

CA2_Instructions_2025

September 11, 2025

Data science - Coursework 2 (55%)

Instructions

This coursework assesses learning outcomes from **all chapters**, with particular focus on **Chapters 6, 7, 8, and 9**. You may complete this assessment **individually or in pairs**.

The assessment consists of:

- A written **Data Science Report** worth [180 marks]
- A **short video** explaining your work worth [20 marks and a multiplier for evidencing understanding]

This Jupyter notebook outlines the instructions and assessment criteria for the Data Science Report. It explains the structure, marking scheme, and expectations for both the written report and the video component. Use this notebook as a reference guide while preparing your submission.

Plagiarism

Please take note of the University's policy on plagiarism, which is outlined in your student handbook.

Plagiarism is the act of passing off the words or ideas of others as if your own. Advice on avoiding plagiarism is given in the UG Student Handbook. There is also considerable help and advice on Learning Central and the University web site. Students need to be especially careful of plagiarism in computing tasks and you are advised not to share code through electronic means. Students working together during their weekly exercises and the coursework is great (and indeed encouraged) but you need to ensure that they you are not using each other's code or text.

Use of genAI

We will follow the University's traffic light system. This coursework is designated AMBER — you may use GenAI tools only for the computational aspect (e.g., coding cells). GenAI must not be used to write text, discussions, or interpretations. You may, however, use support tools such as dictionaries, thesauruses, or grammar/spell checkers (e.g., Grammarly), even if they are powered by GenAI. Any use of AI must be declared, as outlined in Learning Central > Assessment and Feedback > CA 2.

The Data Science Report [180 marks]

- Upload your final Data Science report (created in Jupyter Notebook) as a **PDF**. Instructions for converting a notebook to PDF are in *Learning Central > Assessment and Feedback*. Submit your report in *two places*:
 - As your group submission for assessment in *Learning Central > Assessment and Feedback > CA 2* for grading
 - Via Turnitin in *Learning Central > Assessment and Feedback > CA 2* for plagiarism checking
- Focus on reasoning, not just results. Marks are awarded for interpretation, not perfectly polished code. For each plot, briefly describe what it shows. Explain any assumptions you make and justify your choices.
- The Understanding, Analysis, Interpretation, and Presentation component of the report is broken down below. At least 30% of the report marks are allocated to clear explanations, justification of methods, evidence of understanding, and presentation. The remaining marks are awarded for correct and appropriate methods and results in the code cells.

Assessment Criteria for Understanding, Analysis, Interpretation and Presentation [25 marks]

Marks will be awarded for evidence of understanding, explanations, clarity of plots, interpretation of outputs, formatting, and overall presentation of results. Bonus marks may be awarded for additional investigations or high-quality analysis. See below for the marking criteria.

Mark Range	Knowledge & Understanding	Analysis & Interpretation	Presentation & Communication
22–25 (Excellent)	Exceptional mastery; advanced critical evaluation	Outstanding analysis; original and insightful	Clear, well-structured, professional; plots/tables highly informative
19–21 (Very Good)	Excellent understanding; integrates knowledge effectively	High-quality analysis; thorough discussion	Well-organized and coherent; plots support conclusions
16–18 (Good)	Strong, detailed understanding	Effective analysis; shows insight	Clear and structured; plots adequately labeled; explanations understandable
13–15 (Satisfactory)	Good knowledge with some depth	Adequate analysis; limited interpretation	Readable; plots included; explanations basic but mostly clear
10–12 (Marginal Fail)	Limited understanding	Minimal analysis; some errors	Unclear; incomplete plots or explanations
6–9 (Fail)	Basic understanding; significant gaps	Minimal and mostly incorrect analysis	Poorly structured; plots confusing or missing

Mark Range	Knowledge & Understanding	Analysis & Interpretation	Presentation & Communication
0–5 (Fail)	Minimal grasp of concepts	Analysis absent or wholly incorrect	Fails to communicate findings; no meaningful plots

The video component [20 marks and multiplier]

Submit a short video explaining your report to show your understanding of the techniques used. The video should be informal — just you, or you and your partner, speaking as if explaining your work to another MSc/MPhys student. Focus on clarity and explanation; production quality does not earn marks. The video must be no longer than 7 minutes.

Video Part A - Verbal expression [20 marks]

You should demonstrate an ability to clearly and confidently communicate your approach, key findings. Don't just recite results — explain why you did each step. The lowest mark that can be obtained for this component is 0.

Marks are awarded based on **presentation, clarity, and engagement**.

Marks (0–25)	Verbal Expression / Delivery
23–25 Excellent	Exceptionally clear, confident, and engaging delivery; logical sequencing; excellent pacing; uses examples or visuals effectively.
20–22 Very Good	Clear and confident delivery; mostly well-structured; good pacing; examples or visuals mostly effective.
17–19 Good	Generally clear delivery; structured explanation; minor lapses in clarity or engagement; some use of examples.
14–16 Satisfactory	Adequate clarity; explanation understandable but sometimes disorganized; minimal use of examples or visuals.
10–13 Marginal	Limited clarity or confidence; disorganized presentation; minimal engagement.
1–9 Poor	Difficult to follow; lacks confidence; delivery disjointed; little to no engagement.
0 Fail	Presentation absent or unintelligible.

Video Part B - Knowledge and understanding [multiplier]

You should demonstrate understanding of the key ideas, methods you have used to generate your report. Show you are aware of the strengths and limitations of your methods, explain your report critically, reflecting on strengths, limitations and rigour of your approach. If you demonstrate that you fully understand what you have written, then you will be awarded a 1. The lowest mark that can be obtained for this component is 0.5. **This will act as a multiplier between 0.5 and 1 for the Understanding Components of the Report (approximately 30% of the report).**

Marks are awarded on a **0.5–1.0 scale**, where 0.5 = poor and 1.0 = excellent.

Marks (0.5–1.0)	Knowledge & Understanding	Analysis & Interpretation
0.95–1.0 Excellent	Exceptional mastery of content; explains concepts, methods, and reasoning clearly; demonstrates critical understanding.	Insightful, critical analysis; explains results, limitations, and uncertainties; demonstrates originality and strategic thinking.
0.85–0.94 Very Good	Excellent understanding; explains ideas clearly and mostly accurately.	Strong analysis; interprets results thoughtfully; discusses strengths and limitations.
0.75–0.84 Good	Solid understanding; explains most concepts correctly.	Reasoning generally sound; some discussion of limitations; interpretation mostly correct.
0.65–0.74 Satisfactory	Adequate understanding; key concepts explained with some gaps.	Basic analysis; reasoning partially correct; limited discussion of limitations.
0.60–0.64 Marginal	Limited understanding; explanations contain misconceptions.	Analysis superficial; reasoning contains errors; limited interpretation.
0.50–0.59 Poor	Minimal understanding; major misconceptions or incomplete explanations.	Analysis absent or largely incorrect; reasoning flawed; interpretation missing.

How is the total mark calculated for CA 2?

The final mark for CA 2 is derived from

$$\text{Total mark} = \text{Report} \times (0.7 + 0.3 \times \text{Video Part B}) + \text{Video Part A}$$

As an example, a student receives the following marks for the report:

```
[23]: A= 10
      B=7
      C=18
      D=45
      E=25
      Pres = 18

      report = A+B+C+D+E+Pres

      print('The report mark (out of 180) is',report,'ie',int(100*report/180),'%')
```

The report mark (out of 180) is 123 ie 68 %

The same student receives the following marks in the video:

```
[24]: #Video Part A:  
v_a = 14  
#Video Part A:  
v_b = 0.75
```

The total mark awarded to this student would then be calculated as follows:

```
[25]: def mark(Report_mark,Part_VB,Part_VA):  
      return Report_mark*(0.7 + 0.3*Part_VB) + Part_VA  
  
print('CA 2 Total mark is',int(100*mark(report,v_b,v_a)/200),'%')
```

CA 2 Total mark is 63 %