 What are the key features of this specification?

The key features of OCR's Cambridge Advanced Nationals in IT: Data Analytics for you and your students are:

- a simple and intuitive assessment model, that has:
  - externally assessed units, which focus on subject knowledge and understanding
  - practical non examined assessment units (NEA)
  - optional NEA units to provide flexibility
- a specification developed with teachers specifically for teachers. The specification lays out the subject content, assessment criteria, teacher guidance and delivery requirements clearly
- a flexible support package made based on teachers' needs. The support package will help teachers to easily understand the qualification and how it is assessed
- a team of OCR Subject Advisors who directly support teachers
- a specification designed to:
  - complement A Levels and/or other Level 3 qualifications in a Post-16 study programme
  - develop wider transferable skills, knowledge and understanding desired by HEIs. More detail about the transferable skills these qualifications may develop is in Section 6.3.

All Cambridge Advanced National qualifications offered by OCR are regulated by Ofqual, the Regulator for qualifications offered in England.

The qualification numbers for OCR's Alternative Academic Qualification Cambridge Advanced Nationals in IT: Data Analytics are:

- Certificate: QN 610/3996/2
- Extended Certificate: QN 610/3997/4

2.6 Acknowledgements

We would like to acknowledge the following Higher Education Providers for their input and support in designing these qualifications:
Anglia Ruskin University
Bournemouth University
University of Gloucestershire
University of Liverpool
University of Manchester
University of the West of England
University of Westminster

3 Qualification overview

3.1 OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate) overview

Qualification number	610/3996/2
First entry date	01 September 2025
Guided learning hours (GLH)	150
Total qualification time (TQT)	200
OCR entry code	H019
Approved age range	16-18, 18+, 19+
Offered in	England only
Performance table information	This qualification is designed to meet the Department for Education's requirements for qualifications in the Alternative Academic Qualifications category of the 16-19 performance tables.
Eligibility for funding	This qualification meets funding approval criteria.
UCAS Points	This qualification is recognised in the UCAS tariff tables. You'll find more information on the UCAS website.
This qualification is suitable for students who:	• are age 16-19 and on a full-time study programme • want to develop applied knowledge and skills in data analytics • want to progress onto other related study, such as higher education courses in Business Analytics, Information Technology or Digital Marketing
Entry requirements	There is no requirement for students to achieve any specific qualifications before taking this qualification
Qualification requirements	Students must complete two units: • one externally assessed unit • one NEA unit
Assessment method/model	Unit F200 is assessed by an exam and marked by us. You will assess the NEA unit and we will moderate it. The NEA assignments are live for two years. The front cover details the intended cohort. You must make sure you use the live assignment that relates to the student's cohort for assessment and submit in the period in which the assignments are live. For example, a cohort beginning a two-year course in September 2026 should use the set of assignments marked as being for 2026-2028 so that whatever order assignments are taken in, they will be able to re-submit improved work on the same NEA assignment if they wish to during their study of the qualification.

	Centres should avoid allowing new cohorts to use assignments which have already been live for a year, e.g. students who start the course in September 2027 using assignments for the 2026-2028 cohorts. Centres must have suitable controls in place to ensure that NEA assignment work is completed by each student independently and must not allow previously completed work for assignments which are still live to be shared as examples with other students.
Exam series each year	• January • June
Exam resits	Students can resit the examined unit twice before they complete the qualification.
NEA submission	There are two windows each year to submit NEA outcomes and request a moderation visit by an OCR Assessor. You must make unit entries for students before you can submit outcomes for a visit. All dates are on our administration pages.
Resubmission of students' NEA work	If students have not performed at their best in the NEA assignment, they can improve their work and submit it to you again for assessment. They must have your agreement and you must be sure it is in the student's best interests. We use the term 'resubmission' when referring to student work that has previously been submitted to OCR for moderation. Following OCR moderation, a student can attempt to improve their work for you to assess and provide the final mark to us. There is one resubmission opportunity per NEA assignment. All work submitted (or resubmitted) must be based on the assignment that is live for assessment. For information about feedback see Section 7.3. The final piece of work must be completed solely by the student and teachers must not detail specifically what amendments should be made.
Grading	Information about unit and qualification grading is in Section 6.

3.2 OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate) overview

Qualification number	610/3997/4
First entry date	01 September 2025
Guided learning hours (GLH)	360
Total qualification time (TQT)	500
OCR entry code	H119
Approved age range	16-18, 18+, 19+
Offered in	England only
Performance table information	This qualification is designed to meet the Department for Education's requirements for qualifications in the Alternative Academic Qualifications category of the 16-19 performance tables.
Eligibility for funding	This qualification meets funding approval criteria.
UCAS Points	This qualification is recognised in the UCAS tariff tables. You'll find more information on the UCAS website.
This qualification is suitable for students who:	• are age 16-19 and on a full-time study programme • want to develop applied knowledge and skills in data analytics • want to progress onto other related study, such as higher education courses in Business Analytics, Information Technology or Digital Marketing
Entry requirements	There is no requirement for students to achieve any specific qualifications before taking this qualification
Qualification requirements	Students must complete five units: • two externally assessed units • three NEA units
Assessment method/model	Units F200 and F201 are assessed by an exam and marked by us. You will assess the NEA units and we will moderate them. The NEA assignments are live for two years. The front cover details the intended cohort. You must make sure you use the live assignment that relates to the student's cohort for assessment and submit in the period in which the assignments are live. For example, a cohort beginning a two year course in September 2026 should use the set of assignments marked as being for 2026-2028 so that whatever order assignments are taken in, they will be

	able to re-submit improved work on the same NEA assignment if they wish to during their study of the qualification. Centres should avoid allowing new cohorts to use assignments which have already been live for a year, e.g. students who start the course in September 2027 using assignments for the 2026-2028 cohorts. Centres must have suitable controls in place to ensure that NEA assignment work is completed by each student independently and must not allow previously completed work for assignments which are still live to be shared as examples with other students.
Exam series each year	• January • June
Exam resits	Students can resit the examined unit twice before they complete the qualification.
NEA submission	There are two windows each year to submit NEA outcomes and request a moderation visit by an OCR Assessor. You must make unit entries for students before you can submit outcomes for a visit. All dates are on our administration pages.
Resubmission of students' NEA work	If students have not performed at their best in the NEA assignment, they can improve their work and submit it to you again for assessment. They must have your agreement and you must be sure it is in the student's best interests. We use the term 'resubmission' when referring to student work that has previously been submitted to OCR for moderation. Following OCR moderation, a student can attempt to improve their work for you to assess and provide the final mark to us. There is one resubmission opportunity per NEA assignment. All work submitted (or resubmitted) must be based on the assignment that is live for assessment. For information about feedback see Section 7.3. The final piece of work must be completed solely by the student and teachers must not detail specifically what amendments should be made.
Grading	Information about unit and qualification grading is in Section 6.

3.3 Purpose statement – Certificate

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate)

Qualification number: 610/3996/2

Overview

Who this qualification is for

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate) is for students aged 16-19 years old. It will develop knowledge, understanding and skills that will help prepare you for progression to undergraduate study when taken alongside other qualifications and are relevant to the information technology sector.

You might be interested in this qualification if you want a small qualification that builds applied or practical skills, to take alongside and enhance your A Levels or other Level 3 qualifications. You will have the opportunity to apply what you learn to real-life contexts, such as:

- Planning, developing and reviewing spreadsheet data models that meet the needs of a client.

The qualification will also help you develop independence and confidence in using skills that are relevant to the sector and that prepare you for progressing to university courses where independent study skills are needed. You will develop the following transferable skills that can be used in both higher education and other life and work situations:

- Developing communication skills through having to communicate ideas in different ways to different stakeholders, much as you might be expected to in equivalent real-life situations.
- Developing creativity through opportunities for planning creative solutions that meet the needs of different clients or end-users in the NEA unit.
- Developing skills of project-based working in the NEA unit. You are required to complete individual tasks that combine to form a larger project. Managing different aspects of a project effectively to ensure the success of the whole project is something you will likely encounter should you go on to work in similar projects in higher education or work situations.
- Developing skills of time management. Time management is an important aspect of completing projects successfully. You will need to manage your time effectively in the NEA unit to ensure the needs of a client are met.
- Developing skills of reflective learning by reflecting on the choices you have made in the NEA unit, and considering how you may approach similar tasks differently in future.

This qualification will complement other learning that you're completing at Key Stage 5. If you are a full-time student, it will be part of your studies along with your A Levels and/or other Level 3 qualifications.

What you will study when you take this qualification

Through a combination of theoretical study and hands-on experience, you will develop the necessary knowledge and skills that can support progression to higher education information technology study.

In the examined unit, you will study key knowledge and understanding relevant to information technology. In the non examined assessment (NEA) unit, you will demonstrate knowledge and

skills you learn by completing an applied assignment. More information about the knowledge and skills you will develop is below.

All units in the qualification are mandatory. You must take **all** of these units:

- F200: Fundamentals of data analytics

  This unit is assessed by an exam.

  In this unit you will learn about the fundamental knowledge required for a career working in data-related occupations. Topics include:

  - Topic Area 1 Understanding data
  - Topic Area 2 Managing data
  - Topic Area 3 How data can be accessed and managed across platforms
  - Topic Area 4 Legal considerations
  - Topic Area 5 Job roles, skills and attributes in data analytics

- F202: Spreadsheet data modelling

  This unit is assessed by an assignment.

  In this unit you will learn the principles of data modelling with spreadsheets and the knowledge and skills required to plan, design, create, test and review a spreadsheet modelling solution that meets the needs of a specific client. Topics include:

  - Topic Area 1 Principles of spreadsheet modelling
  - Topic Area 2 Planning the design of a spreadsheet model
  - Topic Area 3 Creating the spreadsheet model
  - Topic Area 4 Delivering the outcomes
  - Topic Area 5 Evaluation

The subjects that complement this course

These subjects might complement this qualification:

- A Level Business
- A Level Computing
- A Level Geography
- A-Level Maths
- A Level Psychology

The types of courses you may progress to

Both the subject-specific knowledge, understanding and skills, and broader transferable skills developed in this qualification will help you progress to further study in related areas such as:

- Business Analytics
- Information Technology
- Digital Marketing

Why you should take the OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate)

There are two qualifications available in Data Analytics. These are:

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in Data Analytics (Certificate) – this is 150 GLH in size

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in Data Analytics (Extended Certificate) – this is 360 GLH in size

You should take this Certificate qualification if you want a small Level 3 Vocational Qualification that builds some applied knowledge and skills in information technology. This qualification is an Alternative Academic Qualification that is the same size as an AS Level qualification. It is half the size of an A Level. It could be taken alongside A Levels and/or other Level 3 qualifications to enhance your learning, helping you to build broader knowledge and skills that are valued in undergraduate study, and relevant for progression to higher education. You would take this qualification alongside A Levels and/or other Level 3 qualifications as part of your programme of study at Key Stage 5.

More information

More information about the OCR Level 3 Alternative Academic Qualification Cambridge Advanced National Certificate in IT: Data Analytics (Certificate) is in these documents:

- Sample Assessment Material (SAM) Question Papers:
  - Unit F200: Fundamentals of data analytics
- Guides to our SAM Question Papers:
  - Unit F200: Fundamentals of data analytics
- SAM Set assignment(s):
  - Unit F202: Spreadsheet data modelling
- Student Guide to NEA Assignments: IT: Data Analytics

3.4 Purpose statement – Extended Certificate

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in Data Analytics (Extended Certificate)

Qualification number: 610/3997/4

Overview

Who this qualification is for

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics in Data Analytics (Extended Certificate) is for students aged 16-19 years old. It will develop knowledge, understanding and skills that will help prepare you for progression to undergraduate study and are relevant to the information technology sector.

You might be interested in this qualification if you want a small qualification that builds applied or practical skills, to take alongside and enhance your A Levels or other Level 3 qualifications. You might be interested in this qualification if you want to apply what you learn to practical, real-life contexts, such as:

- Planning, developing and reviewing spreadsheet data models that meet the needs of a client.
- Planning, developing and reviewing relation databases that meet the needs of a client.
- Planning, communicating and reviewing Internet of Everything (IoE) solutions that meet the needs of a client.
- Planning, developing and reviewing data visualisation solutions through the use of data dashboards that meet the needs of a client.
- Planning, developing and reviewing digital marketing campaigns that meet the needs of a client.

The qualification will also help you develop independence and confidence in using skills that are relevant to the sector and that prepare you for progressing to university courses where independent study skills are needed. You will develop the following transferable skills that can be used in both higher education and other life and work situations:

- Developing communication skills through having to communicate ideas in different ways to different stakeholders, much as you might be expected to in equivalent real-life situations.
- Developing creativity through opportunities for planning creative solutions that meet the needs of different clients or end-users in NEA units.
- Developing skills of project-based working in the NEA units. You are required to complete individual tasks that combine to form a larger project. Managing different aspects of a project effectively to ensure the success of the whole project is something you will likely encounter should you go on to work in similar projects in higher education or work situations.
- Developing skills of time management. Time management is an important aspect of completing projects successfully. You will need to manage your time effectively in the NEA units to ensure the needs of a client are met.
- Developing skills of reflective learning by reflecting on the choices you have made in the NEA units, and considering how you may approach similar tasks differently in future.
- Developing presentation skills through presenting your ideas to people in different ways.

This qualification will complement other learning that you're completing at Key Stage 5. If you are a full-time student, it will be part of your studies along with A Levels and/or other Level 3 qualifications.

What you will study when you take this qualification

Through a combination of theoretical study and hands-on experience, you will develop the necessary knowledge and skills that can support progression to higher education information technology study.

In the examined units, you will study key knowledge and understanding relevant to data analytics. In the non examined assessment (NEA) units, you will demonstrate knowledge and skills you learn by completing applied or practical assignments. More information about the knowledge and skills you will develop is below.

The qualification has three mandatory units and two optional units.

These are the **mandatory** units – you must take **all** these units:

- F200: Fundamentals of data analytics

  This unit is assessed by an exam.

  In this unit you will learn about the fundamental knowledge required for a career working in data-related occupations. Topics include:

  - Topic Area 1 Understanding data
  - Topic Area 2 Managing data
  - Topic Area 3 How data can be accessed and managed across platforms
  - Topic Area 4 Legal considerations
  - Topic Area 5 Job roles, skills and attributes in data analytics

- F201: Big data and machine learning

  This unit is assessed by an exam.

  In this unit you will learn about the challenges of managing big data and the role of artificial intelligence and machine learning in data science. Topics include:

  - Topic Area 1 The scope of managing big data
  - Topic Area 2 The Infrastructure challenges of big data
  - Topic Area 3 Big data, machine learning and artificial intelligence
  - Topic Area 4 Legal and ethical issues in data management
  - Topic Area 5 Environment and society

- F202: Spreadsheet data modelling

  This unit is assessed by an assignment.

  In this unit you will learn the principles of data modelling with spreadsheets and the knowledge and skills required to plan, design, create, test and review a spreadsheet modelling solution that meets the needs of a specific client. Topics include:

  - Topic Area 1 Principles of spreadsheet modelling
  - Topic Area 2 Planning the design of a spreadsheet model
  - Topic Area 3 Creating the spreadsheet model
  - Topic Area 4 Delivering the outcomes
  - Topic Area 5 Evaluation

These are **optional** units – you must take **two** of these units:

- F203: Relational database design

  This unit is assessed by an assignment.

  In this unit you will learn the principles of relational database design and the knowledge and skills required to plan, design, create, test and review a relational database design solution that meets the needs of a specific client. Topics include:

  - Topic Area 1 Relational database concepts
  - Topic Area 2 Plan relational database solutions
  - Topic Area 3 Create relational databases
  - Topic Area 4 Testing relational database solutions
  - Topic Area 5 Evaluate database solutions

- F204: Data and the Internet of Everything (IoE)

  This unit is assessed by an assignment.

  In this unit you will learn the principles of the Internet of Everything (IoE), and the knowledge and skills required to plan, design and present an IoE solution that meets the needs of a specific client. Topics include:

  - Topic Area 1 IoE ecosystem
  - Topic Area 2 Data collection, processing and storage methods and devices
  - Topic Area 3 Connectivity and data transmission
  - Topic Area 4 Human computer interfaces (HCIs)
  - Topic Area 5 Securing IoE devices
  - Topic Area 6 Documentation and audience communication

- F205: Data visualisation

  This unit is assessed by an assignment.

  In this unit you will learn the principles of data visualisation, and the knowledge and skills required to plan, design, create and review a data visualisation solution that meets the needs of a specific client. Topics include:

  - Topic Area 1 The value and importance of data visualisation
  - Topic Area 2 Planning for data dashboards
  - Topic Area 3 Techniques for creating a data dashboard
  - Topic Area 4 Communicating information and interpreting data
  - Topic Area 5 Evaluating the effectiveness of visualisation solutions

- F206: Data and digital marketing

  This unit is assessed by an assignment.

  In this unit you will learn the principles of digital marketing, and the knowledge and skills required to plan, design, create and review digital marketing material that meets the needs of a specific client. Topics include:

  - Topic Area 1 Digital marketing fundamentals
  - Topic Area 2 Data driven digital marketing
  - Topic Area 3 Planning digital marketing content
  - Topic Area 4 Creating content for digital marketing campaigns
  - Topic Area 5 Communicating to stakeholders
  - Topic Area 6 Reflection and evaluation of working processes

The subjects that complement this course

These subjects might complement this qualification:

- A Level Business
- A Level Computing
- A Level Geography
- A-Level Maths
- A Level Psychology

The types of courses you may progress to

Both the subject-specific knowledge, understanding and skills, and broader transferable skills developed through these units, will help you progress to further study in related areas such as:

- Business Analytics
- Information Technology
- Digital Marketing

Why you should take the OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate)

There are two qualifications available in Data Analytics. These are:

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate) – this is 150 GLH in size

OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate) – this is 360 GLH in size

You should take this Extended Certificate qualification if you want a Level 3 Vocational Qualification that builds applied knowledge and skills in information technology. This qualification is an Alternative Academic Qualification that is the same size as an A Level. When it is taken alongside other Level 3 qualifications, it will complement them, helping you to build broader knowledge and skills that are valued in undergraduate study, and relevant for progression to higher education. You would take this qualification alongside other Level 3 qualifications as part of your programme of study at Key Stage 5.

More information

More information about the Cambridge Advanced National (Extended Certificate) in Data Analytics is in these documents:

- Sample Assessment Material (SAM) Question Papers:
  - Unit F200: Fundamentals of data analytics
  - Unit F201: Big data and machine learning
- Guides to our SAM Question Papers:
  - Unit F200: Fundamentals of data analytics
  - Unit F201: Big data and machine learning
- SAM Set assignment(s):
  - Unit F202: Spreadsheet data modelling
  - Unit F203: Relational database design
  - Unit F204: Data and the internet of everything
  - Unit F205: Data visualisation
  - Unit F206: Data and digital marketing
- Student Guide to NEA Assignments: IT: Data Analytics

4 About these qualifications

4.1 Qualification size

The size of each qualification is described in terms of Guided Learning Hours (GLH) and Total Qualification Time (TQT).

GLH indicates the approximate time (in hours) you will spend supervising or directing study and assessment activities. We have worked with people who are experienced in delivering related qualifications to determine the content that needs to be taught and how long it will take to deliver.

TQT includes two parts:

- GLH
- an estimate of the number of hours a student will spend on unsupervised learning or assessment activities (including homework) to successfully complete their qualification.

The OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate) is 150 GLH and 200 TQT.

The OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate) is 360 GLH and 500 TQT.

4.2 Availability and language

The Level 3 Alternative Academic Qualification Cambridge Advanced Nationals are available in England only. They are **not** available in Wales or Northern Ireland.

The qualifications and their assessment materials are available in English only. We will only assess answers written in English.

4.3 Prior knowledge and experience

Recognition of prior learning (RPL) is the process for recognising learning that never received formal recognition through a qualification or certification. It includes knowledge and skills gained in school, college or outside of formal learning situations. These may include:

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

In most cases RPL will not be appropriate for directly evidencing the requirements of the NEA assignments for the Cambridge Advanced National qualifications. However, if you feel that your student could use RPL to support their evidence, you must follow the guidance provided in our RPL Policy.

5 Units

5.1 Guidance on unit content

This section describes what must be taught so that students can access all available marks and meet assessment criteria.

5.1.1 Externally assessed units (F200 and F201)

The externally assessed units contain a number of topic areas.

For each topic area, we list the **teaching content** that must be taught and give information on the **breadth and depth** of teaching needed.

Teaching content

Questions can be asked about anything in the teaching content or breadth and depth columns.

Breadth and depth

The breadth and depth column:

- clarifies the breadth and depth of teaching needed
- indicates the range of knowledge and understanding that can be assessed in the exam
- confirms any aspects that you do not need to teach as 'does not include' statements.

Teaching must cover **both** the **teaching content** and **breadth and depth** columns.

Knowledge and understanding

This is what we mean by knowledge and understanding:

Knowledge	• Be able to identify or recognise an item, for example on a diagram. • Use direct recall to answer a question, for example the definition of a term.
Understanding	• To assess and evidence the perceived meaning of something in greater depth than straight identification or recall. • Understanding will be expressed and presented using terms such as: how; why; when; reasons for; advantages and disadvantages of; benefits and limitations of; purpose of; suitability of; recommendations for improvement; appropriateness of something to/in different contexts.

Students will need to **understand** the content, unless the breadth and depth column identifies it as knowledge only.

Any item(s) that should be taught as **knowledge** only will start with the word 'know' in the breadth and depth column.

All other content must be taught as understanding.

5.1.2 NEA units (F202-F206)

The NEA units contain a number of topic areas.

For each topic area, we list **teaching content** that must be taught and give **exemplification**. The exemplification shows the teaching expected to equip students to successfully complete their assignments.

5.1.3 Command words

Appendix B gives information about the command words that will be used in the external assessments and the NEA assessment criteria.

5.1.4 Performance objectives (POs):

Each Cambridge Advanced National qualification has four Performance Objectives.

PO1	Show knowledge and understanding
PO2	Apply knowledge and understanding
PO3	Analyse and evaluate knowledge, understanding and performance
PO4	Demonstrate and apply skills and processes relevant to the subject

PO1 is assessed in the externally assessed unit only.

PO4 is assessed in the NEA units only.

The weightings of the Performance Objectives across the units in the **Certificate** qualification are:

Performance Objective	**Externally Assessed unit (range)**	**NEA units**	**Overall weighting**
PO1	15-20%	n/a	15-20%
PO2	20-25%	12.5%	32.5-37.5%
PO3	10%	12.5%	22.5%
PO4	n/a	25%	25%
Overall weighting of assessments	**50%**	**50%**	**100%**

The weightings of the Performance Objectives across the units in the **Extended Certificate** qualification are

Performance Objective	**Externally Assessed unit (range)**	**NEA units**	**Overall weighting**
PO1	12.3-16.7%	n/a	12.3-16.7%
PO2	14.3-18.7%	16.7-18.3%	31-37%
PO3	9%	14.2-18.3%	23.2-27.3%
PO4	n/a	24.2-27.5%	24.2-27.5%
Overall weighting of assessments	**40%**	**60%**	**100%**

5.2 Externally assessed units

5.2.1 Unit F200: Fundamentals of data analytics

Unit aim

We all generate and use data in our everyday lives. The data that is generated can be stored and used by organisations. Data needs to be gathered in a format that will ensure it is useful and continues to be useful through data maintenance. Data is communicated across a range of platforms and applications, and needs to be kept secure during usage, e.g. when shopping online. People and organisations analyse and present data for many purposes, such as predicting future trends. If data is not maintained and used correctly it can lead to incorrect decisions and negative effects on the data holders.

In this unit you will learn about data, including an introduction to big data, and the different data formats that can be used. You will learn about how data is gathered, including the importance of data assurance, and data lifecycle management. You will learn about the different methods of gathering, storing, analysing and accessing data and the legislation that needs to be complied with when working with data across platforms. The results of data analysis need to be presented to a target audience and you will learn about the different methods of data visualisation and presentation. You will learn about the range of job roles that are involved in the gathering, maintenance and analysing of data and how these relate to the data pipeline.

Unit F200: Fundamentals of Data Analytics	
Topic Area 1: Understanding data	
Teaching content	**Breadth and depth**
1.1 Data, information and knowledge	
□ What data, information and knowledge are □ Sources of data, information and knowledge □ Interaction of data, information and knowledge □ Data and information in society	To include: □ Know what data, information and knowledge are □ The sources of data, information and knowledge □ The links and differences between data, information, and knowledge □ How data is converted to information □ The benefits and limitations of the use of data and information to organisations and individuals □ Know how data and information is used in society □ How the use of data and information can have a positive impact on society □ How the use of data and information can have negative consequences for society
1.2 Big data	
□ What big data is • Sources • Formats □ The scope of big data • Applications • Situations used	To include: □ The concept of big data □ How big data is structured □ What big data is used for □ The benefits and limitations of big data to organisations and individuals

	Does not include: □ The evolution of big data □ Data preparation techniques □ Data mining techniques □ Big data infrastructure
1.3 Data and file formats	
□ American Standard Code for Information Interchange (ASCII) □ Audio • Audio Interchange File Format (AIFF) • Waveform Audio File Format (WAV/WAVE) □ Extensible Markup Language (XML) □ Image • JPEG • PNG • TIFF □ JavaScript Object Notation (JSON) □ Numeric □ Plain text • Comma-separated Values (CSV) • Fixed width • TXT	To include □ Know what a data format is □ The characteristics of each data/file format □ How/where each data/file format can be used □ The benefits and limitations of each data/file format Does not include: □ Any other data/file formats not specified in the teaching content □ Lossy and lossless data compression
1.4 Data types and classifications	
□ Data types • Boolean • Character • Date • Integer • Real • String □ Classifications of data • Qualitative • Quantitative • Structured • Unstructured	To include: □ The characteristics of each data type □ How each data type can be used □ The benefits and limitations of each data type □ The ways that data types can be classified □ The differences between each classification
Topic Area 2: Managing data	
Teaching content	**Breadth and depth**
2.1 Data lifecycle management (DLM) and the data analytics pipeline	
2.1.1 Data lifecycle management (DLM) □ Phases • Creation • Storage • Usage • Archival • Destruction	To include: □ Know the five phases of the data lifecycle □ The interactions and iterations between the phases of the data lifecycle □ The benefits of using data lifecycle management
2.1.2 Data analytics pipeline □ Phases • Capture (Data Ingestion) • Process (Data Transformation) • Data storage (Data Stores)	To include: □ The concept of the data analytics pipeline □ The phases of the data analytics pipeline □ The tasks carried out at each phase of the analytics pipeline and their purpose

• Analysis • Use (Visualisation)	□ The iterations and interactions between the phases of the data analytics pipeline
2.2 Creation and capture	
2.2.1 Data assurance considerations □ Accuracy □ Quality □ Redundancy □ Reliability □ Timeliness □ Validation □ Validity □ Verification	To include: □ The purpose and importance of the data assurance considerations □ How each data assurance increases confidence in data □ How each consideration can affect the collection and use of data
2.2.2 Data gathering □ Methods • Documents and records • Focus groups • Interviews • Observations • Online tracking • Questionnaires and surveys • Social media monitoring • Transactional tracking • Verbal histories □ Factors influencing the effectiveness of data gathering • Defining requirements • Defining relevant data • Avoiding bias	To include: □ What data gathering is □ The process of data gathering □ How to ensure that gathered data meets its purpose □ How to ensure that gathered data is of good quality □ The consequences of gathering poor quality data □ The benefits and limitations of each data gathering method
2.3 Storage	
2.3.1 Data states □ Data in transit (motion) □ Data at rest □ Data in use	To include: □ The characteristics of each data state □ When each state is used
2.3.2 Data stores □ Purpose □ Interactions	To include: □ Know what data stores are □ The purpose of data stores □ How data stores interact
2.3.3 Data storage □ Types • Block storage • File storage • Object storage	To include: □ The characteristics of each data storage type □ The benefits and limitations of each data storage type □ The factors to consider when selecting a data storage type
2.3.4 On-site storage □ Types • File servers • Hard drives o Hard disk drive (HDD) o Solid state drive (SSD) • Network attached storage (NAS) devices	To include: □ The characteristics of each storage type □ The benefits and limitations of each storage type □ The factors to consider when selecting a storage type

• Portable storage devices • Storage area network (SAN)	
2.3.5 Cloud storage □ Type • Community • Hybrid • Private • Public □ Cloud-based database services	To include: □ The characteristics of each storage type □ The benefits and limitations of each storage type □ The factors to consider when selecting a storage type □ The uses of cloud-based database services
2.4 Data transformation	
2.4.1 Data Wrangling □ Purpose □ Importance	To include: □ The purpose and importance of data wrangling Does not include: □ Specific data wrangling activities
2.4.2 Data maintenance □ Purpose □ Importance	To include: □ The purpose and importance of data maintenance Does not include: □ Specific data maintenance activities
2.5 Usage and analysis	
2.5.1 Data analytics □ Data analytics • Meaning • Purpose	To include: □ Know what data analytics is □ Know the purpose of data analytics
2.5.2 Types of data analytics □ Cognitive □ Descriptive □ Diagnostic □ Predictive □ Prescriptive	To include: □ The characteristics of each type of data analytics □ When each type could be used □ The benefits and limitations of each type
2.6 Usage and visualisation	
2.6.1 Presenting data □ Data presentation methods • Graphical • Tabular • Textual	To include: □ The benefits and limitations of each presentation method □ The criteria used for selecting a presentation method
2.6.2 Visualising data □ Data visualisation methods • Dashboards • Data tables • Digital slides • Graphs and charts ○ Area ○ Bar ○ Bubble ○ Line	To include: □ Using data visualisation for communicating information □ The benefits and limitations of each visualisation method □ The criteria used for selecting a visualisation method

○ Pie ○ Scatter • Infographics • Reports • Shared documents • Tables • Video / online conferencing	
2.7 Archival	
□ Data archiving methods • Cloud Storage • Network Storage • On-site	To include: □ The importance of archiving data □ How data can be archived □ The benefits and limitations of each archiving method
2.8 Destruction	
□ Data destruction methods • Degaussing • Drive destruction • Erasure • Overwriting • Shredding	To include: □ The importance of data destruction □ The benefits and limitations of each data destruction method Does not include: □ Non-secure methods of data destruction
Topic Area 3: How data can be accessed and managed across platforms	
Teaching content	**Breadth and depth**
3.1 Application Programming Interfaces (API)	
□ Role □ Certifications • Composite • Internal • Partner • Private • Public □ Types • JavaScript Object Notation (JSON-RPC) • Representational State Transfer (REST) • Simple Object Access Protocol (SOAP) • XML Remote Procedure Call (XML-RPC)	To include: □ Know what an API is □ The role of APIs and their use □ When each API certificate is used □ The data format each API type uses □ The benefits and limitations of each type of API Does not include: □ A detailed understanding of how the different API types work
3.2 User access controls	
□ Attribute-Based Access Control (ABAC) □ Discretionary Access Control (DAC) □ Mandatory Access Control (MAC) □ Role-Based Access Control (RBAC) □ Rule-Based Access Control (RuBAC)	To include: □ The characteristics of each user access control □ When each user access control can be used

3.3 Permissions	
□ User rights • Read • Write • Edit • Delete □ Administrator rights • Allocating access controls • Allocating user privileges ○ User level ○ User group level ○ File and folder level	To include: □ Know the difference between the rights of user and administrator for data access □ The characteristics of each user rights category and when each is used □ The differences between each user privilege category
Topic Area 4: Legal considerations	
Teaching content	**Breadth and depth**
4.1 Legislation and the role of the ICO when using data	
Legislations and regulations □ Computer Misuse Act (CMA) □ Data Protection Act (DPA) □ Freedom of Information Act (FOIA) □ UK General Data Protection Regulation (UK GDPR) □ Privacy and Electronic Communications Regulations (PECR) Independent Bodies □ Information Commissioner's Office (ICO) in the UK	To include: □ Know what the latest version of each act/regulation is □ Know the important aspects and main purpose(s) of each act/regulation □ The actions that must be taken to comply with legislation when using data □ The impact of non-compliance with legislation □ The role of the Information Commissioner's Office (ICO) in the UK Does not include: □ Knowing the detailed content of each act/regulation
Topic Area 5: Job roles, skills and attributes in data analytics	
5.1 Job roles related to data analytics	
□ Artificial Intelligence Scientist □ Data Analyst □ Data Architect □ Data Engineer □ Data Scientist □ Database Administrator □ Machine Learning Engineer	To include: □ Know how each role contributes to the data pipeline and data lifecycle management □ The main responsibilities of each job role related to the phases in the data pipeline data and data lifecycle management Does not include: □ The specific skills required for each job role □ Detailed list of responsibilities for each job role

5.2 Personal attributes	
□ Analytical skills □ Effective communicator □ Independence □ Leadership □ Planning and organisation skills □ Problem solving □ Self-motivation □ Team working □ Time management	To include: □ Know the personal attributes needed for each job role
5.3 Communication Skills	
□ Appropriate language to meet the needs of the audience □ Non-verbal □ Questioning techniques to elicit specific information □ Verbal □ Written	To include: □ Appropriate use of each communication skill within a job role and its specific stage in the data pipeline or data lifecycle management

Assessment guidance

This unit is assessed by an exam. The exam is 1 hour and 15 minutes and has 60 marks in total. All questions in the exam are compulsory.

The exam will **always** have:

Questions to assess Performance Objectives 1, 2, and 3	• PO1: these questions will require students to recall generic knowledge and understanding. • PO2: these questions will require students to apply knowledge and understanding. • PO3: these questions will require students to analyse and evaluate knowledge, understanding and performance in relation to the context given in the question.
A range of question types	• Forced choice/controlled response questions. • Short answer, closed response questions. • Extended constructed response questions with points-based marks schemes. • Extended constructed response questions with levels of response marks schemes. • One six mark and one nine mark extended constructed response question with a levels of response marks scheme.
Questions relating to each Topic Area	• Content will be sampled from all topic areas, with at least one question or part question relating to each topic area.

This will be conducted under examination conditions. For more details refer to the Administration area.

The guide to our Sample Assessment Material gives more information about the layout and expectations of the exam.

The exam for this unit assesses the following Performance Objectives:

- PO1 – Show knowledge and understanding
- PO2 – Apply knowledge and understanding
- PO3 – Analyse and evaluate knowledge, understanding and performance.

Synoptic assessment

This unit allows students to gain underpinning knowledge and understanding relevant to the qualification and sector. The NEA units draw on and strengthen this learning with students applying their learning in a practical way.

The following NEA units have synoptic links with this unit. The synoptic grids at the end of these NEA units show these synoptic links.

- F202: Spreadsheet data modelling
- F203: Relational database design
- F204: Data and the Internet of Everything (IoE)
- F205: Data visualisation
- F206: Data and digital marketing

More information about synoptic assessment in these qualifications can be found in Section 6.2 Synoptic Assessment.

5.2.2 Unit F201: Big data and machine learning

Unit aim

We are living in a world where data of every type is all around us. It is growing rapidly in huge volumes. This big data coming from the Internet and mobile communications can be analysed by software applications. It can then help organisations to make important decisions and identify new business opportunities. It is used by governments to help make important decisions. Big data also has an impact on environmental issues and on our society.

In this unit you will learn about the challenges of managing big data. You will also learn about data analytics, artificial intelligence (AI) and machine learning (ML). It will lead to big innovations in the future. Finally, you will learn about the legal and ethical issues in data management and how big data can be used in environmental work and social developments.

Unit F201: Big data and machine learning	
Topic Area 1: The scope of managing big data	
Teaching content	**Breadth and depth**
1.1 The six characteristics (6Vs)	
□ Volume of data □ Variety of data types □ Velocity of streamed data □ Value of data □ Veracity of data □ Variability of data inconsistencies □ Six steps for analysing big data • Data collection • Data storing • Data cleaning • Data mining • Data analysis • Data consumption	To include: □ Know what each characteristic is □ How each characteristic helps to define big data □ The purpose of each characteristic □ When each characteristic can be used To include: □ Know what is involved in each step □ The role of each step in the process of managing big data □ When each analysis step can be used
1.2 The evolution of big data	
□ Developments • Database management systems • Internet of Everything (IoE) • Proliferation of devices generating digital data • Search engines • Web-based storage	To include: □ How each development has contributed to the evolution of big data □ The benefits and limitations of each development in relation to the evolution of big data
1.3 How big data is captured	
□ Data capture methods • Digital images and videos • GPS signals • IoE connected devices • Natural language • Online surveys • Satellites • Sensors • Social media sites • Transactional records	To include: □ Know what big data capture is □ Know how data capture methods are used to collect data □ When the data capture methods can be used □ The types of data generated by using the different data capture methods □ The benefits and limitations of each data capture method

1.4 The purpose, importance and use of big data analytics	
□ Areas of application • Banking • Communications, media and entertainment • Education • Energy and utilities • Government • Healthcare • Insurance • Manufacturing • Retail	To include: □ The purpose of the use of big data analytics in each area of application □ Benefits and limitations of the use of big data analytics in each area of application
Topic Area 2: The infrastructure challenges of big data	
Teaching content	**Breadth and depth**
2.1 Types of big data	
□ Structured data • Continuous • Discrete • Relational database • Spreadsheet file data • Transactional data □ Unstructured data • Social media and entertainment data • Weather data □ Semi structured data • Emails • XML • Zipped files • Web pages	To include: □ The difference between structured, unstructured and semi structured types of data □ How each type of data is captured □ The purpose of each type of data □ When each type of data can be used □ The benefits and limitations of each type of data
2.2 Data preparation and cleaning techniques for data mining	
□ Data preparation • Numeric data • Textual data □ Data wrangling □ Data cleaning techniques • Removing duplicates • Removing irrelevant data • Converting data type • Clear formatting • Fix structural errors • Language translation • Fix missing data • Validate data	To include: □ The purpose of preparing data □ How the different types of data can be prepared □ Know what data wrangling is □ How data wrangling can be used to prepare data □ The purpose of cleaning data □ Know when to use each cleaning technique □ The benefits and limitations of each data cleaning technique Does not include: □ Technical details of each data cleaning technique
2.3 Data mining techniques	
□ Data mining □ Data mining techniques • Descriptive • Diagnostic • Predictive	To include: □ Know what data mining is □ The role of data mining techniques in analysing big data

• Prescriptive	□ The characteristics of each data mining technique □ When each data mining technique can be used □ The benefits and limitations to organisations of using each data mining technique Does not include: □ Coding details
2.4 Big data infrastructure	
□ Server configurations • Dedicated servers • Distributed cluster of servers	To include: □ Know the characteristics of each configuration □ When each configuration can be used □ The benefits and limitations of each configuration □ The factors which influence choice of server configuration Does not include: □ Costs of implementation
□ Software platforms • Open-source software • Vendor-specific software • Data visualisation software • Data analytics software • NoSQL database • Data integration platforms	To include: □ The purpose of each software platform □ When each platform can be used □ The characteristics of each platform □ The benefits and limitations of using each software platform
□ Data storage areas • Public Cloud • Private Cloud • Data lake • Data warehouse • Solid state drives (SSDs) • Emerging data storage technologies ○ Block chain ○ DNA ○ Quantum server	To include: □ The purpose of each data storage area □ The characteristics of each data storage area □ When each data storage area can be used □ The benefits and limitations of each data storage area Does not include: □ Providers of data lakes and data warehouses
2.5 Data science and data analytics	
□ Data science □ Data analytics	To include: □ The purpose of data science □ The purpose of data analytics □ The difference between data science and data analytics □ How each can be used in the areas of application listed in Topic Area 1.4
2.6 Data analytic techniques	
□ Techniques • Regression analysis • Monte Carlo simulation • Factor analysis	To include: □ Know what each technique is □ The purpose of each technique □ When each technique can be used

• Cohort analysis • Cluster analysis • Time series analysis	□ The benefits and limitations of each technique Does not include: □ The technical details of each technique
Topic Area 3: Big data, machine learning and artificial intelligence	
Teaching content	**Breadth and depth**
3.1 Artificial Intelligence and machine learning	
□ Artificial intelligence (AI) □ The interaction of big data and AI in data science □ Machine learning □ Machine learning algorithms • Decision Tree • Random Forest • K-Means	To include: □ Know what AI is □ How AI is developed and used in data science □ The benefits and limitations of using AI in data science □ Know what machine learning is □ How machine learning algorithms are used □ The purpose and characteristics of the machine learning algorithms □ The benefits and limitations of using each machine learning algorithm □ How each machine learning algorithm can be used for digital analysis □ How big data, machine learning and AI interact in data science Does not include: □ The historical development of AI and machine learning
Topic Area 4: Legal and ethical issues in data management	
Teaching content	**Breadth and depth**
4.1 Legal issues	
□ UK General Data Protection Regulations (UK GDPR) • Features • Principles • Rights of data subjects • Marketing consent	To include: □ Know what the latest version of the regulation is □ Know the main purpose(s) of the regulation □ How to comply with UK GDPR □ Why compliance with UK GDPR is important □ The impacts of noncompliance with UK GDPR on organisations □ How organisational policies on data use can mitigate against noncompliance Does not include: □ Knowing the detailed content of the regulation
4.2 Ethical issues	
□ Automated decision making □ Collection, storage, ownership and sharing of data □ Emerging ethical debates affecting the use of data □ Frameworks for ethical data management • Data ethics framework • Inclusive data principles	To include: □ How automated decision making creates risks of discrimination and bias for individuals □ How UK GDPR applies to automated decision making in organisations □ The impacts of automated decision making on individuals

	□ Protecting the identity of individuals when collecting, storing and sharing data □ How data ownership is determined □ How organisations respond to issues of data collection, storage, ownership and sharing □ The impacts of emerging ethical debates on individuals □ How organisations respond to emerging ethical debates □ How organisations can use frameworks for ethical data management
Topic Area 5: Environment and society	
Teaching content	**Breadth and depth**
5.1 Environment	
□ Accuracy of weather forecasting □ Natural disaster management □ Energy efficiency □ Environmental management □ Platforms to combat climate change □ Emerging environmental developments affected by big data	To include: □ How big data can be used in the different areas of environmental work □ The benefits and limitations of big data use in each area of environmental work
5.2 Society	
□ Big data and the development of smart cities □ Emerging social developments driven by big data • Personalised healthcare • Smart homes • Traffic management • Urban and community planning	To include: □ Know the purpose of a smart city □ How data from a variety of sources can be exchanged to optimise city operations □ Benefits and limitations of a smart city □ How individuals are affected by emerging social developments driven by big data

Assessment guidance

This unit is assessed by an exam. The exam is 1 hour and 30 minutes and has 60 marks in total. All questions in the exam are compulsory.

The exam will **always** have:

A short scenario	• This will develop through the paper.
Questions to assess Performance Objectives 1, 2, and 3	• PO1: these questions will require students to recall generic knowledge and understanding. • PO2: these questions will require students to apply knowledge and understanding. • PO3: these questions will require students to analyse and evaluate knowledge, understanding and performance in relation to the scenario.
A range of question types	• Forced choice/controlled response questions. • Short answer, closed response questions. • Extended constructed response questions with points-based marks schemes.

	• Extended constructed response questions with levels of response marks schemes. • One six mark and one nine mark extended constructed response question with a levels of response marks scheme.
Questions relating to each Topic Area	• Content will be sampled from all topic areas, with at least one question or part question relating to each topic area.

This will be conducted under examination conditions. For more details refer to the Administration area.

The guide to our Sample Assessment Material gives more information about the layout and expectations of the exam.

The exam for this unit assesses the following Performance Objectives:

- PO1 – Show knowledge and understanding
- PO2 – Apply knowledge and understanding
- PO3 – Analyse and evaluate knowledge, understanding and performance.

Synoptic assessment

This unit allows students to gain underpinning knowledge and understanding relevant to the qualification and sector. The NEA units draw on and strengthen this learning as students will apply their learning to practical tasks.

The following NEA units have synoptic links with this unit. The synoptic grids at the end of these NEA units show these synoptic links.

- F203: Relational database design
- F204: Data and the Internet of Everything (IoE)
- F205: Data visualisation
- F206: Data and digital marketing

More information about synoptic assessment in these qualifications can be found in Section 6.2 Synoptic Assessment.

5.3 NEA Units

5.3.1 Unit F202: Spreadsheet data modelling

Unit Aim

Data modelling is the process of creating a usable and manipulable, visual representation of a data set. Spreadsheets are widely used across all organisation types for data modelling purposes, such as revenue forecasting and profit and loss accounts, enabling businesses to show data in an accessible way. Communicating with clients to gather requirements is the first step in designing and developing an appropriate data model.

In this unit you will learn how to communicate with a client to identify the information and data which must be gathered to solve a problem. You will also learn how to use a range of tools and techniques used in spreadsheets to develop inputs and complete processes to produce outputs. You will use these tools and techniques to design and develop solutions to a client's problems. You will also test your models thoroughly to ensure that they meet a client's needs.

Unit F202: Spreadsheet data modelling	
Topic Area 1: Principles of spreadsheet modelling	
Teaching content	**Exemplification**
1.1 Spreadsheet data modelling	
□ Purposes of spreadsheet modelling • Store data • Manipulate data • Analyse data • Share analysis outcomes □ Types of spreadsheet model • Financial • Statistical • Business Future Planning • Presentation of data and outcomes □ Technological developments affecting spreadsheet modelling	To include: □ The purpose of spreadsheet models in different contexts □ How types of spreadsheet models can be used in different contexts □ Suitability of spreadsheet model types in different data modelling contexts □ The benefits and limitations of spreadsheet modelling for organisations To include: □ How developments in data modelling could improve spreadsheet data models Examples of **technological developments** may include: □ Big data □ Machine learning □ Artificial Intelligence □ Real time data modelling □ Internet of Things (IoT)/Internet of Everything (IoE) □ Data dashboard systems □ Data modelling cycle □ Data modelling techniques □ Business intelligence software

1.2 Spreadsheet modelling development	
□ Stages of the spreadsheet modelling development cycle • Gather business requirements • Identify the entities required • Create the conceptual model of what is required • Design the logical data model • Create the physical data model □ Stages of the decision-making process • Identify the problem • Gather and analyse the most relevant data • Identify the alternatives to solve the problem • Select the best alternative • Take action • Evaluate and verify the decision	To include: □ The stages of the spreadsheet data modelling development cycle □ The role of the spreadsheet model designer at each stage of development □ The stages of the decision-making process □ How the features of spreadsheet software can be used to support the decision-making process
□ Challenges of spreadsheet data modelling development • Version control of data modelling • Complexity of using a range of modelling tools • Selecting appropriate presentation of data • Security of data and information • Hidden errors • Integration with other business systems • Limited knowledge of users	To include: □ The reasons for retaining versions of a spreadsheet data model during development □ How the scale and complexity of spreadsheet data modelling can cause challenges to the designer □ The dangers that using spreadsheets may pose to the security of data □ How data can be protected when using spreadsheet modelling □ Mitigating for hidden errors □ The reasons for ensuring that a spreadsheet data model works with existing business systems □ The reasons for having effective user documentation
Topic Area 2: Planning the design of a spreadsheet model	
Teaching content	**Exemplification**
2.1 Design tools	
□ Flow charts □ Mind maps □ Story boards □ Visualisation diagrams □ Wire frames □ Data Dictionaries • Variable names • Unit measurements • Acceptable values • Definition of the variables	To include: □ Key components of each design tool □ The benefits and limitations of each design tool □ When each design tool is appropriate to use □ How design tools are used digitally and manually □ Layout conventions for each design tool □ Factors influencing the effectiveness of each design tool □ The definitions of the items in the data dictionary □ How variables are used

2.2 Planning the design of a data model	
□ Design parameters • Purpose • User requirements • Project constraints ○ Time ○ Cost ○ Scope ○ Quality ○ Resources ○ Risks and risk analysis • SMART success criteria □ Design requirements • Structure • Inputs • Calculations • Outputs • Simplification of tasks for end users • Data validation • Cell formatting	To include: □ How each parameter can influence the design of a spreadsheet data model □ Defining the purpose of a spreadsheet model for a specific context □ How to identify risks and mitigate against them □ Identifying the tasks end users will need to complete when using a model □ How to select success criteria for a data model □ How each design requirement can influence the design of a spreadsheet data model □ The importance of including all design requirements in plans
2.3 Structure	
□ Structure • Spreadsheet model title • Worksheets • Column headings • Row headings	To include: □ Using spreadsheet titles to convey the purpose □ Using column and row headings to convey the meaning of cell content
2.4 Inputs	
□ Data requirements □ Validation □ Comments and notes	To include: □ Selecting appropriate inputs for use in different contexts □ How to select input data that is appropriate for a data model □ When processed data is appropriate for entry into a data dictionary □ Possible validation rules and when to use them □ How to use comments and notes to support users
2.5 Calculations	
□ Manipulation of data using formulae and functions □ Built in functions • Relative and absolute cell references • Mathematical operators • Simple functions • Logical functions • Financial functions • Text functions • Date and time functions • Lookup and reference functions • Maths and trig functions □ Data ranges □ Error messages □ Importing data from different file types	To include: □ Selecting appropriate calculations for use in different contexts □ How to select and use built-in functions for spreadsheet data modelling □ How flowcharts can be used to aid the design of calculations □ How to use meaningful error messages to support end users when errors occur □ How to import data from different applications including .csv, databases, other spreadsheets Examples of **mathematical operators** may include: □ +

	□ - □ * □ ≤ □ ≥ □ = □ / Examples of **simple functions** may include: □ SUM □ AVERAGE □ COUNT □ MIN □ MAX Examples of **logical functions** may include: □ IF □ Nested IF □ AND □ OR □ NOT □ SUMIF Examples of **financial functions** may include: □ ISPMT □ PMT □ PV Examples of **text functions** may include: □ UPPER □ LOWER □ CONCATENATE Examples of **date and time** functions may include: □ TODAY □ DAY □ HOUR Examples of **lookup and reference** functions may include: □ LOOKUP □ VLOOKUP □ HLOOKUP □ INDEX Examples of **maths and trig functions** may include: □ ROUND □ CEILING □ RAND Does not include: □ Identifying cell references when planning calculations

2.6 Planning testing	
□ Test plan documentation □ Types of tests • Iterative testing ○ Technical ○ Useability • After development testing ○ Technical ○ Useability • Types of test data ○ Extreme ○ Invalid (erroneous) ○ Valid □ Test strategy	To include: □ Conventions and layout of a test plan □ How to develop a test plan □ The types of tests to be carried out on a developed model □ How to select relevant test data for use in a test plan □ When it is appropriate to test during and after development □ How to record test results □ The reasons for completing a test strategy when planning a spreadsheet data model □ How to write a test strategy
2.7 Outputs	
□ Charts □ Graphs □ Tables □ Reports □ Dashboard • Layout • Use of macros	To include: □ Selecting the required outputs for use in different contexts □ Selecting outputs that are fit for purpose based on results analysis □ How to design a coherent layout for the outputs □ How to determine dashboard requirements
2.8 Human computer interface (HCI) in data modelling	
□ Human Computer Interface (HCI) features • Purpose • Navigation • Accessibility • Colour • Layout • Learnability • Memorability • Messages • User perceptions • Use of macros	To include: □ Select methods that simplify the ways in which end users work with a spreadsheet data model □ How the HCI features contribute to the creation of dashboards for use in different contexts □ How to select appropriate navigation methods for different contexts □ How to ensure that the proposed HCI is accessible to all users □ How to select the most user-friendly colour and layout of the HCI □ How the HCI features enhance user-friendliness □ How macros can be used to simplify tasks for end-users
Topic Area 3: Creating the spreadsheet model	
Teaching content	**Exemplification**
3.1 Spreadsheet model creation	
□ Cell formatting • Font • Font size • Alignment centre, left, right □ Cell referencing • Absolute • Relative • Named ranges • Multi-sheet referencing □ Multiple worksheets • Linked worksheets	To include: □ How cell formatting can be used to create an appropriate format for a spreadsheet model □ How cell referencing can be used to create an appropriate format for a spreadsheet model □ How multiple worksheets can be used to make different components of a spreadsheet model easier to manage

□ Data manipulation tools • Drop down lists • Spin buttons • Scroll bars • Sorting • Filtering □ Data validation • Range check • Text length • Lookup • Limited choice □ Worksheet protection and security • Passwords • Limit access to named individuals • Organisational policies on access rights and limitations □ Navigation methods between worksheets • Multi-sheet formatting • Page orientation • Colour • Conditional formatting • Limited choice of data validation o Drop down list o Radio buttons o Tick list	□ How data manipulation tools can be used to enhance user-friendliness □ How data validation can be used to ensure the accuracy of inputted data □ How data validation methods can be selected for use in different contexts □ How to protect a spreadsheet model from errors in data entry □ How to protect a spreadsheet model from unauthorised access □ How navigation methods between worksheets can be used to enhance user-friendliness Does not include: □ Merging of cells as this can reduce potential for portability
3.2 Inputting formulae, functions and data	
□ Formulae • Simple • Complex • Mathematical operators □ Functions • Simple • Logical • Financial • Text □ Data • Cleansing data • Inputting data • Importing data	To include: □ How to use correct construct when inputting formulae □ How to use the inbuilt functions within spreadsheet software □ How to select and use appropriate data
3.3 Developing the outputs	
□ Charts/graphs • Titles • Legends • Axis labels • Colour/shading/pattern • Data labels □ Data Tables • Orientation • Headings • Grid lines/borders/shading	To include: □ How each output can enhance audience understanding □ How the components of data tables can be used to improve clarity for a user □ How to create comprehensive reports which are easily understood by the audience □ How outputs can be displayed using dashboards to improve client understanding

• Text format • Row and column headings □ Reports • Headings • Page numbering • Headers • Footers • Font size and style	
3.4 Testing the spreadsheet throughout its development	
□ Iterative testing □ End testing	To include: □ How to check the components of a spreadsheet during construction □ The reasons for re-checking the components and making necessary adjustments □ How to check the components of the final product □ How to record test outcomes □ The reasons for re-checking the spreadsheet after any changes
Topic Area 4: Delivering the outcomes	
Teaching content	**Exemplification**
4.1 Analysis of the processed data	
□ Trends/patterns in data □ Visualisation indicators from graphs/charts □ Dashboard □ Pivot tables and pivot charts □ Make conclusions	To include: □ How to identify and analyse trends and patterns in data □ How different types of graphs/charts can be used to enhance the presentation of modelling results □ How to select appropriate graphs/charts to present the results of the model □ How to label graphs/charts effectively and accurately □ How to make conclusions from results analysis
4.2 Technical and user documentation	
□ Technical documentation • Hardware and software requirements • Instructions on use • Formulae and functions used • Data validation and error messages • Fault log □ User documentation • Description of purpose of the system • The functions of the system • The hardware and/or software requirements • Step-by-step guide o Installation o Access o Use o The model	To Include: □ The difference between technical and user documentation □ How to develop technical documentation □ How to develop documentation to aid the end user when using the spreadsheet data model

Topic Area 5: Evaluation	
Teaching content	**Exemplification**
5.1 Evaluation	
□ Meets user and/or client requirements □ Effective use of HCI □ Effectiveness of the spreadsheet data model • Ease of use and accessibility • Data formatted appropriately • Strengths of spreadsheet model • Improvements that could be made	To include: □ Determining how effectively a spreadsheet data model meets agreed requirements □ How well the HCI features support the effectiveness of the spreadsheet data model □ How easy the spreadsheet data model is to use □ How to evaluate the effectiveness of the spreadsheet data model

Assessment criteria

The table below gives the assessment criteria for the tasks in the set assignment for this unit. The assessment criteria indicate what is required in these tasks.

This qualification has a compensatory approach. This means that the unit grade awarded is based on the **total** number of achieved criteria for the unit (see Section 6.4). Students do **not** have to achieve **all** criteria for a specific grade to achieve that unit grade (e.g. achieve all Pass criteria to achieve a Pass grade).

Section 7.4 provides full information on how to assess the NEA units and apply the assessment criteria. Students' work must show that all aspects of a criterion have been met in sufficient detail for it to be **successfully achieved** (see Section 7.4.1). If a student's work does not fully meet a criterion, you must not award that criterion.

The command words used in the assessment criteria are defined in Appendix B.

Pass	Merit	Distinction
P1: Identify appropriate SMART success criteria against the purpose and user requirements.	M1: Explain the constraints for the project.	
P2: Identify the spreadsheet data model structure using appropriate planning and design tools.	M2: Identify the formulae for the spreadsheet data model using appropriate planning and design tools.	D1: Identify the formatting and validation for the spreadsheet data model using appropriate planning and design tools. Include user comments and appropriate protection.
P3: Identify and explain your choice of ~~the~~ HCI features for the spreadsheet using appropriate planning and design tools.		
P4: Create a test plan to test the useability of the spreadsheet data model.	M3: Create a test plan to test the technical aspects of the spreadsheet data model.	D2: Justify the selection of tests to be used in the test plan through a test strategy.

Pass	Merit	Distinction
P5: Produce a spreadsheet data model based on the design documentation.	M4: Produce a functioning spreadsheet data model based on the design documentation.	
P6: Use formatting in the spreadsheet data model.	M5: Use linked worksheets and functions in the spreadsheet data model.	D3: Use validation, protection and data manipulation tools in the spreadsheet data model.
P7: Use simple formulae in the spreadsheet data model.		
P8: Carry out end testing of the spreadsheet data model and record the outcomes in a test plan.		
P9: Develop outputs to be used to aid the analysis of the results of the spreadsheet model.	M6: Produce an analysis of the trends and/or patterns indicated by the outputs.	D4: Evaluate the outcomes of the analysis and make recommendations.
P10: Create the required content of the technical documentation for the spreadsheet data model.		
P11: Create the required content of the user documentation for the spreadsheet data model.		
P12: Compare the user requirement with the spreadsheet data model created.	M7: Assess the effectiveness of the HCI features in the spreadsheet data model.	D5: Evaluate the effectiveness of the spreadsheet data model and suggest improvements that could be made.

Assessment guidance

This assessment guidance gives you information relating to the assessment criteria. There might not be additional assessment guidance for each assessment criterion. It is included only where it is needed.

Assessment Criteria	Assessment guidance
P1	• Students **must** present success criteria as SMART objectives. • The SMART objectives **must** be linked to the purpose and user requirements from the scenario.
M1	• There is no assessment guidance for this criterion.
P2	• There is no assessment guidance for this criterion.
M2	• Calculations **must** be expressed as headings, not cell references.
D1	• The spreadsheet data model **must** include at least one advanced function.
P3	• Students **must** explain why the HCI features they have identified are appropriate for the solution.

P4	• The plan **must** include normal, extreme and erroneous testing..
M3	• The plan **must** include normal, extreme and erroneous testing.
D2	• Students **must** write a test strategy statement, not a lengthy document.
In **Task 2**, ideally students will follow the plans they made in **Task 1**. However, if students deviate from their plans they must **not** be penalised when assessing **Task 2**. Students might wish to reflect on any deviations in their evaluation.	
P5	• There is no assessment guidance for this criterion.
M4	• There is no assessment guidance for this criterion.
P6	• There is no assessment guidance for this criterion.
P7	• There is no assessment guidance for this criterion.
M5	• Students can use pivot tables or similar to produce outputs for the spreadsheet data model.
D3	• There is no assessment guidance for this criterion.
P8	• Students **must** use screenshots in their test documentation. • If students have **not** used the test plan template provided, they must **not** be penalised when assessing **P8**. Any relevant test plan document is acceptable.
P9	• The evidence can be the spreadsheet data model and/or the outputs.
M6	• Students can present this information in a report or a dashboard. • Students can use pivot tables or similar to produce their analysis.
D4	• Recommendations **must** focus on the question or questions raised in the scenario.
P10	• The task specifies which parts of the technical documentation students need to create. They **must** create these parts **only**. They do **not** need to create full documentation. • The technical documentation produced **must** be fully appropriate for the spreadsheet data model the student has produced.
P11	• The task specifies which parts of the user documentation students need to create. They **must** create these parts **only**. They do **not** need to create full documentation. • The user documentation produced **must** be fully appropriate for the spreadsheet data model the student has produced.
P12	• There is no assessment guidance for this criterion.
M7	• The focus is specifically on the HCI features **only**.
D5	• The focus is on the model as a whole. • The evaluation **must** include justification for the improvements suggested. • The improvements suggested **must** relate to the evaluation.

Synoptic assessment

Some of the knowledge, understanding and skills needed to complete this unit will draw on the learning in Unit F200 Fundamentals of data analytics.

This table details these synoptic links.

Unit F202: Spreadsheet data modelling		F200: Fundamentals of data analytics	
Topic Area		Topic Area	
1	Principles of spreadsheet modelling	1	Understanding data
2	Planning the design of a spreadsheet model	1 2	Understanding data Managing data
3	Creating the spreadsheet model	1 2 3	Understanding data Managing data How data can be accessed and managed across platforms
4	Delivering the outcomes	2 5	Managing data Job roles, skills and attributes in data analytics
5	Evaluation	1	Understanding data

More information about synoptic assessment in these qualifications can be found in Section 6.2 Synoptic Assessment.

5.3.2 Unit F203: Relational database design

Unit Aim

This unit will provide you with the knowledge and skills to create and test a relational database. Relational databases are the most common type of databases used in business today. Relational databases are used by many different organisations to store and manipulate data. Using a relational database model will ensure that data is structured, accurate and accessible to all users.

In this unit you will learn how to design a relational database to meet specified users' needs and how to create a database from designs. You will learn how to manipulate data in databases through the use of queries, forms and reports and create a user interface that allows users to navigate databases with ease. Finally, you will learn how to test a relational database, carry out improvements based on feedback and evaluate the design.

Unit F203: Relational database design	
Topic Area 1: Relational database concepts	
Teaching content	**Exemplification**
1.1 Databases	
□ Relational database □ Non-relational database	To include: □ What relational and non-relational databases are □ Uses of relational and non-relational databases □ Storage of data items in relational and non-relational databases □ The role of data integrity □ The role of data reliability Does not include: □ Types of data integrity
1.2 Database fundamentals	
□ Objects • Tables • Queries • Forms • Macros • Reports □ Primary and foreign keys □ Relationship types • One-to-one • One-to-many • Many-to-many □ Referential integrity	To include: □ What each object in a database is □ How fields can be identified for each table in a database □ How to identify which field(s) are primary keys □ How to identify which field(s) are foreign keys □ How to identify composite keys in the relationship □ What each relationship type is □ The difference between each relationship type □ The reasons for using referential integrity

□ Data types	Examples of **data types** may include: □ Text □ Number □ Alphanumeric □ Date/time □ Boolean □ Lookup
□ Data redundancy □ ACID properties • Atomicity • Consistency • Isolation • Durability	To include: □ How data redundancy can be resolved □ The reasons for maintaining consistency in a database □ How ACID properties can be used to achieve data validity in a database
Topic Area 2: Plan relational database solutions	
Teaching content	**Exemplification**
2.1 User requirements	
□ Functional requirements • User needs • Security needs □ Non-functional requirements • Performance constraints o Record retention o Backup arrangements • Development constraints o Time	To include: □ How functional requirements will affect the design of a database solution □ How non-functional requirements will affect the design of a database solution
2.2 Planning database structures	
□ Normalisation • 0NF/UNF • 1NF • 2NF • 3NF □ Entity relationship diagrams (ERD)	To include: □ How to take unnormalised data and normalise to third normal form (3NF) □ How to use normalisation techniques to 3NF to plan structures in a database solution □ The purpose of entity relationship diagrams (ERD) □ How to resolve many-to-many relationships □ How to use entity relationship diagrams to plan data structures in a database solution □ The different ways entity relationship diagrams can be notated
□ Data dictionary • Purpose • Content □ Naming conventions □ Attributes • Properties o Field name o Data type	To include: □ The purpose of a data dictionary in planning a database □ The information required to create a data dictionary □ How to use data dictionaries to plan data structures in a database solution □ Standard naming conventions for fields and objects

○ Field size ○ Format ○ Default value ○ Required (Y/N) ○ Validation methods • Input mask • Validation rules • Lists	□ How to define entities in terms of attributes □ How to ensure that attributes are atomic □ How data types for each field can be identified □ How the properties of a field can be identified □ The different methods that can be used to validate data □ How error messages can be used as part of data validation □ When and why different validation methods are appropriate
2.3 Planning data input	
□ On-screen data entry form design considerations • Allow entry of data into single/multiple tables • Form field lengths • Labelling • Instructions • Validation rules • Built-in lists • Calculated fields • Automated number fields • Date fields • Form controls • Navigation buttons • Switchboards	To include: □ How each design consideration affects the design of on-screen data entry
□ HCI considerations • Ease of use • Layout • Colour/font choices • Language style • House style • Ease of navigation • User feedback	To include: □ How each HCI consideration affects the design of on-screen data entry forms
2.4 Planning data processing and automation	
□ Planning data manipulation • Simple queries • Complex queries □ Relational operators • AND • OR • NOT • BETWEEN • >, >=, <, <=, = □ Built-in functions □ Planning automation	To include: □ The different types of queries □ How to plan queries needed for a database solution □ How relational operators can be used to create complex queries □ How multiple tables can be used in the design of complex queries □ How to plan the use of built-in functions needed for a database solution □ How macros can be used to automate aspects of a database solution

	□ How to plan the macros needed for a database solution using flowcharts, tables, or written explanation
2.5 Planning data outputs	
□ Sources of information for outputs • Queries • Tables □ Output formats • Labels • Mail-merge • On-screen output forms • Reports □ Design considerations for outputs • Layout • Colour/font choices • Titles • House styles	To include: □ The different sources of information that can be used to generate outputs □ How to plan each output format □ How each consideration affects the design of each output format
Topic Area 3: Create relational databases	
Teaching content	**Exemplification**
3.1 Database software tools and techniques	
□ Data entry	To include: □ How data can be entered into a database □ How relational database software tools can be used to implement a planned solution based on design documentation
□ Database software tools • Table design • Query design • Form design • Output design • Wizards • Macro creation	Examples of **database software tools** use may include: □ Creating tables to store data □ Using table design facilities to improve database efficiency □ Creating validation rules to ensure data accuracy □ Creating relationships to link tables and reduce data redundancies □ Creating queries to manipulate data from multiple tables □ Creating data entry and output forms to display/share data □ Using form design functionalities to enhance the layout and appearance of data entry and output forms □ Using design functionalities to create switchboards or main menus that can enhance user experience □ Making use of wizards to create basic database objects before enhancing with other tools □ Creating simple and complex macros to automate processes Does not include: □ Use of SQL

Topic Area 4: Testing relational database solutions	
Teaching content	**Exemplification**
4.1 Testing solutions	
□ Types of testing • Technical testing o Validation rules o Field sizes o Data types o Database calculations o Correct outputs from queries o Content included in the output • Usability testing o Navigation features o Layout of forms o Layout of reports □ Test plan documentation □ Types of test data • Valid • Invalid (Erroneous) • Extreme	To include: □ How to use testing techniques during and after relational database development □ How to follow a test plan document □ How to choose appropriate test data to be used in a test plan □ How to record test results □ How and when to retest Does not include: □ User testing, user feedback or user acceptance testing
Topic Area 5: Evaluate database solutions	
5.1 Evaluating solutions	
□ Fulfilment of user requirements □ Success in relation to design intentions • Layout • Menus • Interface • Outputs • Incorporation of house style • Efficiency of solution o Validation o Lack of duplication o Effectiveness of queries	□ How successfully a database solution meets a client's requirements □ How well a solution follows intended designs □ How well efficiency has been addressed in a solution
5.2 Evaluating the effectiveness of planning	
□ Planning processes followed • Defining user requirements • Planning structures • Planning data input • Planning processing and automation • Planning data outputs □ Tools and techniques used □ Lessons learnt	To include: □ How effectively planning processes have been used □ How useful tools and techniques used in the planning processes were □ How well tools and techniques have been used □ How a similar project would be approached in future

Assessment criteria

The table below gives the assessment criteria for the tasks in the set assignment for this unit. The assessment criteria indicate what is required in these tasks.

This qualification has a compensatory approach. This means that the unit grade awarded is based on the **total** number of achieved criteria for the unit (see Section 6.4). Students do **not** have to achieve **all** criteria for a specific grade to achieve that unit grade (e.g. achieve all Pass criteria to achieve a Pass grade).

Section 7.4 provides full information on how to assess the NEA units and apply the assessment criteria. Students' work must show that all aspects of a criterion have been met in sufficient detail for it to be **successfully achieved** (see Section 7.4.1). If a student's work does not fully meet a criterion, you must not award that criterion.

The command words used in the assessment criteria are defined in **Appendix B**.

Pass	Merit	Distinction
P1: Create an entity relationship diagram (ERD) for the solution where data duplication is minimised and data integrity is maintained.		
P2: Normalise the database to third normal form (3NF) using normalisation techniques.		
P3: Create a data dictionary for the solution, using standard conventions.	**M1: Identify** input masks and other methods to validate the data.	**D1: Justify** the use of the chosen validation methods for the database solution.
P4: Design the forms to be used for the solution.		
P5: Describe simple queries to be used for the solution.	**M2: Describe** complex queries to be used for the solution.	
P6: Design the switchboard and navigation for the solution.	**M3: Design** outputs to be used for the solution.	**D2: Design** the macros required for the solution to work effectively.
P7: Create the database structure and populate with data.		
P8: Create simple queries required for the solution.	**M4: Create** complex queries required for the solution.	**D3: Create** the macros required for the solution to work effectively.
P9: Create the forms required for the solution.	**M5: Create** outputs required for the solution.	
P10: Create the switchboard and navigation required for the solution.		
P11: Test the database solution against the database requirements.	**M6: Analyse** the test outcomes and, if necessary, **resolve** any errors in the database solution.	

Pass	Merit	Distinction
P12: Compare the database solution with the client's requirements.	**M7: Explain** how the database solution meets the client's requirements.	**D4: Evaluate** how successful the solution is in relation to design intentions.
		D5: Evaluate the planning processes followed and suggest improvements that could be made for a similar project in the future.

Assessment guidance

This assessment guidance gives you information relating to the assessment criteria. There might not be additional assessment guidance for each assessment criterion. It is included only where it is needed.

Assessment Criteria	Assessment guidance
P1	• The entity relationship diagram for the solution **must** be notated to identify relationships.
P2	• The database structure for the solution **must** be created to third normal form with an explanation relating to each stage of the normalisation process carried out. • The evidence **must** cover 0NF/UNF, 1NF, 2NF and 3NF.
P3	• All entities in the data dictionary solution **must** be atomic. • The data dictionary **must** include: o field name o data type o field size o format o default value o required (Y/N) o reference table if foreign key o identification of primary keys
M1	• Input masks and other methods **must** be defined for the relevant fields in the data dictionary.
D1	• There is no assessment guidance for this criterion.
P4	• The forms used for the solution **must** be designed with enough detail to allow someone else to implement the designs. • Sub-forms can be used as part of the solution. • The forms **must** clearly indicate user aids, such as indicating mandatory fields to be completed. • Designs can be hand drawn or produced electronically.
P5	• Queries **must** be related to the scenario. • At least one criterion **must** be used in each query. • Totals such as count, minimum/maximum, sum may be required for the output.
M2	• Queries **must** include the use of calculations. • Queries **must** require the use of multiple tables. • Queries might use parameters.
P6	• The solution **must** include a main menu/switchboard and navigation back to it. HCI considerations **must** be included.
M3	• The outputs **must** be designed for screen and print output. Totals can form part of the output.

D2	• State the steps required within the macros clearly enough to allow someone else to create the macros. • For the solution to work effectively, students **must** plan for different macros to be used throughout the solution. • Users **must** be able to fully operate the solution using automated features only.
In **Task 2**, ideally students will follow the plans they made in **Task 1**. However, if students deviate from their plans they must not be penalised when assessing **Task 2**.	
P7	• Students **must** create the planned database structure using the data provided to populate the database tables.
P8	• There is no assessment guidance for this criterion.
M4	• There is no assessment guidance for this criterion.
P9	• There is no assessment guidance for this criterion.
M5	• There is no assessment guidance for this criterion.
P10	• A start-up menu/switchboard **must** load when the database is loaded. • The navigation techniques used within the solution **must** be effective. • House style **must** be incorporated in the navigation system. • Evidence **must** be the database file.
D3	• There is no assessment guidance for this criterion.
P11	• Ideally, students will use the test plan template provided. However, if students use a different template which is appropriate for the task, they must not be penalised for doing so. • Students must test their solution against all the database requirements in the scenario.
M6	• If errors have been discovered during testing, the evidence must show these errors and how the errors have been corrected. • If the student has carried out the analysis and no errors have been discovered, the mark must still be awarded.
P12	• There is no assessment guidance for this criterion.
M7	• There is no assessment guidance for this criterion.
D4	• This criterion focuses on the solution itself.
D5	• This criterion focuses on the process followed to create the solution.

Synoptic assessment

Some of the knowledge, understanding and skills needed to complete this unit will draw on the learning in F200: Fundamentals of data analytics and Unit F201: Big data and machine learning.

This table details these synoptic links.

F203: Relational database design		**F200: Fundamentals of data analytics**	
Topic Area		Topic Area	
1	Relational database concepts	1	Understanding data
2	Plan a relational database solution	1 2	Understanding data Managing data

3	Create a relational database	1 2	Understanding data Managing data
4	Testing the relational database solution	2	Managing data
5	Evaluation of the database solution	5	Job roles, skills and attributes in data analytics

F203: Relational database design		**F201: Big Data and Machine Learning**	
Topic Area		Topic Area	
1	Relational database concepts	1 2 4	The scope of managing big data The infrastructure challenges of big data Legal and ethical issues in data management
2	Plan a relational database solution	2 5	The infrastructure challenges of big data Environment and society
3	Create a relational database	2	The infrastructure challenges of big data
4	Testing the relational database solution		
5	Evaluation of the database solution	2	The infrastructure challenges of big data

More information about synoptic assessment in these qualifications can be found in Section 6.2 Synoptic Assessment.

5.3.3 Unit F204: Data and the Internet of Everything (IoE)

Unit Aim

The Internet of Everything (IoE) refers to the devices we use that are connected to the internet, generating data about everything we do. Data and devices are now being used in different sectors of life providing organisations and consumers with automated products and services that enhance our lives. Every day more devices are connected to the internet, with new opportunities and services being developed. Refrigerators that message you to tell you that the milk is out of date and cities where traffic flows are controlled by computers responding to congestion problems, are examples of how the IoE is impacting our lives.

In this unit you will learn about the IoE and how it can be used in different sectors of life. You will learn about the devices that are used to gather data including how they are powered and transmit data. You will also learn how devices process the data and output it in a usable form. Finally, you will learn how to design an IoE product considering the devices, communication methods and processing requirements and how to present your product to stakeholders to gather feedback to help develop your idea further.

Unit F204 Data and the Internet of Everything (IoE)	
Topic Area 1: IoE ecosystem	
Teaching content	**Exemplification**
1.1 Sectors that use the IoE	
□ What is meant by the Internet of Everything □ Sectors • Health o Disability aids o Health analytics o Medical devices o Sensors o Social safety wearables o Weather safety • Home o Energy generation/monitoring/reduction o Living aids o Security/surveillance o Home automation systems • City/neighbourhood o Environmental control o Intelligent cities o Public services o Traffic management o Transport • Industry o Emergency services o New developments o Production refinement/new techniques o Remote working o Safety o Workforce aids o Workforce aids	To include: □ What is meant by the IoE □ The different sectors where the IoE is used □ How the IoE is used in different sectors

• The environment
  ○ Environmental monitoring
  ○ Flood detection network
  ○ Illegal deforestation monitoring
  ○ Landslide detection systems
  ○ Pollution monitoring
  ○ Wildlife tracking	

1.2 The four pillars infrastructure of the IoE	

□ The structure of the IoE
• People
  ○ Users
• Data
  ○ Raw data
  ○ Analysis
  ○ Decisions
  ○ Results
• Process
  ○ Delivering information
  ○ Time of processing
  ○ Methods of processing
• Things
  ○ Collection devices
  ○ Output devices
	To include:
	□ The role of each pillar
	□ What entities are included in each pillar
	□ How the four pillars work together to create a workable system
	□ How one pillar affects another

Topic Area 2: Data collection, processing and storage methods and devices	
Teaching content	**Exemplification**
2.1 Data collection devices	
□ Sensors □ Auto process □ Manual process	To include: □ How data can be collected □ Types of devices that are used to collect data □ How devices are selected in different contexts
2.2 Power considerations for data collection devices	
□ Frequency of data collection □ Frequency of communication □ Energy generation: • Solar • Motion • Radio Frequency (RF) energy harvesting • Battery • Wired power source	To include: □ How power is consumed based on frequency of use for data collection □ How power is consumed based on frequency of use for communication □ How devices can be powered □ How power sources are selected in different contexts Does not include: □ Physics of how power is generated □ Calculations of power consumption
2.3 Data processing	

□ Where it takes place
• Device
• Edge
• Fog
• Cloud
  ○ Software as a Service (SaaS)
  ○ Platform as a Service (PaaS)
	To include:
	□ Where data is processed
	□ Why data is processed at that location
	□ Benefits and limitations of different processing locations
	□ How processing locations are selected in different contexts

○ Infrastructure as a Service (IaaS) ○ Public/Private/Hybrid	
2.4 Data storage	
□ Devices • Server • Mobile • System □ Locations • Remote/Cloud • On-site/On device	To include: □ Where data is stored □ How storage locations are selected in different contexts
Topic Area 3: Connectivity and data transmission	
Teaching content	**Exemplification**
3.1 Types of connectivity	
□ Person to Person (P2P) □ Person to Device (P2D) □ Device to Device (D2D)	To include: □ How people and devices are connected to each other □ The different types of connection that are established with the IoE
3.2 Connectivity methods	
□ Wireless • Bluetooth • Global Positioning System (GPS) • Mobile (3G/4G/5G) • Near-Field Communication (NFC) • Wi-Fi • Zigbee • Z Wave □ Wired • Fibre • Copper	To include: □ How data collection devices can connect and transmit data □ How connectivity and communication methods are selected in different contexts
3.3 Transmission considerations	
□ Data size □ Transmission range □ Transmission rate □ Frequency of transmission	To include: □ The amount of data that is transmitted □ The distance that data is transmitted over and effect of connectivity method choice □ How often data is transmitted Does not include: □ Calculating exact figures and rates
Topic Area 4: Human computer interfaces (HCIs)	
Teaching content	**Exemplification**
4.1 Output	
□ Screens □ Speakers □ Actuators	To include: □ The devices that can be used to output information from the IoE □ How the selection of device is based on the needs of a context
4.2 Information formats	
□ Visual □ Audio □ Movement	To include: □ Range of information output formats from the IoE

	□ How the selection of output format is based on the needs of a context
4.3 HCI Principles for IoE solutions	
□ Human Computer Interface (HCI) features • Purpose • Navigation • Accessibility • Colour • Layout • Learnability • Memorability • Messages • User perceptions • Audio • Haptic	To include: □ How to select methods that simplify the ways in which stakeholders work with an IoE solution □ How to ensure that a proposed HCI is accessible to all users □ How to select the most user-friendly colour and layout for a HCI □ How HCI features enhance user-friendliness
Topic Area 5: Securing IoE devices	
Teaching content	**Exemplification**
5.1 Device security	
□ Threats to devices • Brute force • Playback attack • Rootkit • Side Channel • Spoofing • Zero day □ Mitigation methods for devices • Deep packet inspection • Firewall • Intrusion Detection Systems • Intrusion Protection Systems • Public Key/Private Key • Root of Trust • Physical tampering protection	To include: □ The different threats that can affect IoE devices □ The mitigation methods against threats to IoE devices Does not include: □ How each threat to devices works □ How each mitigation method for devices works
5.2 Connection Security	
□ Threats to data in transit • Man-In-The-Middle (MITM) • Interception □ Mitigations for data in transit • Encryption • Cryptography	To include: □ The different threat types that can affect data in transit □ How to propose mitigation methods against threats to data in transit □ How device protection can aid security of data in transit Does not include: □ How each threat to data in transit works □ How mitigation for data in transit works
5.3 Legal and ethical considerations	
□ Data ownership □ Privacy □ Stalking □ Data access	To include: □ The purpose of the legal and ethical considerations □ The implications of the legal and ethical issues surrounding the use of the IoE by individuals and businesses

	□ Legal and ethical considerations that need to be taken when developing an IoE solution
Topic Area 6: Documentation and audience communication	
Teaching content	**Exemplification**
6.1 Presenting solutions	
□ Presentation □ Website/multimedia □ Video □ Delivery of pitch	To include: □ Features of a good presentation/pitch to propose a solution to a client □ How to deliver a presentation/pitch of a proposed solution to a client
6.2 Feedback	
□ Feedback sources • Stakeholders • Developers □ Feedback formats • Written • Verbal	To include: □ The different sources of feedback □ How feedback can be gathered from different sources □ The different formats that feedback can be received in and how to record it □ How feedback from different sources and formats can be analysed
6.3 IoE solution proposal	
□ Features • User requirements • Stakeholder considerations • Purpose • Security issues • Legal and ethical considerations • Data to be collected • Connectivity and data transmission • Processing required • Outputs	To include: □ Features of an effective business proposal to a client
6.4 Stakeholder considerations	
□ Who could benefit from a proposed solution • Organisation • Individual • Society • Environment □ What the benefits are • Cost reduction • Income generation • Environmental protection	To include: □ Who will benefit from proposed solution □ How benefits will be gained from proposed solution Does not include: □ Specific cost reduction details for a project
6.5 Technical documentation	
□ Program flowcharts □ Data flow diagrams □ Wireframes	To include: □ How to create diagrams showing data flow □ How to create diagrams showing system processing □ How to create diagrams showing device interactions

Assessment criteria

The table below gives the assessment criteria for the tasks in the set assignment for this unit. The assessment criteria indicate what is required in these tasks.

This qualification has a compensatory approach. This means that the unit grade awarded is based on the **total** number of achieved criteria for the unit (see Section 6.4). Students do **not** have to achieve **all** criteria for a specific grade to achieve that unit grade (e.g. achieve all Pass criteria to achieve a Pass grade).

Section 7.4 provides full information on how to assess the NEA units and apply the assessment criteria. Students' work must show that all aspects of a criterion have been met in sufficient detail for it to be **successfully achieved** (see Section 7.4.1). If a student's work does not fully meet a criterion, you must not award that criterion.

The command words used in the assessment criteria are defined in Appendix B.

Pass	Merit	Distinction
P1: Summarise the user requirements.	**M1: Describe** the stakeholder considerations for the solution.	
P2: Explain the entities for the four pillars for the solution.	**M2: Explain** how the entities will interact.	
P3: Identify security issues for the devices in the solution.	**M3**: **Explain** the mitigations that will be put in place to deal with the security issues identified.	**D1: Identify** threats to data in transit in the solution and **explain** mitigation methods.
P4: Describe the legal and ethical issues that need to be considered in the solution.	**M4: Explain** how the legal and ethical issues will be addressed.	
P5: Describe how data will be collected.	**M5: Explain** how and where data will be processed using appropriate technical documentation.	**D2: Describe** the functionality of your additional idea for the solution.
P6: Describe the devices and locations where data will be stored.		
P7: Describe how the data collection devices used will be powered.	**M6: Explain** benefits and limitations to the way the data collection devices will be powered in the solution.	
P8: Describe how you will include HCI principles to meet user needs for the solution.		
P9: Produce annotated wireframes for your HCIs.		
P10: Describe the connectivity methods that will be used to transmit the data.		**D3: Justify** the connectivity methods chosen for the solution, taking transmission considerations into account.

Pass	Merit	Distinction
P11: Present your solution to the client.	**M7:** Gather feedback on the additional idea for the solution.	**D4: Analyse** feedback to **identify** improvements that could be made to the additional idea for the solution.
P12: Identify improvements that can be made to your solution in the future.		**D5: Suggest** possible future developments (additional functions) to the IoE solution.

Assessment guidance

This assessment guidance gives you information relating to the assessment criteria. There might not be additional assessment guidance for each assessment criterion. It is included only where it is needed.

Assessment Criteria	Assessment guidance
P1	• Students **must** select the relevant information from the scenario, **not** just repeat the whole scenario.
M1	• There is no assessment guidance for this criterion.
P2	• Students **must** list the entities and explain their roles in the solution. • Students can use a flow chart for this.
M2	• Students do **not** need to produce technical documentation for this criterion.
P3	• Students **must** identify at least **two** security issues.
M3	• There is no assessment guidance for this criterion.
D1	• There is no assessment guidance for this criterion.
P4	• Students **must** reference laws listed in **Unit F200** in relation to the scenario.
M4	• There is no assessment guidance for this criterion.
P5	• Students can use technical documentation.
P6	• Students can use technical documentation.
M5	• There is no assessment guidance for this criterion.
P7	• There is no assessment guidance for this criterion.
M6	• There is no assessment guidance for this criterion.
P8	• Students **must** consider the needs of at least one user.
P9	• There is no assessment guidance for this criterion.
D2	• Students **must** complete **P5** to **P10**, **M5** and **M6** in relation to their additional idea.
P10	• There is no assessment guidance for this criterion.
D3	• This **must** be included in the proposal.
P11	• Students must use one of the methods of presentation listed in Topic Area 6. • Evidence can be the written presentation or a video recording.
M7	• Teachers must give feedback on the additional idea. • Feedback must focus on improvements that could be made to the additional idea.
D4	• Suggested improvements must be based on the feedback received and focus on the additional idea.
P12	• Students must generate their own ideas for improvements.
D5	• There is no assessment guidance for this criterion.

Synoptic assessment

Some of the knowledge, understanding and skills needed to complete this unit will draw on the learning in F200: Fundamentals of data analytics and Unit F201: Big data and machine learning.

This table details these synoptic links.

F204: Data and the Internet of Everything (IoE)		**F200: Fundamentals of data analytics**	
Topic Area		Topic Area	
1	IoE ecosystem	1	Understanding data
2	Data collection, processing and storage methods and devices	2	Managing data
3	Connectivity and data transmission	2	Managing data
4	Human computer interfaces (HCI's)	2	Managing data
5	Securing the IoE devices	4	Legal considerations
6	Documentation and audience communication	3 5	How data can be accessed and managed across platforms Job roles, skills and attributes in data analytics

F204: Data and the Internet of Everything (IoE)		**F201: Big Data and Machine Learning**	
Topic Area		Topic Area	
1	IoE ecosystem	1 5	The scope of managing big data Environment and society
2	Data collection, processing and storage methods and devices	1 2 4	The scope of managing big data The infrastructure challenges of big data Legal and ethical issues in data management
3	Connectivity and data transmission	1	The scope of managing big data
4	Human computer interfaces (HCI's)		
5	Securing the IoE devices	4	Legal and ethical issues in data management
6	Documentation and audience communication	5	Environment and society

More information about synoptic assessment in these qualifications can be found in Section 6.2 Synoptic Assessment.

5.3.4 Unit F205: Data visualisation

Unit Aim

Organisations collect and use data to aid decision making. As the volume of data collected continues to grow, techniques are needed to analyse this data to make informed decisions. Being able to interpret and communicate what the data means is critical for success, whether it is identifying problems to solve or opportunities to explore. The easiest way to communicate trends and themes in the data is to show them visually. Dashboards are used to connect to, transform, and visualise data.

In this unit you will learn skills required to process data sets effectively to draw out meaningful insights. You will use skills of visualisation and communication to convert data sets into formats that can facilitate the effective communication of information using a data dashboard. To do this you will learn how to prepare data for analysis and design a dashboard for the visualisation of information.

Unit F205: Data visualisation	
Topic Area 1: The value and importance of data visualisation	
Teaching content	**Exemplification**
1.1 Impact of data on organisations and individuals	
□ The value of large data sets to organisations □ How large data sets are used by organisations • Customer preferences • Marketing • Competitive advantage through data visualisation • Predictive analytics • Identifying and mitigating risks □ Data sources □	To include: □ The positive and negative impacts that large data sets can have on organisations □ The different ways that large amounts of data can be used by organisations □ How suitable data from the different data sources can be identified and retrieved □ The reasons why managing large amounts of data can be challenging for organisations □ How organisations can address the challenges of managing large amounts of data Examples of **data sources** may include: • Existing data • Social media content and social network activity reports • Text from customer emails • Survey responses • Web server logs • Internet clickstream data • Financial reports • Machine data captured by sensors connected to the Internet of Everything (IoE)
□ Challenges of managing large data sets	Examples of **challenges** may include: • Lack of understanding of large data sets • Representing large data sets • Data growth and storage • Need for skilled data professionals • Data security • Integrating data from a variety of sources

	• Selecting appropriate software analysis tools
1.2 Data dashboards	
□ Data dashboards • Types ○ Analytical ○ Informational ○ Operational ○ Strategic • Uses/implementations	To include: □ What a data dashboard is □ The different types and uses of data dashboards □ How data dashboards can be used to communicate complex data to different stakeholders or audiences □ The benefits and limitations of the different types of data dashboard
Topic Area 2: Planning for data dashboards	
Teaching content	**Exemplification**
2.1 Initial plans	
□ Design considerations • Purpose of the dashboard • Needs of end users • Data requirements • Success criteria □ Target audience considerations • Technical • Non-technical □ Planning tools • Storyboard • Mind map • Flowchart	To include: □ How each consideration affects the design of data dashboards □ How target audience considerations affect the design of data dashboards □ How each planning tool can be used to plan data dashboards
2.2 Planning data preparation	
□ Data preparation considerations • Data cleansing • Data validation • Data reliability • Data transformation ○ Constructive ○ Destructive ○ Structural □ Legal considerations • UK GDPR • Intellectual property protection • Terms of service agreements □ Ethical, moral and social considerations	To include: □ How each consideration will affect the preparation of data for use in data dashboards □ How data can be cleansed so that it can be analysed and visualised □ How data can be prepared so that errors can be removed prior to manipulation and visualisation □ The benefits of data preparation prior to visualisation □ How each legal, ethical, moral and social consideration will affect the preparation of data for use in data dashboards
2.3 Planning the layout of data dashboards	
□ Layout considerations • User-friendliness • Pages • Content positioning • Interactivity □ HCI considerations • Input controls • Navigational components • Informational components	To include: □ How each layout consideration affects the layout of data dashboards □ How each HCI consideration affects the layout of data dashboards □ How to use planning tools to plan the layout of data dashboards

2.4 Planning the functionality and manipulation of data dashboards	
□ Functionality considerations • User customisation • Data filtering options • Search options • Export options • Real time update □ Data manipulation methods • Multiple tables • Multiple criteria • Advanced formulas	To include: □ How each consideration affects the functionality of data dashboards □ How different methods of data manipulation can be used to process data □ How planning tools can be used to plan the functionality of data dashboards
2.5 Planning the outputs from data dashboards	
□ Output considerations • Purpose of the data dashboard • Types of visualisation required • Interactions required	To include: □ How each consideration will affect the choice of outputs for a data dashboard □ How planning tools can be used to design/specify outputs for a data dashboard
Topic area 3: Techniques for creating a data dashboard	
Teaching content	**Exemplification**
3.1. Preparing data for visualisation	
□ Importing data • File formats • Import techniques	To include: □ The different ways to import data ready for visualisation □ How to use data preparation software to prepare data for use in a planned solution □ How to use data analysis tools to summarise data ready for visualisation
□ Data preparation software tools • Data collection • Data connection • Data cleansing • Data transformation/manipulation • Data analysis	Examples of **data preparation software tools** may include: • Collecting/retrieving data from a range of different file formats to prepare for visualisation purposes • Connecting data collected from a range of data sources to show relationships and connections/correlations between two or more variables • Cleansing data by identifying data errors and issues to create complete and accurate datasets • Transforming data to improve organisation and data quality • Using data transformation facilities to add additional fields to datasets • Using data transformation facilities to modify the format of datasets
3.2 Creating data dashboards	
□ Visualisation software tools • Visual creation tools • Dashboard creation tools • Sorting options • Searching and filtering options • Report creation • Publishing options	To include: □ How to use visualisation software tools to affect the design of planned data dashboard solutions □ How planning documentation can be used to create functioning data dashboards

• Sharing options	□ How functions can be used to manipulate data in dashboards Examples of **visualisation software tools** may include: • Using visualisation tools to create and modify visuals, text and graphics for defined purposes and users • Using creation tools to modify visualisations for different users • Creating a simple, intuitive dashboard interface to engage users • Applying appropriate user access rights to the dashboard • Using dashboard creation facilities to create appropriate security features for the dashboard • Establishing sorting, searching and filtering functions to customise data shown on a dashboard • Using report creation facilities to enhance data presentation • Using report creation facilities to draw attention to important insights • Using and combining multiple reports or datasets to create an interactive dashboard • Pinning tiles to a dashboard to publish and highlight important information for a user
Topic area 4: Communicating information and interpreting data	
Teaching content	**Exemplification**
4.1. Communicating information	
□ Methods of communicating information from data dashboards • Infographic • Presentation • Report • Screen recording	To include: □ How data from data dashboards can be communicated for different audiences and why □ The benefits and limitations of each method
4.2. Interpreting data	
□ Drawing conclusions from data dashboards • Trends • Patterns • Recommendations	To include: □ How data dashboards can be used to draw conclusions from datasets
Topic area 5: Evaluating the effectiveness of visualisation solutions	
5.1. Evaluating data preparation	
□ Evaluating the process of preparing data • Processes used	To include: □ How well data preparation processes worked □ The effectiveness of data cleansing processes in preparing data for a solution

5.2 Evaluating the effectiveness of data dashboards	
□ Evaluating the effectiveness of data dashboards created • Identified solution against requirements • Meeting the needs of the task • Following HCI design conventions • Effectiveness of the layout created • Future improvements	To include: □ How well the needs of client requirements have been met □ How well a data dashboard produced matches plans □ How well HCI design conventions have been adhered to □ How effective the layout of a data dashboard is compared to client requirements □ Improvements that could be made if a similar exercise were carried out in future □ How the functionality of a data dashboard could be modified to enhance the client experience in future □ How the content of a data dashboard could be further developed to enhance the client experience in future

Assessment criteria

The table below gives the assessment criteria for the tasks in the set assignment for this unit. The assessment criteria indicate what is required in these tasks.

This qualification has a compensatory approach. This means that the unit grade awarded is based on the **total** number of achieved criteria for the unit (see Section 6.4). Students do **not** have to achieve **all** criteria for a specific grade to achieve that unit grade (e.g. achieve all Pass criteria to achieve a Pass grade).

Section 7.4 provides full information on how to assess the NEA units and apply the assessment criteria. Students' work must show that all aspects of a criterion have been met in sufficient detail for it to be **successfully achieved** (see Section 7.4.1). If a student's work does not fully meet a criterion, you must not award that criterion.

The command words used in the assessment criteria are defined in Appendix B.

Pass	Merit	Distinction
P1: Describe design and target audience considerations for data visualisation.	**M1 Explain** why data preparation is important for data visualisation.	**D1 Examine** the legal, ethical, moral and social considerations in relation to collection and use of a data set.
P2: Describe the data preparation considerations for data visualisation.		
P3: Identify the layout of a data dashboard and the HCI considerations that are required to present data on the dashboard for the client.		

Pass	Merit	Distinction
P4: Explain the functionality considerations and data manipulation methods required to present data on the dashboard for the client.		
P5: Identify the outputs for the data dashboard for the client.		
P6: Import the data provided into an appropriate application for visualisation.		
P7: Prepare the data provided to allow for effective manipulation.		
P8: Create the functionality and data manipulation methods required to present data on the dashboard.	**M2: Summarise** data ready for visualising the data using appropriate data analysis tools.	
P9: Create a data dashboard to visualise data for the client.	**M3: Implement** HCI considerations in the data dashboard using visualisation software tools.	
	M4: Sort data on a data dashboard for the client.	**D2: Filter** data on a data dashboard for the client.
P10: Present the outputs from the data dashboard to the client.	**M5: Justify** the method used to communicate the outputs from the data dashboard.	**D3: Interpret** the outputs from the data dashboard for the client.
P11: Describe what was and what was **not** effective in the data preparation process.		
P12: Compare the data dashboard produced with the client requirements.	**M6: Evaluate** how far the dashboard produced reflects the plans.	**D4: Evaluate** how effective overall the data dashboard produced is in meeting the client requirements.
	M7: Suggest improvements that could be made to the HCI and layout of the data dashboard produced.	**D5: Suggest** possible further development of the data dashboard produced.

Assessment guidance

This assessment guidance gives you information relating to the assessment criteria. There might not be additional assessment guidance for each assessment criterion. It is included only where it is needed.

Assessment Criteria	Assessment guidance
P1	• The considerations **must** reference the scenario.
M1	• The explanation **must** be linked to the given scenario.
D1	• The evidence **must** be linked to the given scenario.

P2	• There is no assessment guidance for this criterion.
P3	• There is no assessment guidance for this criterion.
P4	• Students can select calculation functions from the list in **Section 2.5** of **Unit F202**. • These are: o Relative and absolute cell references o Mathematical operators o Simple functions o Logical functions o Financial functions o Text functions o Date and time functions o Lookup and reference functions o Maths and trig functions • (See **Section 2.5** of Unit **F202** for examples.)
P5	• There is no assessment guidance for this criterion.
P6	• There is no assessment guidance for this criterion.
P7	• Students only need to cleanse the data. They do **not** need to validate it.
P8	• Students can select calculation functions from the list in **Section 2.5** of Unit **F202.**
M2	• Students **must** use appropriate data analysis tools, such as pivot tables or similar.
P9	• There is no assessment guidance for this criterion.
M3	• There is no assessment guidance for this criterion.
M4	• Sorting can include ascending and descending order, and sorting on more than one column of data.
D2	• There is no assessment guidance for this criterion.
P10	• Students will demonstrate how the data dashboard works. • Acceptable formats for this are: written report, written or verbal presentation. • Evidence of presentation can be a report, a written presentation, or a video recording.
M5	• There is no assessment guidance for this criterion.
D3	• Students **must** consider trends and patterns from the data outputs. Students **must** make recommendations to the client based on any trends and patterns.
P11	• There is no assessment guidance for this criterion.
P12	• Students **must** describe the similarities and differences between their data dashboard and the client requirements outlined in the scenario.
M6	• There is no assessment guidance for this criterion.
D4	• This is an extension of **P12**. Students will make reasoned judgements on how well client requirements have been met.
M7	• There is no assessment guidance for this criterion.
D5	• There is no assessment guidance for this criterion.

Synoptic assessment

Some of the knowledge, understanding and skills needed to complete this unit will draw on the learning in F200: Fundamentals of data analytics and Unit F201: Big data and machine learning.

This table details these synoptic links.

F205: Processing and communicating data with data dashboards		**F200: Fundamentals of data analytics**	
Topic Area		Topic Area	
1	The value and importance of data visualisation	1 2	Understanding data Managing data
2	Planning for a data dashboard	2	Managing data
3	Techniques for creating a data dashboard	2	Managing data
4	Interpreting and communicating information	5	Job roles, skills and attributes in data analytics
5	Evaluating the effectiveness of the visualisation solution	1 5	Understanding data Job roles, skills and attributes in data analytics

F205: Processing and communicating data with data dashboards		**F201: Big Data and Machine Learning**	
Topic Area		Topic Area	
1	The value and importance of data visualisation	1 2 3 5	The scope of managing big data The infrastructure challenges of big data Big data, machine learning and artificial intelligence Environment and society
2	Planning for a data dashboard	1 2 4	The scope of managing big data The infrastructure challenges of big data Legal and ethical issues in data management
3	Techniques for creating a data dashboard	2	The infrastructure challenges of big data
4	Interpreting and communicating information	2	The infrastructure challenges of big data
5	Evaluating the effectiveness of the visualisation solution	4	Legal and ethical issues in data management

More information about synoptic assessment in these qualifications can be found in Section 6.2 Synoptic Assessment.

5.3.5 Unit F206: Data and digital marketing

Unit Aim

Digital marketing has become important as organisations and individuals have started using digital devices and social media channels to communicate messages to a wider audience. Many people spend hours online and the ability to reach them has become more and more important. Digital marketing can take many forms, including video, pop up advertisements, and social media posts. The use of data allows digital marketing to target specific individuals and groups. This results in digital marketing providing a much more cost effective and efficient method of communication.

In this unit you will learn the basics of digital marketing and how to create digital marketing campaigns for a specified purpose. You will learn about the different tools that can be used to create digital marketing campaigns. This will include the use of data to allow more targeted approaches to marketing campaigns. You will learn and develop the skills to develop content for campaigns, as well as the tools and techniques used to pitch your ideas to clients. You will also review how you have worked, developing the ability to be reflective about the approach you took and how you could improve your approach in the future.

Unit F206: Data and digital marketing	
Topic Area 1: Digital marketing fundamentals	
Teaching content	**Exemplification**
1.1 Role of digital marketing	
□ Purposes of digital marketing • Raising awareness • Increasing sales • Building a brand/organisation • Expanding/growing an organisation • Repositioning an organisation • Collecting market research □ Approaches to digital marketing • Business to business (B2B) • Business to consumer (B2C)	To include: □ How digital marketing is used to collect market research □ How digital marketing is used for each purpose □ How digital marketing is used differently for each approach
1.2 Digital marketing tools	
□ Social media platforms □ Banner advertising □ Pay per click advertising □ Email □ Landing page optimisation □ Search Engine Optimisation (SEO) □ Emerging technologies	To include: □ How different tools can be used in digital marketing □ How different social media platforms are targeted at different audiences □ The effectiveness of different tools in different contexts □ The use of emerging technologies in digital marketing
1.3 Marketing strategies and the digital marketing lifecycle	
□ Identifying potential customers and markets • Segmentation • Persona □ Goals • Short term • Long term □ Stages of the digital marketing lifecycle • Setup	To include: □ How potential customers and markets can be analysed □ How and why goals for marketing can be set over different timescales □ How digital marketing campaigns can be used in the different stages of the digital marketing lifecycle

• Traction • Positioning • Conversion and expansion • Viral growth	
Topic Area 2: Data driven digital marketing	
Teaching content	**Exemplification**
2.1 Data collection	
□ Data collection sources • Website marketing analytics o Visitor o Pager view o Session o Traffic • Traffic per channel • Traffic by device • Social media aggregation	To include: □ How data is collected from the different sources □ How to use the different data collection sources
2.2 Data analysis	
□ Analysis techniques □ Presenting results	To include: □ How to analyse data for a defined purpose □ How to present and describe the results of data analysis
2.3 Data use	
□ Identifying gaps in the market □ Identifying changing customer habits □ Targeted campaigns • Channel(s) • Format(s)	To include: □ How to interpret data to make marketing decisions □ How data can be used to support decisions to target different channels □ How data can be used to support decisions to use different formats for digital marketing campaigns
Topic Area 3: Planning digital marketing content	
Teaching content	**Exemplification**
3.1 Planning digital marketing campaigns	
□ Client requirements □ Aim and purpose • Campaign objectives • Target audience • Brand identity • Unique selling point (USP) □ Success criteria • Metrics • Key Performance Indicators (KPI) □ Defining timescales • Publishing schedule o Date o Time o Content □ Generating ideas for content	To include: □ How the aim and purpose of a digital marketing campaign can influence marketing decisions □ How the target audience will influence digital marketing campaign decisions □ How brand identity will influence digital marketing campaign decisions □ What a USP is □ The benefits of having a USP as part of a digital marketing campaign □ How metrics and KPIs are used to measure success □ How data can be used to support the aim and purpose of a digital marketing campaign □ How data analysis can be used to make/inform decisions made in planning a digital marketing campaign □ How to define timescales for a digital marketing campaign

	□ How a publishing schedule can be used to plan content for a digital marketing campaign □ The different ways that ideas for content for a digital marketing campaign can be produced
3.2 Planning the marketing mix	
□ 7 Ps of digital marketing • Product • Price • Place • Promotion • People • Process • Physical evidence	To include: □ What the digital marketing mix is □ What each of the 7Ps of digital marketing is □ How each of the 7Ps can be used in a digital marketing campaign
3.3 Digital marketing funnel	
□ Purpose of the digital marketing funnel □ Sections of the digital marketing funnel • Pre-purchase ○ Engagement ○ Education ○ Research ○ Evaluation ○ Justification ○ Purchase • Post purchase ○ Adoption ○ Retention ○ Expansion ○ Advocacy	To include: □ What the digital marketing funnel is and its purpose □ The purpose of each section of the funnel □ How to develop content ideas for each section of the digital marketing funnel
Topic Area 4: Creating content for digital marketing campaigns	
Teaching content	**Exemplification**
4.1 Content format	
□ Imagery □ Video □ Audio □ Text	To include: □ How each content format connects with audiences □ The digital marketing channels that each content format suits □ How to create prototypes of each content format for a digital marketing campaign Does not include: □ Publishing on social media □ Finished content
4.2 Content purpose	
□ Entertain □ Inspire □ Educate □ Convince/persuade	To include: □ How content can be used for each purpose in a digital marketing campaign

4.3 Content style	
□ Language use for audience • Clarity • Persuasion • Call to action □ Keywords	To include: □ How the language used in digital marketing campaign content can be modified for target audiences □ How keywords can be used □ The value of keywords in digital marketing
Topic Area 5: Communicating to stakeholders	
Teaching content	**Exemplification**
5.1 Communicating the proposal	
□ Executive summary • Purpose of campaign • Impact on stakeholders □ Presentation/pitch to client • Structure • Content – main points of proposal • Digital elements for different channels □ Effective delivery • Clear presentation content • Clear communication □ Feedback • Gathering feedback • Using feedback	To include: □ Features of an executive summary for a proposed digital marketing campaign □ How to communicate the purpose of a digital marketing campaign □ How a digital marketing campaign will affect relevant stakeholders □ Features of a presentation/pitch to stakeholders of a proposed digital marketing campaign □ How to deliver a presentation/pitch to stakeholders to gather feedback □ How feedback from stakeholders can be gathered □ How feedback from a presentation can be used to improve digital marketing plans
Topic Area 6: Reflection and evaluation of working processes	
Teaching content	**Exemplification**
6.1 Ways to reflect	
□ Boud, Keogh and Walker's model • Experience • Reflective process • Outcomes □ Effectiveness of the processes followed • Analysis of data • Campaign planning • Content prototyping • Communicating with stakeholders □ Effectiveness of the tools and techniques used • Data visualisation tools • Planning techniques • Prototyping tools • Presentation delivery • Tools for gathering feedback □ Lessons learnt	To include: □ How to evaluate the working processes followed, and the tools and techniques used □ How to identify actions that would be performed differently in future

Assessment criteria

The table below gives the assessment criteria for the tasks in the set assignment for this unit. The assessment criteria indicate what is required in these tasks.

This qualification has a compensatory approach. This means that the unit grade awarded is based on the **total** number of achieved criteria for the unit (see Section 6.4). Students do **not** have to achieve **all** criteria for a specific grade to achieve that unit grade (e.g. achieve all Pass criteria to achieve a Pass grade).

Section 7.4 provides full information on how to assess the NEA units and apply the assessment criteria. Students' work must show that all aspects of a criterion have been met in sufficient detail for it to be **successfully achieved** (see Section 7.4.1). If a student's work does not fully meet a criterion, you must not award that criterion.

The command words used in the assessment criteria are defined in Appendix B.

Pass	Merit	Distinction
P1: Describe the client requirements.		
P2: Analyse provided data using data analysis techniques.	**M1: Describe** the results of data analysis.	**D1: Explain** and **justify** which digital marketing tools will be used in the digital marketing campaign based on the analysis.
P3: Visually present results of data analysis.		
P4: Describe the aim and purpose for a digital marketing campaign.	**M2: Plan** timescales including publishing times for digital marketing campaign content.	**D2: Identify** and **justify** metrics and/or key performance indicators to measure the success of a digital marketing campaign.
P5: Describe how the digital marketing mix will be used in the digital marketing campaign.	**M3: Explain** how the digital marketing mix and marketing funnel will meet the clients' requirements.	
P6: Describe how the sections of the digital marketing funnel will be used in the digital marketing campaign.		
P7: Produce outline ideas of content for a digital marketing campaign including channels to be used.	**M4: Justify** the proposed content formats in relation to digital marketing channels.	
P8: State and **explain** choice of keywords to be used in the digital marketing campaign.		**D3: Explain** how content style is used to meet the client requirements, aims and purpose of the digital marketing campaign
P9: Produce prototypes of digital marketing content to be used in the digital marketing campaign.	**M5: Justify** content produced in relation to client requirements.	

Pass	Merit	Distinction
P10: Produce an executive summary of a proposed digital marketing campaign.		
P11: Present a proposed digital marketing campaign to stakeholders and gather feedback.	**M6: Analyse** feedback on a proposed digital marketing campaign.	**D4: Adapt** proposal for digital marketing campaign based on feedback received.
P12: Describe the processes followed in developing a digital marketing campaign.	**M7: Explain** what could be done differently when developing future digital marketing campaigns.	**D5: Evaluate** how far the processes used allowed the development of a digital marketing campaign to meet client requirements.

Assessment guidance

This assessment guidance gives you information relating to the assessment criteria. There might not be additional assessment guidance for each assessment criterion. It is included only where it is needed.

Assessment Criteria	Assessment guidance
P1	• There is no assessment guidance for this criterion.
P2	• Data analysis techniques are identified in **Unit F202**. • Students can analyse the data in any way that is relevant to the scenario. This can include removing some parts of the data ahead of analysis, if appropriate.
P3	• Methods of visualisation are identified in **Unit F200**. • Students can use any method that is relevant to the scenario and the analysis.
M1	• **M1** is linked to **P2** and **P3**.
D1	• **D1** is linked to **P2**, **P3** and **M1**.
P4	• There is no assessment guidance for this criterion.
M2	• There is no assessment guidance for this criterion.
D2	• There is no assessment guidance for this criterion.
P5	• Students **must** include all the elements of the marketing mix that are relevant to the proposed digital marketing campaign.
P6	• Students **must** include all the elements of the digital marketing funnel that are relevant to the proposed digital marketing campaign.
M3	• There is no assessment guidance for this criterion.
P7	• There is no assessment guidance for this criterion.
M4	• There is no assessment guidance for this criterion.
P8	• The explanations do **not** have to be based on research.
P9	• There is no assessment guidance for this criterion.
M5	• There is no assessment guidance for this criterion.
D3	• There is no assessment guidance for this criterion.
P10	• The executive summary can be presented as a document in its own right, or as part of the pitch.
P11	• Acceptable formats for this are: written report, written or verbal presentation. • Evidence of presentation can be the report, the written presentation, or a video recording. • Evidence of gathering feedback can be notes or a report. • The teacher provides the feedback. Feedback should focus on potential improvements to the marketing campaign. The feedback **must** allow for analysis (**M6**) and adaptations to be explored (**D4**).
M6	• There is no assessment guidance for this criterion.
D4	• There is no assessment guidance for this criterion.
P12	• There is no assessment guidance for this criterion.
M7	• There is no assessment guidance for this criterion.
D5	• There is no assessment guidance for this criterion.

Synoptic assessment

Some of the knowledge, understanding and skills needed to complete this unit will draw on the learning in F200: Fundamentals of data analytics and Unit F201: Big data and machine learning.

This table details these synoptic links.

F206: Data and digital marketing		**F200: Fundamentals of data analytics**	
Topic Area		Topic Area	
1	Digital marketing fundamentals	1	Understanding data
2	Data driven digital marketing	1 2 5	Understanding data Managing data Job roles, skills and attributes in data analytics
3	Planning digital marketing content	1	Understanding data
4	Creating content for a digital marketing campaign	5	Job roles, skills and attributes in data analytics
5	Communicating to stakeholders	5	Job roles, skills and attributes in data analytics
6	Evaluating working processes	5	Job roles, skills and attributes in data analytics

F206: Data and digital marketing		**F201: Big Data and Machine Learning**	
Topic Area		Topic Area	
1	Digital marketing fundamentals	1	The scope of managing big data
2	Data driven digital marketing	1 2 4	The scope of managing big data The infrastructure challenges of big data Legal and ethical issues in data management
3	Planning digital marketing content	1	The scope of managing big data
4	Creating content for a digital marketing campaign		
5	Communicating to stakeholders		
6	Evaluating working processes		

More information about synoptic assessment in these qualifications can be found in Section 6.2 Synoptic Assessment.

6 Assessment and grading

6.1 Overview of the assessment

Entry code	H019
Qualification title	OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate)
GLH	150*
Reference	610/3996/2
Total Units	Has two units: • Mandatory units F200, F202

Entry code	H119
Qualification title	OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate)
GLH	360*
Reference	610/3997/4
Total Units	Has five units: • Mandatory units F200, F201, F202, • and 2 other units from F203, F204, F205, F206

*the GLH includes assessment time for each unit

Unit F200: Fundamentals of data analytics
75 GLH 1 hour 15 minute written exam 60 marks (60 UMS) OCR-set and marked Calculators are not required in this exam The exam will always **have**: • A number of short contexts throughout the paper • Forced choice/controlled response questions • Short answer, closed response questions • Extended constructed response questions with points-based marks schemes

- Extended constructed response questions with levels of response marks schemes
- One six mark and one nine mark extended constructed response question with a levels of response marks scheme

Unit F201: Big data and machine learning

70 GLH

1 hour 30 minute written exam

60 marks (60 UMS)

OCR-set and marked

Calculators are not required in this exam

The exam will always **have**:

- A short scenario which will develop through the paper
- Forced choice/controlled response questions
- Short answer, closed response questions
- Extended constructed response questions with points-based marks schemes
- Extended constructed response questions with levels of response marks schemes
- One six mark and one nine mark extended constructed response question with a levels of response marks scheme

Unit F202: Spreadsheet data modelling

75 GLH

OCR-set assignment

Centre-assessed and OCR-moderated

This set assignment has four practical tasks.

It should take about 15 GLH to complete.

Unit F203: Relational database design

70 GLH

OCR-set assignment

Centre-assessed and OCR-moderated

This set assignment has four practical tasks.

It should take about 15 GLH to complete.

Unit F204: Data and the internet of everything (IoE)
70 GLH OCR-set assignment Centre-assessed and OCR-moderated This set assignment has three practical tasks. It should take about 15 GLH to complete

Unit F205: Data visualisation
70 GLH OCR-set assignment Centre-assessed and OCR-moderated This set assignment has four practical tasks. It should take about 15 GLH to complete.

Unit F206: Data and digital marketing
70 GLH OCR-set assignment Centre-assessed and OCR-moderated This set assignment has four practical tasks. It should take about 15 GLH to complete.

OCR-set assignments for NEA units are on our secure website, Teach Cambridge. Each NEA assignment is live for two years. The intended cohort is shown on the front cover. It is important you use the correct NEA set assignment for each cohort, as starting a new cohort of Year 12 students on an NEA set assignment that has already been live for one year will mean that these students will only have one year to work on the assignment.

6.2 Synoptic assessment

Synoptic assessment is a built-in feature of these qualifications. It means that students need to use an appropriate selection of their knowledge, understanding and skills developed across each qualification in an integrated way and apply them to a key task or tasks.

This helps students to build a holistic understanding of the subject and the connections between different elements of learning, so they can go on to apply what they learn from these qualifications to new and different situations and contexts.

The externally assessed units allow students to gain underpinning knowledge and understanding relevant to data analytics. The NEA units draw on and strengthen this learning by assessing it in a practical way.

It is important to be aware of the synoptic links between the units so that teaching, learning and assessment can be planned accordingly. Then students can apply their learning in ways which show they are able to make connections across the qualification. Section 5.3 shows the synoptic links for each unit.

6.3 Transferable skills

These qualifications give students the opportunity to gain broad, transferable skills and experiences that they can apply in future study, employment and life.

Higher Education Institutions (HEIs) have told us that developing some of these skills helps students to transition into higher education.

These skills include:

- Communication
- Creativity
- Critical thinking
- Independent learning
- Presentation skills
- Problem solving
- Reflection
- Research skills
- Resilience
- Risk taking
- Time management

6.4 Grading and awarding grades

Externally assessed units

We mark all the externally assessed units.

Each external assessment is marked according to a mark scheme, and the mark achieved will determine the unit grade awarded (Pass, Merit or Distinction). We determine grade boundaries for each of the external assessments in each assessment series.

If a student doesn't achieve the mark required for a Pass grade, we issue an unclassified result for that unit. The marks achieved in the external assessment will contribute towards the student's overall qualification grade, even if a Pass is not achieved in the unit assessment.

NEA units

NEA units are assessed by the teacher and externally moderated by us.

Each unit has specified Pass, Merit and Distinction assessment criteria. The assessment criteria for each unit are provided with the unit content in Section 5.3 of this specification. Teachers must judge whether students have met the criteria or not.

A unit grade can be awarded at Pass, Merit or Distinction. The number of assessment criteria needed to achieve each grade has been built into each assignment. These are referred to as design thresholds. The table below shows the design thresholds for each grade outcome for the NEA assessments in these qualifications. The unit grade awarded is based on the **total** number of achieved criteria for the unit. The total number of achieved criteria for each unit can

come from achievement of any of the criteria (Pass, Merit or Distinction). This is **not** a 'hurdles-based' approach, so students do **not** have to achieve **all** criteria for a specific grade to achieve that grade (e.g. all Pass criteria to achieve a Pass).

The number of assessment criteria achieved for an NEA unit will be classed as the raw mark. Teachers will assess students' work and identify the number of criteria (raw marks) achieved for each NEA unit. OCR Moderators will moderate samples of work from each centre. This moderation process may result in the number of assessment criteria (raw marks) achieved being changed. The final raw mark achieved after moderation has taken place will be converted into a mark on the Uniform Mark Scale (UMS) and will contribute towards the student's overall qualification grade. (More information about UMS is in the section Calculating the qualification grades).

To make sure we can keep outcomes fair and comparable over time, we will review the performance of the qualifications through their lifetime. The review process might lead to changes in these design thresholds if any unexpected outcomes or significant changes are identified.

Unit size (GLH)	**70**	**75**
Number of pass criteria	12	12
Number of merit criteria	7	7
Number of distinction criteria	5	5
Total number of criteria needed for a unit pass	10	10
Total number of criteria needed for a unit merit	15	15
Total number of criteria needed for a unit distinction	20	20
Total number of criteria available for the unit	24	24

If a student doesn't achieve enough criteria to achieve a unit Pass, we will issue an unclassified result for that unit. The number of criteria achieved will be converted into a mark on the Uniform Mark Scale (UMS) and will contribute towards the student's overall qualification grade, even if a Pass is not achieved in the unit assessment. More information about this is in the Section below (Calculating the qualification grades).

Qualifications

The overall qualification grades are:

Certificate and Extended Certificate

- Distinction* (D*)
- Distinction (D)
- Merit (M)
- Pass (P)
- Unclassified (U)

Calculating the qualification grades

When we work out students' overall grades, we need to be able to compare performance on the same unit in different assessments over time and between different units. We use a Uniform Mark Scale (UMS) to do this.

A student's uniform mark for each externally assessed unit is calculated from the student's raw mark on that unit. A student's uniform mark for each NEA unit is calculated from the number of criteria the student achieves for that unit. The raw mark or number of criteria achieved are converted to the equivalent mark on the uniform mark scale. Marks between grade boundaries are converted on a pro rata basis.

When unit results are issued, the student's unit grade and uniform mark are given. The uniform mark is shown out of the maximum uniform mark for the unit (for example, 48/60).

The student's uniform marks for each unit will be aggregated to give a total uniform mark for the qualification. The student's overall grade will be determined by the total uniform mark.

The tables below show:

- the maximum raw marks or number of criteria, and uniform marks for each unit in the qualifications
- the uniform mark boundaries for each of the assessments in each qualification
- the minimum total mark for each overall grade in the qualifications.

Certificate Qualification:

Unit	Maximum raw mark/number of criteria	Maximum uniform mark (UMS)	Distinction* (UMS)	Distinction (UMS)	Merit (UMS)	Pass (UMS)
F200	60	60	-	48	36	24
F202	24	60	-	48	36	24
Qualification Totals	84	120	108	96	72	48

Extended Certificate Qualification:

Unit	Maximum raw mark/number of criteria	Maximum uniform mark (UMS)	Distinction* (UMS)	Distinction (UMS)	Merit (UMS)	Pass (UMS)
F200	60	60	-	48	36	24
F201	60	60	-	48	36	24
F202	24	60	-	48	36	24
F203	24	60	-	48	36	24
F204	24	60	-	48	36	24
F205	24	60	-	48	36	24
F206	24	60	-	48	36	24
Qualification Totals	192	300	270	240	180	120

You can find a marks calculator on the qualification page of the OCR website to help you convert raw marks/number of achieved criteria into uniform marks.

6.5 Performance descriptors

Performance descriptors indicate likely levels of attainment by representative students performing at the Pass, Merit and Distinction grade boundaries at Level 3.

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 achieved will depend on how far the student has met the assessment criteria overall. Shortcomings in some parts of the assessment might be balanced by better performance in others.

Level 3 Pass

At Pass, students show adequate knowledge and understanding of the basic elements of much of the content being assessed. They can develop and apply their knowledge and understanding to some basic and familiar contexts, situations and problems.

Responses to higher order tasks involving detailed discussion, evaluation and analysis are often limited.

Many of the most fundamental skills and processes relevant to the subject are executed effectively but lack refinement, producing functional outcomes. Demonstration and application of more advanced skills and processes might be attempted but not always executed successfully.

Level 3 Merit

At Merit, students show good knowledge and understanding of many elements of the content being assessed. They can sometimes develop and apply their understanding to different contexts, situations and problems, including some which are more complex or less familiar.

Responses to higher order tasks involving detailed discussion, evaluation and analysis are likely to be mixed, with some good examples at times and others which are less accomplished.

Skills and processes relevant to the subject, including more advanced ones, are developed in terms of range and quality. They generally lead to outcomes which are of good quality, as well as being functional.

Level 3 Distinction

At Distinction, students show thorough knowledge and understanding of most elements of the content being assessed. They can consistently develop and apply their understanding to different contexts, situations and problems, including those which are more complex or less familiar.

Responses to higher order tasks involving detailed discussion, evaluation and analysis are successful in most cases.

Most skills and processes relevant to the subject, including more advanced ones, are well developed and consistently executed, leading to high quality outcomes.

7 Non examined assessment (NEA) units

This section gives guidance on completing the NEA units. In the NEA units, students build a portfolio of evidence to meet the assessment criteria for the unit.

Assessment for these qualifications **must** adhere to JCQ's Instructions for Conducting Coursework. Do **not** use JCQ's Instructions for Conducting Non-examination Assessments – these are only relevant to GCE and GCSE specifications.

The NEA units are centre-assessed and externally moderated by us.

You **must** read and understand all the rules and guidance in this section **before** your students start the set assignments.

If you have any questions, please contact us for help and support.

7.1 Preparing for NEA unit delivery and assessment

7.1.1 Centre and teacher/assessor responsibilities

We assume the teacher is the assessor for the NEA units.

Before you apply to us for approval to offer these qualifications you must be confident your centre can fulfil all the responsibilities described below. Once you're approved, you can offer any of our general qualifications, Cambridge Nationals or Cambridge Advanced Nationals **without** having to seek approval for individual qualifications.

Here's a summary of the responsibilities that your centre and teachers must be able to fulfil. It is the responsibility of the head of centre[1] to make sure our requirements are met. The head of centre must ensure that:

- there are enough trained or qualified people to teach and assess the expected number of students you have in your cohorts.
- teaching staff have the relevant level of subject knowledge and skills to deliver and assess these qualifications.
- teaching staff will fully cover the knowledge, understanding and skills requirements in teaching and learning activities.
- allowed combinations of units are considered at the start of the course to be confident that all students can access a valid route through the qualifications.
- all necessary resources are available for teaching staff and students during teaching and assessment activities. This gives students every opportunity to meet the requirements of the qualification and reach the highest grade possible.
- there is a system of internal standardisation in place so that all assessment decisions for centre-assessed assignments are consistent, fair, valid and reliable (see Section 7.4.3).
- there is enough time for effective teaching and learning, assessment and internal standardisation.
- robust processes are in place to make sure that students' work is individual and confirmed as authentic. (see 7.2.1).

[1] This is the most senior officer in the organisation, directly responsible for the delivery of OCR qualifications, For example, the headteacher or principal of a school/college. The head of centre accepts full responsibility for the correct administration and conduct of OCR exams.

- OCR-set assignments are used for students' summative assessments. You must make sure that students use the assignment that is live for the period during which they are taking their summative assessment.
- OCR-set assignments are **not** used for practice. This includes both assignments that are currently live or live assignments that have expired. Sample assessment material for each of the NEA units is available on the OCR website. This sample assessment material can be used for practice purposes.
- students understand what they need to do to achieve the criteria.
- students understand what it means when we say work must be authentic and individual and they (and you) follow our requirements to make sure their work is their own.
- students know they must not reference another individual's personal details in any evidence produced for summative assessment, in accordance with the Data Protection Act 2018 and the UK General Data Protection Regulations (UK GDPR). It is the student's responsibility to make sure evidence that includes another individual's personal details is anonymised.
- outcomes submitted to us are correct and are accurately recorded and adhere to the published deadlines.
- assessment of set assignments adheres to the JCQ Instructions for Conducting Coursework and the JCQ AI Use in Assessments: Protecting the Integrity of Qualifications.
- 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 of our website,
    - students' work is authentic.
    - marks have been transcribed accurately.

  (Failing to meet the assessment requirements might be considered as malpractice.)
- centre records and students' work are kept according to these requirements:
    - students' work **must** be kept until **after** the unit has been awarded and any review of results or appeals processed. We cannot consider any review if the work has not been kept.
    - 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.
- all cases of suspected malpractice involving teachers or students are reported (see Section 7.3.1).

7.2 Requirements and guidance for delivering and marking the OCR-set assignments

The assignments are:

- set by us.
- taken under supervised conditions (unless we specify otherwise in the assessment guidance)
- assessed by the teacher.
- moderated by us.

You can find the set assignments on our secure website, Teach Cambridge.

The set assignments give an approximate time that it will take to complete all the tasks. These timings are for guidance only, but should be used by you, the teacher, to give students an indication of how long to spend on each task. You can decide how the time should be allocated between each task or part task. Students can complete the tasks and produce the evidence across several sessions. Students' evidence (either hard copy or digital) must be kept securely by the teacher and access to assessment responses must be controlled. Students aren't permitted to access their work in between the assessment sessions.

We will publish a new set assignment each year and they will be live for two years. Each new set assignment will be released on 1 June for teacher planning. You must not start delivery of live assignments with students until the live assessment dates, which are shown on the front cover. You should use the set assignment released in the same calendar year as the new cohort starts to ensure they have two years for that assignment. Students are allowed one resubmission of work based on the same live assignment. Section 7.4.6 provides more information about resubmissions

You must:

- check our secure website, Teach Cambridge, and use a set assignment that is live for assessment for all summative assessment of students.
- have made unit entries before submitting NEA work for moderation.
- not share the set assignments with anyone from outside of your centre. These must only be shared with appropriate centre staff and students taking the assessments.

  (More information about maintaining the integrity of assessment materials is in the JCQ document General Regulations for Approved Centres General and Vocational qualifications.)
- make sure students know that they must not share assessment material or their own work with others, including posting or sharing on social media.

  (More information is in the JCQ guidance Information for candidates Using social media and examinations/assessments.)

Appendix A of this specification gives guidance for creating electronic evidence for the NEA units. Read Appendix A in conjunction with the unit content and assessment criteria grids to help you plan the delivery of each unit.

The rest of this section is about how to manage the delivery and marking of the set assignments so that assessment is valid and reliable. Please note that failing to meet these requirements might be considered as malpractice.

Here is a summary of what you need to do.

You **must**:

- have covered the knowledge, understanding and skills with your students and be sure they are ready for assessment **before** you start the summative assessment. This may include students practising applying their learning and receiving feedback from teachers in preparing to take the assessment.
- use the correct live OCR-set assignment for summative assessment of the students. The dates for which set assignments are live for summative assessment are shown on the front cover. These assignments are available on Teach Cambridge.
- give students the Student Guide before they start the assessment.
- familiarise yourself with the assessment guidance relating to the tasks. The assessment guidance for each unit is in Section 5 after the assessment criteria grids and with the student tasks in the assignments.
- make sure students are clear about the tasks they must complete and the assessment criteria they are attempting to meet.
- give students a reasonable amount of time to complete the assignments and be fair and consistent to all students. The estimated time we think each assignment should take is stated in the OCR-set assignments. In that time students can work on the tasks under the specified conditions until the date that you collect the work for centre assessment.
- tell the students the resources they can use in the assignment before they start the assessment tasks.
- only give students OCR-provided templates. Where we think a template is useful for a task, we have provided it in the assignment. You must **not** give students any other templates to use when completing their live assignments. If they choose to use a different template from a book, a website or course notes (for example, to create a plan) they **must** make sure the source is referenced and that the template is not pre-populated with responses for which the students may gain marks.
- monitor students' progress to make sure work is capable of being assessed against the assessment criteria, on track for being completed in good time and is the student's own work:
    - NEA work must be completed in the centre under teacher supervision. Supervision is not invigilation. A supervised classroom does not require exam conditions in that classroom. This would typically be in normal curriculum time:
        - work must be completed with enough supervision to make sure that it can be authenticated as the student's own work. The supervising teacher must be the teacher who will authenticate the students' work. You must be familiar with the requirements of the JCQ document AI Use in Assessments: Protecting the Integrity of Qualifications before assessment starts.
        - there may be exceptions to the requirement for supervised conditions if there is work to complete to support the assignment tasks (e.g. research). The assignment and assessment guidance will specify if there are exceptions.

Where students are allowed to complete work outside of supervised conditions (e.g. research that may be allowed between supervised sessions) you **must** make sure that they only bring notes relating to the work they are allowed to complete unsupervised into the supervised sessions (e.g. notes relating to the research they have done) and to make sure any work they have done is independent. They must not use unsupervised time as an opportunity to:

- Create drafts of work for their tasks.
- Gather information to use in other aspects of their tasks.

- if you provide any material to prepare students for the set assignment, you must adhere to the rules on using referencing and on acceptable levels of guidance to students. This is in Section 7.2.3 and 7.3.
- students must produce their work independently (see Sections 7.2.1 and 7.3).
- you must make sure students know to keep their work and passwords secure. and know that they must not share completed work with other students, use any aspect of another student's work or share their passwords.
- use the assessment criteria to assess students' work.
- before submitting a final outcome to us, you can mark students' completed work and allow them to repeat any part of the assignment, reworking their original evidence. We call this a reattempt. Students must have completed the whole assignment before you mark their work. Any feedback you give to students on the marked work, must:
  - be factual: telling the student what you have observed, not what to do to improve their work.
  - be recorded.
  - be available to the OCR assessor.

(See Section 7.3 on Feedback and Section 7.4.4 on reattempting work.)

You **must not**:

- create your own assignments for students to use for practice or live assessment.
- change any part of the OCR-set assignments (scenarios or tasks).
- mark students' work in stages, providing feedback at each stage. This would be iterative assessment which is not allowed.
- accept multiple reattempts of work where small changes have been made in response to feedback. Marking and feedback must not be an iterative process.
- allow teachers or students to add, amend or remove any work **after** submission for moderation by OCR.
- give detailed advice and suggestions to individuals or the whole class on how work may be improved to meet the assessment criteria. This includes giving access to student work as an exemplar.
- allow students access to their assignment work between teacher supervised sessions. (There may be exceptions where students are allowed to complete work independently (e.g. research). Any exceptions will be stated in the assignments.)
- practise the live OCR-set assignment tasks with the students. We provide Sample Assignments for you to use for practice purposes.

7.2.1 Ways to authenticate work

All NEA work must be completed under teacher supervision (unless the assessment guidance for a specific task or sub-task advises otherwise). In addition, you must complete enough checks to be confident that the work you mark is the student's own and was produced independently.

You should discuss work in progress with students, including asking them questions such as what they are planning/doing and why. This will make sure that work is being completed in a planned and timely way and will give you opportunities to check the authenticity of the work. This is not an opportunity to offer additional guidance to students.

You **must**:

- have read and understood the JCQ document AI Use in Assessments: Protecting the Integrity of Qualifications.
- make sure students and other teachers understand what constitutes plagiarism and other forms of malpractice (e.g. collusion and copying).
- not accept plagiarised work as evidence.
- use questioning as appropriate to confirm authenticity.
- make sure students and teachers fill in authentication statements.

7.2.2 Group work

Group work is not allowed for the NEA assignments in these qualifications.

7.2.3 Plagiarism

Students must use their own words when they produce final written pieces of work to show they have genuinely applied their knowledge and understanding. When students use their own words, ideas and opinions, it reduces the possibility of their work being identified as plagiarised. Plagiarism is:

- the submission of someone else's work as your own
- failure to acknowledge a source correctly, including any use of written material, the internet or Artificial Intelligence (AI).

You might find the following JCQ documents helpful:

- Plagiarism in Assessments
- AI Use in Assessments: Protecting the Integrity of Qualifications

Due to increasing advancements in AI technology, we strongly recommend that you are familiar with the likely outputs from AI tools. This could include using AI tools to produce responses to some of the assignment tasks, so that you can identify typical formats and wording that these may produce. This may help you identify any cases of potential plagiarism from students using AI tools to generate written responses.

Plagiarism makes up a large percentage of cases of suspected malpractice reported to us by our assessors. You must **not** accept plagiarised work as evidence.

Plagiarism often happens innocently when students do not know that they must reference or acknowledge their sources or aren't sure how to do this. It's important to make sure your students 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 and clearly mark quotations.
- quoting someone else's work, even when it's properly sourced and referenced, doesn't evidence understanding. The student must 'do' something with that information to show they understand it. For example, if a student has to analyse data from an experiment, quoting data doesn't show that they understand what it means. The student must interpret the data and, by relating it to their assignment, say what they think it means. The work must clearly show how the student is using the material they have referenced to inform their thoughts, ideas or conclusions.

We have The OCR Guide to Referencing on our website. We have also produced a poster about referencing and plagiarism which may be useful to share with your students.

Teach your students how to reference and explain why it's important to do it. At Key Stage 5 they must:

- use quote marks to show the beginning and end of the copied work.
- list the html address for website text and the date they downloaded information from the website.
- show the name of the AI source used and the date the content was generated for computer-generated content (such as an AI Chatbot).
- for other publications, list:
    - the name of the author.
    - the name of the resource/book/printed article.
    - the year in which it was published.
    - the page number.

Teach your students to:

- always reference material copied from the internet or other sources. This also applies to infographics (graphical information providing data or knowledge).
- always identify information they have copied from teaching handouts and presentations for the unit, using quote marks and stating the text is from class handouts.

Identifying copied/plagiarised work

Inconsistencies throughout a student's work are often indicators of plagiarism. For example:

- different tones of voice, sentence structure and formality across pieces of work.
- use of American expressions, spellings and contexts (such as American laws and guidelines).
- dated expressions and references to past events as being current.
- sections of text in a document where the font or format is inconsistent with other sections.

What to do if you think a student has plagiarised

If you identify plagiarised work during assessment or internal standardisation, you must:

- consider the plagiarism when judging the number of assessment criteria achieved. (You must not award assessment criteria where the work is plagiarised.)
- record that there is plagiarism in the work on the Unit Recording Sheet (URS) and that you have adjusted the number of assessment criteria achieved to take account of the plagiarism.
    - if the work is requested as part of the moderation sample, it must be provided to the OCR Moderator with the other work requested.

If plagiarism is identified during ongoing monitoring of students' work, you can address this in your centre (for example, by instructing the student(s) involved to re-do the affected tasks).

If plagiarism is identified when the work has been submitted to you as final for marking, you must:

- report the student(s) for plagiarism in line with the JCQ document Suspected Malpractice Policies and Procedures
    - fill in the **JCQ form M1**.

In line with JCQ's policies and procedures on suspected malpractice, the penalties applied for plagiarism will usually result in the work not being allowed (disqualification) or the mark being significantly reduced.

7.3 Feedback

Feedback to students on work in progress towards summative assessment

You can discuss work in progress towards summative assessment with students to make sure it's being done in a planned and timely way. It also provides an opportunity to check the authenticity of the work. You must intervene if there's a health and safety risk (and reflect this in your assessment if the student's ability to operate safely and independently is part of the criteria).

Generic guidance to the whole class is also allowed. This could include reminding students to check they have provided evidence to cover all key aspects of the task. Individual students can be prompted to double check for gaps in evidence providing that specific gaps are not pointed out to them.

You can give general feedback and support if one or more students are struggling to get started on an aspect of the assignment or following a break between sessions working on the assignment. For example, if a student is seeking more guidance that suggests they are not able to apply knowledge, skills and understanding to complete their evidence, you can remind them that they had a lesson which covered the topic. The student would then need to review their own notes to find this information and apply it as needed.

If a student needs additional help to get started on an initial task that is critical to accessing the rest of the assessment, you can provide this help if you feel it is necessary, but you must not award the student with any assessment criteria directly associated with the part(s) of the task for which they received help. More information about how to record additional help given in these circumstances is in Section 7.4.1.

With the exception of the specific feedback allowed to help students start a critical task, mentioned above, feedback must not provide specific advice and guidance that would be construed as coaching. This would compromise the student's ability to independently perform the task(s) they are doing and constitutes malpractice. Our assessors use a number of measures to assure themselves the work is the student's own

Assessing completed work

When students have completed their work on an assignment, you must assess it and give feedback to them on the completed work they submitted to you for assessment. (Section 7.4.1 has more information about how to assess NEA work.) Assessment should not be an iterative process. This means you must not assess work and give feedback on it in stages. You must only assess the work when the assignment is complete.

Feedback **must**:

- be supportive, encouraging and positive.
- tell the student what has been noticed, not what you think (for example, if you have observed the student completing a task, you can describe what happened, what was produced and what was demonstrated).

Feedback **can**:

- identify what task and part of the task could be improved, but not say how to improve it. You could show the student work from a **different** unit that demonstrates higher achievement, but you must not detail to the student how they could achieve that in their work. If you are using another student's work from a different unit as an example, you must anonymise this work and make sure that the potential to plagiarise from this work is minimised. You could remind students that they had a lesson on a specific topic and that they could review their notes, but you must not tell them how they could apply the teaching to improve their work.
- comment on what has been achieved, for example 'the evidence meets the P2 and M2 criteria'.
- identify that the student hasn't met a command word or assessment criteria requirement. For example, 'This is a description, not an evaluation'.
- use text from the specification, assignment or assessment criteria in general guidance to clarify what is needed in the work. For example, 'You identified the HCI features for the spreadsheet (P3)'.

Feedback **must not**:

- point out specific gaps. For example, you must not prompt the student to include specific detail in their work, such as 'You need to include the following formulae in your spreadsheet.'
- be so detailed that it leads students to the answer. For example, you must not give:
    - model answers.
    - step-by-step guidance on what to do to complete or improve work.
    - headings or prompts that include examples which give all or part of what students have to write about or produce.
- talk the student through how to achieve or complete the task.
- give detail on where to find information/evidence.

In other words, feedback must help the student to take the initiative in making changes. It must not direct or tell the student what to do to complete or improve their work in a way that means they do not need to think how to apply their learning. Students need to recall or apply their learning. You must not do the work for them.

Students can reattempt their work on an assignment after you have marked it and provided feedback. This **must** happen before the work is submitted to us for moderation. Neither you nor the student can add, amend or remove any work after the final mark has been submitted for moderation.

Sections 7.4.4 and 7.4.6 give more guidance for students who wish to reattempt or resubmit their work following feedback.

What improper assistance might look like

When we see anything that suggests the teacher has led students to the answer, we become concerned because it suggests students have not worked independently to produce their assignment work. The following are examples of what might indicate improper assistance by the teacher:

- prompts that instruct students to include specific detail in their work, such as, 'You need to include the aims of the activity. Who is it aimed at? What is the purpose of the activity? How will it benefit the specific group/individual?'
- headings or templates that include examples which give all or part of what students have to write about or produce, such as sources of support.

OCR Assessors will report suspected malpractice when they cannot see differences in content between students' work in the sample they are moderating. An exception is when students have only used and referenced technical facts and definitions. If the OCR assessor is in any doubt, they will report suspected malpractice. The decision to investigate or not is made by us, not the assessor.

7.3.1 Reporting suspected malpractice

It is the responsibility of the head of centre to report all cases of suspected malpractice involving teachers or students.

A JCQ Report of Suspected Malpractice form (JCQ/M1 for student suspected malpractice or JCQ/M2 for staff suspected malpractice) is available to download from the JCQ website The form must be completed as soon as possible and emailed to us at compliance@ocr.org.uk.

When we ask centres to gather evidence to assist in any malpractice investigation, heads of centres must act promptly and report the outcomes to us.

The JCQ document Suspected Malpractice Policies and Procedures has more information about reporting and investigating suspected malpractice, and the possible sanctions and penalties which could be imposed. You can also find out more on our website.

7.3.2 Student and centre declarations

Both students and teachers must declare that the work is the student's own:

- **each student** must sign a declaration before submitting their work to their teacher. A **candidate authentication statement** can be used and is available to download from our website. You must keep these statements in the centre until all reviews of results, malpractice and appeal issues have been resolved.
- **teachers** must declare the work submitted for centre assessment is the students' own work by completing a centre authentication form (CCS160) for each cohort of students for each unit**.** You must keep centre authentication forms in the centre until all post-results issues have been resolved.

7.3.3 Generating evidence

The set assignments will tell the students what they need to do to meet the assessment criteria for the NEA units. It is your responsibility to make sure that the methods of generating evidence for the assignments are:

- valid
- safe and manageable
- suitable to the needs of the student.

Valid

The evidence presented must be valid. For example, it would not be appropriate to present an organisation's equal opportunities policy as evidence towards a student's understanding of how the equal opportunities policy operates in an organisation. It would be more appropriate for the student to incorporate the policy in a report describing the different approaches to equal opportunities.

Safe and manageable

You must make sure that methods of generating evidence and approaches taken:

- are safe and manageable
- do not put unnecessary demands on the student.
- are appropriate and in line with ethical standards and your centre's safeguarding responsibilities.

Suitable to the needs of the student

We are committed to ensuring that achievement of these qualifications is free from unnecessary barriers.

Observation and questioning

The primary evidence for assessment is the work submitted by the student, however the following assessment methods might be suitable for teachers/assessors to use for some aspects of these qualifications where identified:

- **observation** of a student doing something
- **questioning** of the student or witness.

Observation

The teacher/assessor and student should plan observations together, but it is the teacher's/assessor's responsibility to record the observation properly (for example observing a student undertaking a practical task).

Questioning

Questioning the student is normally an ongoing part of the formative assessment process and may, in some circumstances, provide evidence to support achievement of the criteria.

Questioning is often used to:

- test a student's understanding of work which has been completed outside of the classroom (where this may be permitted).
- check if a student understands the work they have completed
- collect information on the type and purpose of the processes a student has gone through.

If questioning is used as evidence towards achievement of specific topic areas, it is important that teachers/assessors record enough information about what they asked and how the student replied, to allow the assessment decision to be moderated.

7.3.4 Presentation of the final piece of work

Students must submit their evidence in the format specified in the tasks where specific formats are given. Written work can be digital (e.g. word processed) or hand-written and tables and graphs (if relevant) can be produced using appropriate ICT.

Any sourced material must be suitably acknowledged. Quotations must be clearly marked and a reference provided.

A completed Unit Recording Sheet (URS) must be attached to work submitted for moderation.

The URS can be downloaded from the qualification webpage or Teach Cambridge Centres **must** show on the URS where specific evidence can be found. The URS tells you how to do this.

Work submitted digitally for moderation **must** be in a suitable file format and structure. Appendix A gives more guidance about submitting work in digital format.

7.4 Assessing NEA units

All NEA units are assessed by teachers and externally moderated by OCR assessors. Assessment of the set assignments must adhere to JCQ's Instructions for Conducting Coursework. The centre is responsible for appointing someone to act as the internal assessor. This would usually be the teacher who has delivered the programme but could be another person from the centre. The assessment criteria must be used to assess the student's work. These specify the levels of skills, knowledge and understanding that the student needs to demonstrate.

7.4.1 Applying the assessment criteria

When students have completed the assignment, they must submit their work to you to be assessed.

You must assess the tasks using the assessment criteria and any additional assessment guidance provided. Each criterion states what the student needs to do to achieve that criterion (e.g. Produce a spreadsheet data model based on the design documentation). The command word and assessment guidance provide additional detail about breadth and depth where it is needed.

You must judge whether each assessment criterion has been **successfully achieved** based on the evidence that a student has produced. For the criterion to be achieved, the evidence must show that all aspects have been met in sufficient detail.

When making a judgement about whether a criterion has been **successfully achieved**, you must consider:

- the requirements of the specific NEA task that the student is completing
- the criterion wording, including the command word used and its definition
- any assessment guidance for the criterion
- the unit content that is being assessed.

You must annotate the work to show where evidence meets each criterion (Section 7.4.2). You can then award the criterion on the Unit Recording Sheet (URS). Assessment should be positive, rewarding achievement rather than penalising failure or omissions.

The number of criteria needed for each unit grade (Pass, Merit or Distinction) is provided in Section 6.4.

You must complete a Unit Recording Sheet (URS) for each unit a student completes. On the URS you must identify:

- whether the student has met each criterion or not (by adding a tick (✓) or X in the column titled **Assessment criteria achieved**)
    - you should also indicate where the evidence can be found if a '✓' is identified.
    - a X indicates that there is insufficient evidence to fully meet the criterion or it was not attempted.
- the total number of criteria achieved by the student for the unit. The total number of criteria achieved is their 'raw mark'.

You must be convinced, from the evidence presented, that students have worked independently to the required standard.

If you have given additional, more specific support or guidance to an individual student to get them started on a task, because they could not start a task or part of a task that was **critical to them accessing the rest of the task or assignment** (see Section 7.3), this **must** also be recorded on the student's work and/or Unit Recording Sheet (URS) for the OCR Moderator to see. In this situation, the student should **not** be awarded the assessment criteria for the work for which they received help, and the number of criteria achieved must be adjusted appropriately. Recording this on the student's work and/or URS will help the OCR Moderator to understand why the assessment criteria have not been awarded.

Your centre must internally standardise the assessment decisions for the cohort **before** you give feedback to students (see Section 7.4.3). When you are confident the internal assessment standardisation and appeals process is complete, you can submit work for moderation at the relevant time. You **must not** add, amend or remove any work after it has been submitted to us for final moderation. Work **must** be kept securely until the end of the review of results process.

7.4.2 Annotating students' work

Each piece of NEA work must show how you are satisfied the assessment criteria have been met.

Comments on students' work and the Unit Recording Sheet (URS) provide a means of communication about assessment decisions made, between teachers during internal standardisation, and with the OCR assessor if the work is part of the moderation sample. (Comments or annotations must not be used as a method of communication with the OCR Moderator for any other reason.)

7.4.3 Internal standardisation

It is important that all teachers are assessing work to common standards. For each unit, centres must make sure that internal standardisation of outcomes across teachers and teaching groups takes place using an appropriate procedure.

This can be done in a number of ways. In the first year, reference material and OCR training meetings will provide a basis for your centre's own standardisation. In following years, this, and/or your own centre's archive material, can be used. We advise you to hold preliminary meetings of staff involved to compare standards through cross-marking a small sample of work. After you have completed most of the assessment, a further meeting at which work is exchanged and discussed will help you make final adjustments.

If you are the only teacher in your centre assessing these qualifications, we still advise you to make sure your assessment decisions are internally standardised by someone else in your centre. Alternatively, this could be a teacher that may be delivering in another local centre or as part of

your Multi Academy Trust (MAT) if relevant. Ideally this person will have experience of these types of qualifications, for example someone who:

- is delivering a similar qualification in another subject.
- has relevant subject knowledge.

You must keep evidence of internal standardisation in the centre for the OCR assessor to see.

We have a guide to how internal standardisation can be approached on our website.

7.4.4 Reattempting work to improve the grade before submitting marks to OCR

As described in Section 7.2, **before** submitting a final outcome to us for external moderation, you can allow students to repeat any element of the assignment and rework their original evidence. We refer to this as a reattempt. A reattempt allows the student to reflect on **internal** feedback, and to improve their work. A reattempt is **not** an iterative process where students make small modifications through ongoing feedback to eventually achieve the desired outcome.

Any feedback **must** be noted by the teacher and a record of this kept in centre. We have provided a feedback form for this purpose, which can be found on the OCR website and Teach Cambridge. We recommend that you use the feedback form we provide or create your own recording form.

To summarise, a reattempt is a process that is internal to the centre. This allows students to rework their evidence:

- after it has been marked by you as a complete assignment.
- before it is submitted to us as the final work.

A reattempt **must** be done before submission for external moderation. When a student submits the work to you as final for external moderation, they **must not** complete any further work on any aspect of it.

7.4.5 Submitting outcomes

When you have assessed the work and it has been internally standardised, outcomes can be submitted to us. For the purpose of submission, outcomes will be considered as 'marks'. You will submit the total number of criteria achieved for units as marks. You must have made entries before you can submit marks. You can find the key dates and timetables on our website.

There should be clear evidence that work has been attempted and some work produced. If a student does not submit any work for an NEA unit, the student should be identified as being absent from that unit.

If a student completes any work at all for an NEA unit, you must assess the work using the assessment criteria and award the appropriate number of criteria. This might be zero.

7.4.6 Resubmitting moderated work to OCR to improve the grade

We use the term 'resubmission' when referring to student work that has previously been submitted to OCR for moderation. Following OCR moderation, if you and the student feel they have not performed at their best during the assessment, the student can, with your agreement, improve their work and resubmit it to you again for assessment and to us for external moderation You must be sure it is in the student's best interests to resubmit the work for assessment. There is one resubmission opportunity per NEA assignment. If you have submitted the same assignment twice for a student, they will need to use the next live assignment for any further reattempt and resubmission. Where appropriate, students may rework earlier evidence for any new live assignment task. This should only be allowed if the original work is relevant to the new task.

Students can only resubmit work using the **same** assignment if the assignment is still live. The live assessment dates and intended cohort will be shown on the front cover of the assignment. We will not accept work based on an assignment that is no longer live. If the assignment is no longer live, students will need to produce work using the new live assignment for the unit for the resubmission.

To summarise, a resubmission is the reworking and submitting of assignment evidence and marks to us, following previous external moderation by us.

7.5 Moderating NEA units

The purpose of external moderation is to make sure that the standard of assessment is the same for all centres and that internal standardisation has taken place.

The administration pages of our website give full details about how to submit work for moderation.

This includes the deadline dates for entries and submission of marks. For moderation to happen, you must submit your marks by the deadline.

7.5.1 Sample requests

Once you have submitted your marks, we will tell you which work will be sampled as part of the moderation process. Samples will include work from across the range of students' attainment.

Students' work must be securely kept until after the unit has been awarded and any review of results and appeals windows are closed.

Centres will receive the final outcomes of moderation when the provisional results are issued. Results reports will be available for you to access. More information about the reports that are available is on our administration pages.

We need sample work to help us monitor standards. We might ask some centres to release work for this purpose. We will let you know as early as possible if we need this from you. We always appreciate your co-operation.

8 Administration

This section gives an overview of the processes involved in administering these qualifications.. More information about the processes and deadlines involved at each stage is on our administration pages.

8.1 Assessment availability

There are two assessment opportunities available each year for the externally assessed units: one in January and one in June. Students can be entered for different units in different assessment series.

All students must take the exams at a set time on the same day in a series.

Qualification certification is available each January and June.

NEA assignments can be taken by students at any time during the live period shown on the front cover. It is important you use the set assignment that is released in the same calendar year as the new cohort starts to ensure that students have two years to use the assignment.

There are two windows each year to submit NEA outcomes.

You must make unit entries for students before you can submit outcomes for a visit. All dates relating to NEA moderation are on our administration pages.

Qualification certification is available at each results release date.

8.2 Collecting evidence of student performance to ensure resilience in the qualifications system

Regulators have published guidance on collecting evidence of student performance as part of long-term contingency arrangements to improve the resilience of the qualifications system. You should review and consider this guidance when delivering this qualification to students at your centre.

For more detailed information on collecting evidence of student performance please visit our website.

8.3 Equality Act information relating to Cambridge Advanced Nationals

The Cambridge Advanced Nationals require assessment of a broad range of skills and, as such, prepare students for further study and higher-level courses.

The Cambridge Advanced National qualifications have been reviewed to check if any of the competences required present a potential barrier to disabled students. If this was the case, the situation was reviewed again to make sure that such competences were included only where essential to the subject.

8.4 Accessibility

There can be adjustments to standard assessment arrangements based on the individual needs of students. It is important that you identify as early as possible if students have disabilities or particular difficulties that will put them at a disadvantage in the assessment situation and that you choose a qualification or adjustment that allows them to demonstrate attainment.

If a student requires access arrangements that need approval from us, you must use Access arrangements (online) to gain approval. You must select the appropriate qualification type(s) when you apply. Approval for GCSE or GCE applications alone does not extend to other qualification types. You can select more than one qualification type when you make an application. For guidance or support please contact the OCR Special Requirements Team.

The responsibility for providing adjustments to assessment is shared between your centre and us. Please read the JCQ document Access Arrangements and Reasonable Adjustments .

If you have students who need a post-exam adjustment to reflect temporary illness, indisposition or injury when they took the assessment, please read the JCQ document A guide to the special consideration process**.**

If you think any aspect of these qualifications unfairly restricts access and progression, please email Support@ocr.org.uk or call our Customer Support Centre on **01223 553998**.

The following access arrangements are allowed for this specification:

Access arrangement	**Type of assessment**
Reader/Computer reader	All assessments
Scribes/Speech recognition technology	All assessments
Practical assistants	All assessments
Word processors	All assessments
Communication professional	All assessments
Language modifier	All assessments
Modified question paper	Timetabled exams
Extra time	All assessments with time limits

8.5 Requirements for making an entry

We provide information on key dates, timetables and how to submit marks on our website.

Your centre must be registered with us as an approved centre before you enrol students and can make entries. Centre approval should be in place well in advance of making your first entries. Details on how to register with us are on our website.

8.5.1 Making estimated unit entries

Estimated entries are not needed for Cambridge Advanced National qualifications.

8.5.2 Making final unit entries

When you make an entry, you need to know the unit entry codes including the option code where required. Students submitting work must be entered for the appropriate unit entry code from the table below.

The short title for these Cambridge Advanced Nationals is CAN AAQ. This is the title that will be displayed on Interchange and some of our administrative documents.

Individual unit entries should be made for each series in which you intend to submit or resubmit an NEA unit or sit an externally assessed examination.

Make a certification entry using the overall qualification code (see Section 8.6) in the final series only.

Unit entry code	Component code	Assessment method	Unit titles
F200	01	Written paper	Fundamentals of data analytics
F201	01	Written paper	Big data and machine learning
F202	01	Moderated	Spreadsheet data modelling
F203	01	Moderated	Relational database design
F204	01	Moderated	Data and the Internet of Everything (IoE)
F205	01	Moderated	Data visualisation
F206	01	Moderated	Data and digital marketing

8.6 Certification rules

You must enter students for qualification certification separately from unit assessment(s). If a certification entry is **not** made, no overall grade can be awarded. These are the qualifications that students should be entered for:

- OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Certificate) - certification code H019.
- OCR Level 3 Alternative Academic Qualification Cambridge Advanced National in IT: Data Analytics (Extended Certificate) - certification code H119.

8.7 Unit and qualification resits

Students can resit the assessment for each unit and the best result will be used to calculate the certification result. Students may resit each external assessment twice before certification.

Resit opportunities must be fair to all students and **not** give some students an unfair advantage over other students. For example, the student must not have direct guidance and support from the teacher in producing further evidence for NEA units. When resitting an NEA unit, students must submit new, amended or enhanced work, as detailed in the JCQ Instructions for Conducting Coursework.

When you arrange resit opportunities, you must make sure that you do not adversely affect other assessments being taken.

Arranging a resit opportunity is at the centre's discretion. Summative assessment series must not be used as a diagnostic tool and resits should only be planned if the student has taken full advantage of the first assessment opportunity and any formative assessment process.

8.8 Post-results services

A number of post-results services are available:

- Reviews of results - if you think there might be something wrong with a student's results, you may submit a review of marking or moderation.
- Missing and incomplete results - if an individual subject result for a student is missing, or the student has been omitted entirely from the results supplied you should use this service.
- Access to scripts - you can ask for access to marked scripts.
- Late certification - following the release of unit results, if you have not previously made a certification entry, you can make a late request, which is known as a **late certification**. This is a free service.

Please refer to the JCQ Post-Results Services booklet and the OCR Administration page for more guidance about action on the release of results.

For each NEA unit, a review of moderation can only be requested for the cohort. It cannot be requested for individual students.

Appendix A: Guidance for the production of electronic evidence

Structure for evidence

The NEA units in these qualifications are units F202–F206. For each student, all the tasks together will form a portfolio of evidence, stored electronically. Evidence for each unit must be stored separately.

An NEA portfolio is a collection of folders and files containing the student's evidence. Folders should be organised in a structured way so that the evidence can be accessed easily by a teacher or OCR assessor. This structure is commonly known as a folder tree. It would be helpful if the location of particular evidence is made clear by naming each file and folder appropriately and by use of an index called 'Home Page'.

There should be a top-level folder detailing the student's centre number, OCR candidate number, surname and forename, together with the unit code (F202–F206), so that the portfolio is clearly identified as the work of one student.

Each student's portfolio should be stored in a secure area on the centre's network. Before submitting the portfolio to OCR, the centre should add a folder to the folder tree containing the internal assessment and summary forms.

Data formats for evidence

It is necessary to save students' work using an appropriate file format to minimise software and hardware capability issues.

Students must use formats appropriate:

- to their evidence
- for viewing for assessment and moderation.

Formats must be open file formats or proprietary formats for which a downloadable reader or player is available. If a downloadable reader or player is not, the file format is **not** acceptable.

Evidence submitted is likely to be in the form of word-processed documents, presentation documents, digital photos and digital video.

All files submitted electronically must be in the formats listed on the following page. Where new formats become available that might be acceptable, we will give more guidance. It is the centre's responsibility to make sure that the electronic portfolios submitted for moderation are accessible to the OCR assessor and fully represent the evidence available for each student.

Standard file formats acceptable as evidence for the Cambridge Advanced Nationals are listed here.

File type	File format	Max file size*
Audio	.3g2 .3ga .aac .aiff .amr .m4a .m4b .m4p .mp3 .wav	25GB
Compression	.zip .zipx .rar .tar .tar .gz .tgz .7z .zipx .zz	25GB
Data	.xls .xlsx .mdb .accdb .xlsb	25GB
Document	.odt .pdf .rtf .txt .doc .docx .dotx .	25GB
Image	.jpg .png .jpeg .tif .jfif .gif .heic .psd .dox .pcx .bmp .wmf	25GB
Presentation	.ppt .pptx .pdf .gslides .pptm .odp .ink .potx .pub	25GB
Video	.3g2 .3gp .avi .flv .m4v .mkv .mov .mp4 .mp4v .wmp .wmv	25GB
Web	.wlmp .mts .mov-1 .mp4-1 .xspf .mod .mpg	25GB

If you are using **.pages** as a file type, please convert this to a .pdf prior to submission.

*max file size is applicable when using our Submit for Assessment service.

Submit for Assessment is our secure web-based submission service. You can access Submit for Assessment on any laptop or desktop computer running Windows or macOS and a compatible browser. It supports the upload of files in the formats listed in the table above as long as they do not exceed the maximum file size. **Other file formats and folder structures can be uploaded within a compressed file format.**

When you view some types of files in our Submit for Assessment service, they will be streamed in your browser. It would help your OCR assessor or examiner if you could upload files in the format shown in the table below:

File type	File format	Chrome	Firefox
Audio	.mp3	Yes	Yes
Audio	.m4a	Yes	Yes
Audio	.aac	No	Yes
Document	.txt	Yes	Yes
Image	.png	Yes	Yes
Image	.jpg	Yes	Yes
Image	.jpeg	Yes	Yes
Image	.gif	Yes	Yes
Presentation	.pdf	Yes	Yes
Video	.mp4	Yes	Yes
Video	.mov	No	Yes
Video	.3gp	Yes	No
Video	.m4v	Yes	Yes
Web	.html	Yes	Yes
Web	.htm	Yes	Yes

Appendix B: Command Words

External assessment

The table below shows the command words that will be used in exam questions. This shows what we mean by the command word and how students should approach the question and understand its demand. Remember that the rest of the wording in the question is also important.

Command Word	Meaning
Analyse	• Separate or break down information into parts and identify their characteristics or elements • Explain the different elements of a topic or argument and make reasoned comments • Explain the impacts of actions using a logical chain of reasoning
Annotate	• Add information, for example, to a table, diagram or graph
Calculate	• Work out the numerical value. Show your working unless otherwise stated
Choose	• Select an answer from options given
Compare	• Give an account of the similarities and differences between two or more items or situations
Complete	• Add information, for example, to a table, diagram or graph to finish it
Describe	• Give an account that includes the relevant characteristics, qualities or events
Discuss (how/whether/etc)	• Present, analyse and evaluate relevant points (for example, for/against an argument) to make a reasoned judgement
Draw	• Produce a picture or diagram
Explain	• Give reasons for and/or causes of something • Make something clear by describing and/or giving information
Give examples	• Give relevant examples in the context of the question
Identify	• Name or provide factors or features from stimulus
Label	• Add information, for example, to a table, diagram or graph until it is final
Outline	• Give a short account or summary
State	• Give factors or features • Give short, factual answers

Non examined assessment (NEA)

The table shows the command words that will be used in the NEA assignments and/or assessment criteria.

Command Word	Meaning
Adapt	• Change to make suitable for a new use or purpose
Analyse	• Separate or break down information into parts and identify their characteristics or elements • Explain the different elements of a topic or argument and make reasoned comments • Explain the impacts of actions using a logical chain of reasoning
Assess	• Offer a reasoned judgement of the standard or quality of situations or skills. The reasoned judgement is informed by relevant facts
Calculate	• Work out the numerical value. Show your working unless otherwise stated
Classify	• Arrange in categories according to shared qualities or characteristics
Compare	• Give an account of the similarities and differences between two or more items, situations or actions
Conclude	• Judge or decide something
Describe	• Give an account that includes the relevant characteristics, qualities or events
Discuss (how/whether/etc)	• Present, analyse and evaluate relevant points (for example, for/against an argument) to make a reasoned judgement
Evaluate	• Make a reasoned qualitative judgement considering different factors and using available knowledge/experience
Examine	• To look at, inspect, or scrutinise carefully, or in detail
Explain	• Give reasons for and/or causes of something • Make something clear by describing and/or giving information
Interpret	• Translate information into recognisable form • Convey one's understanding to others, e.g. in a performance
Investigate	• Inquire into (a situation or problem)
Justify	• Give valid reasons for offering an opinion or reaching a conclusion
Research	• Do detailed study in order to discover (new) information or reach a (new) understanding
Summarise	• Express the most important facts or ideas about something in a short and clear form

We might also use other command words but these will be:

- commonly used words whose meaning will be made clear from the context in which they are used (e.g. create, improve, plan)
- subject specific words drawn from the unit content.

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