

BCS LEVEL 4 DIGITAL MODULAR PROGRAMME IN DATA ANALYSIS

LEARNER GUIDE TO THE SYNOPTIC PROJECT



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This is a United Kingdom government regulated qualification which is administered and approved by one or more of the following: Ofqual Qualifications Wales, CCEA Regulation or SQA

Are you ready to showcase your skills?

Well done for all of your hard work so far on the Digital Modular Programme (DMP). It's now time to begin planning and preparing your synoptic project. This is your opportunity to apply everything you have learned so far, and we want to make sure that you are as prepared as possible.

Within this document, you will find information about the requirements and format for this part of the assessment for the Level 4 Digital Modular Programme in Data Analysis.

NB: This synoptic project is part of the mandatory assessment strategy for all qualifications in the DMP suite of qualifications. This project **will not be required** by learners accessing any element of the DMP as part of an Apprenticeship.



Overview of the synoptic project

Working in a project-based environment, data analysts collate, analyse and present data in order to help inform business decisions.

The project will enable you to demonstrate your analytical skills, your use of varied methods of presenting data analysis outputs, and your ability to distil key data analysis findings into a presentation. It will require you to draw upon experience gained during your day-to-day work and design a project to address a data analysis task that is relevant to your role, although an alternative approach is available for learners who are not currently working in a data analyst role.



Top tip: Start with the end in mind! We encourage you to familiarise yourself with the project early on in their DMP journey and to think about areas or topics that you might like to explore further when undertaking the project.

What should I focus on within my project?

The project focus and title can be flexible – any project can be considered, providing that it permits adequate coverage of the assessment criteria and the skills and behaviours set out within this document (see page 6 onwards).

There are two options available for how you may undertake this project:

1. **A real-world business solution.** Your choice of project will focus on a real work situation relevant to your current job role e.g a data analyst. This may include either live client work (which can be anonymised) or work that forms part of a larger-scale or wider focused business activity.

The project should set out to solve a particular business problem (e.g. to support a particular operational issue, or to enable a particular business decision to be made) where you have identified an opportunity to use data analysis to provide information based on stakeholder requirements. You should use the business data that is available to you within the context of your own organisation.

You should ensure that you are able to clearly define the problem you wish to solve, who this will support, the particular data you will need, the process through which you will undertake analysis, and the outputs of your analysis.

2. **A Data Analysis investigation.** Your choice of project will focus on a work situation relevant to your intended or desired job role i.e. in data analysis. You will choose a suitable topic to focus on which researches or tests an aspect of data analysis to inform a business decision or strategy. This need not cover a real work example but the outcomes must be applicable to and relevant in an business context.

The topic you choose is open to you as long as it has a clear business focus. **For example**, you may wish to gather data for analysis that relates to:

- City property prices or transport data that would enable an organisation to make predictions and plan its strategy for office and home working.
- The sale of particular types of goods and customer demographics that would enable an organisation to make decisions and plan which products it takes to market.

Where you may not have access to you own business's data (i.e. you are not currently employed within a relevant job role) you should look to utilise open source data freely available for use online, such as government published data, market data or any other data which will allow you to undertake

each stage of the data analysis lifecycle i.e. collection, preparation and exploration, modelling, validation and testing, and visualisation.

You may wish to explore the open data sets available from [GOV.UK](https://www.gov.uk).

You should ensure that you are able to clearly define the problem you wish to solve, who this will support, the particular data you will need, the process through which you will undertake analysis, and the outputs of your analysis.

We highly recommend that a mentor/tutor supports you throughout your project. When you meet with them you complete a log of your meetings to track the progress of your project where each party signs and dates to allow the log to be submitted for audit purposes.

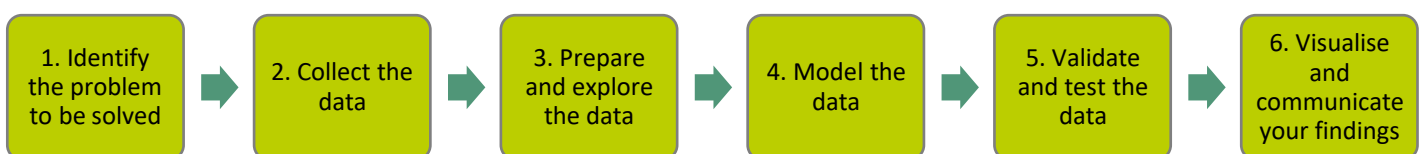
It is important that you aim to gather sufficient data for analysis which allows you to provide answers to a particular question/set of questions and from it draw conclusions that can form the basis of a presentation report. This report should be designed to enable a group of stakeholders to make a particular business decision – so it's important that you considers your target audience.

Project proposal

Once you have chosen a topic on which to base your project, you will need to complete a project proposal form which will be submitted to BCS. Our assessors will review your project proposal and provide you with feedback. Once your proposal has been approved, you will be able to start working on your project.

How should I structure my work?

The project will follow the same structure whether you use your own data or data you have gathered from other sources, as per the options above. Follow the steps below to set out your project:



Top tip: These elements are not equally weighted – this means that you would not be expected to spend the same amount of time on or produce as much for each of the six sections.

To ensure you meet the requirements of this assessment, the files you submit for your project should reference the Data Analysis Lifecycle throughout, and should contain:

- An introduction
- Details of the project scope
- Details of the planning and design activities undertaken
- Collection and preparation log, including where you got your data from and what you did to it.
- Model, validation and testing of model, including any code and narrative of the model.
- Analysis and visualisation of the data
- A conclusion explaining the final solution and any improvements you would make
- References to any sources used e.g. open data sources, published reports.

How long should my project be?

The project must represent a substantial piece of work; as such, the suggested time requirement for this part of the assessment is 30 hours. These hours are included in the Total Qualification Time (TQT) of 320 hours. You do not have to be supervised when you complete all the project work but you may wish to have your tutor available for any questions.

A word limit of **3500 words** applies to your project, with a 10% tolerance either way. Any additional reports, surveys or supporting documentation can be included as an annex, which would not contribute to the overall word count. If the project exceeds the tolerance allowed, then the project will be returned unmarked and a restructure before the second submission would be requested.

How will I submit my work?

Your project must be submitted electronically, and contain notes and guidance for the assessor so that they can easily identify where you have met the learning objectives and assessment criteria in your work. The final submission must be in a format that is straightforward to access, so that your work can be assessed against the stated criteria – these might include PowerPoint, Word, PDF or Excel.



What will I need to demonstrate to pass this assessment?

The following table outlines the pass criteria required for this assessment, and the skills and behaviours you will be able to demonstrate by undertaking this project. The syllabus criteria has been provided to show you how the learning undertaken through completion of the Digital Core module and your occupationally focussed module will support you to meet these criteria.

1. Identify the problem to be solved You will need to outline the specific business problem you intend to address and the business context. You should provide a clear explanation for how data analysis will enable the problem to be solved. You should outline the approach you will take to undertake data analysis, detailing each of the steps you will undertake.			
Pass criteria	Distinction criteria	Occupational Standard	Syllabus criteria
You can demonstrate that you are able to:	You can demonstrate that you are able to:	You will be able to demonstrate the following skills or behaviours:	The learning towards this criteria can be supported within the following syllabus areas:
Identify and describe the problem to be solved and explain how data analysis can present a solution. Illustrate plans to undertake each of the stages of the data analysis lifecycle.	Analyse the requirements of the intended customer to produce a data analysis plan that provides an optimum solution.	B2 Demonstrate initiative, being resourceful when faced with a problem and taking responsibility for solving problems within their own remit. B3 Work independently and collaboratively. B5 Identify issues quickly, enjoys investigating and solving complex problems and applies appropriate solutions. B4 Demonstrate logical and analytical skills. S2 Implement the stages of the data analysis lifecycle.	BCS Level 4 Module in Digital Core: 1.5, 2.2 BCS Level 4 Module in Data Analysis: 3.1, 3.2, 3.5, 3.6, 6.1-6.6

2. Collect the data

You should provide evidence towards how they have collected the data. This includes detail of the specific data sources they have used and the means by which you have collected the data. You should include reference to any sources you have used if using open data sources, with consideration towards any terms of use.

Pass criteria	Distinction criteria	Occupational Standard	Syllabus criteria
Collect data for use in the analysis process.	Compare multiple data sources, justifying the choice of data used.	S8 Identify data sources and the risks, challenges to combination within data analysis activity.	BCS Level 4 Module in Data Analysis: 5.1, 5.2, 6.1

3. Prepare and explore the data

You should outline the process you have taken to prepare the data for analysis, discussing how you have addressed any errors or duplication in the data. You should provide evidence of your use of statistical programming languages. This should include examples of particular queries or scripts you have used in preparing the data.

Pass criteria	Distinction criteria	Occupational Standard	Syllabus criteria
Prepare and investigate the data collected. Use statistical programming languages to prepare the data.	Demonstrate the use of data sets with different data structures.	S4 Analyse data sets taking account of different data structures and database designs. S10 Apply statistical methodologies to data analysis tasks. S3 Apply principles of data classification within data analysis activity.	BCS Level 4 Module in Data Analysis: 2.1, 2.3, 5.3, 4.3, 4.7, 5.4, 6.1, 6.3

4. Model the data

You should provide a visual diagram that presents the data model to be used that illustrates how you will structure and use the data.

Pass criteria	Distinction criteria	Occupational Standard	Syllabus criteria
Demonstrate the ability to model the data to produce a visual diagram. Demonstrate an understanding of the different datasets and how they can be used to present an overall picture.	Justify choice of data modelling techniques used.	S13 Use a range of analytical techniques such as data mining, time series forecasting and modelling techniques to identify and predict trends and patterns in data. S8 Identify data sources and the risks, challenges to combination within data analysis activity.	BCS Level 4 Module in Data Analysis: 4.4, 4.6, 5.1, 5.2, 6.1 6.3, 6.4

5. Validate and test the data

You should provide evidence of how you have tested the data, the process you have followed and your observations when testing. This may take the form of a testing log. You should explain your approach to fixing or addressing any issues encountered whilst testing.

Pass criteria	Distinction criteria	Occupational Standard	Syllabus criteria
Demonstrates the ability to validate data and test it.	Compares different data analysis tools and justifies how their choice of tool will enable them to deliver the best outcome.	S15 Select and apply the most appropriate data tools to achieve the best outcome. B4 Demonstrate logical and analytical skills.	BCS Level 4 Module in Data Analysis: 5.1-5.4, 6.1, 6.5

6. Visualise and communicate your findings

You should provide a summary of your findings, drawing conclusions that will inform on the business decision making process. You should include copies of reports that have been created to share with key stakeholders. These should include visualisations of the data included in the report such as graphs, charts or screenshots of dashboards created.

Pass criteria	Distinction criteria	Occupational Standard	Syllabus criteria
<p>Demonstrates an understanding of contextual information and consideration for users.</p> <p>Presents evidence for a variety of trialled approaches and identifies how this informed next steps.</p> <p>Presents outputs of analysis explaining how it solves the problem.</p> <p>Presents outcomes and findings of data analysis in a clear and comprehensible manner.</p>	<p>Justifies the approach taken to deliver the recommended outcome with rationale for the conclusions drawn.</p> <p>Justifies the approach taken to communicate the outputs of analysis with consideration to the needs of the intended audience.</p>	<p>S5 Assess the impact on user experience and domain context on the data analysis activity.</p> <p>B3 Work independently and collaboratively.</p> <p>B5 Identify issues quickly, enjoys investigating and solving complex problems and applies appropriate solutions.</p> <p>B6 Demonstrate resilience by viewing obstacles as challenges and learning from failure.</p> <p>B7 Demonstrate an ability to adapt to changing contexts within the scope of a project, direction of the organisation or Data Analyst role.</p> <p>S14 Collate and interpret qualitative and quantitative data and convert into infographics, reports, tables, dashboards and graphs.</p>	<p>BCS Level 4 Module in Digital Core: 1.3 2.1, 5.1, 7.4</p> <p>BCS Level 4 Module in Data Analysis: 2.5, 3.6, 6.6</p>

Top tips you help you prepare

Finally, here are our key pieces of advice for preparing your project:



1. Plan your time wisely – e.g. you should approach this piece of work as if it were a real-life project.
2. Document what you do – e.g. things will fail, but this does not mean that they are not worth writing about. For example, you might like to discuss why they failed? What did you learn? How did this have an impact on your next steps?
3. Use tools that you are familiar with – e.g. do not be tempted to use new or unfamiliar tools for the project, as this could waste time.
4. Don't be afraid to make assumptions – e.g. data will not be perfect. Do not be tempted to cleanse it beforehand, as this would leave a large chunk of work undocumented and you may not be able to evidence many of the key behaviours above.
5. Show your thought process – e.g. think about how you have used logic or problem-solving techniques to approach and break down a problem. Make sure you document this!

You can find more information in the [Data Analyst syllabus](#) or the [DMP Qualification Guide](#).

Good luck!