# Solent University

# Coursework Assessment Brief

# Assessment Details

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| Module Title: | Data Science |
| Module Code: | COM618 |
| Module Leader: | Dr Taiwo Ayodele |
| Level: | 6 |
| Assessment Title: | Data Science Report |
| Assessment Number: | AE1 |
| Assessment Type: | Portfolio |
| Restrictions on Time/Word Count: | 2000 words plus artefacts |
| Consequence of not meeting time/word count limit: | There is no penalty for submitting below the word/count limit, but you should be aware that there is a risk you may not maximise your potential mark.  It is essential that assignments keep within the time/word count limit stated above. Any work beyond the maximum time/word length permitted will be disregarded and not accounted for in the final grade. |
| Individual/Group: | Individual |
| If a group | Not applicable |
| Assessment Weighting: | 100% |
| Issue Date: | Week starting on 23rd September 2024 |
| Hand In Date: | 6th January 2025 4pm |
| Planned Feedback Date: | Within 4 weeks after submission |
| Mode of Submission: | Online (via ‘Solent Online Learning’)  Only FINAL submissions will be accepted. DRAFT submissions will not be considered an attempt and will not be marked. |
| Anonymous Marking | This assessment: Is exempt from anonymous marking. |

# Assessment Task

The amount of data in the world is exploding. In particular, the healthcare industry is generating large amounts of data, driven by a wide range of medical and healthcare functions, including clinical records, medical images, genomic data, health behaviours, clinical decision support, disease surveillance, and public health management. The challenges include capturing, storing, searching, sharing, analysing, and then finding insights from complex, noisy, heterogeneous, longitudinal, and voluminous data. To take advantage of the massive amounts of data in healthcare fields and provide the right intervention to patients, methods such as personalised care, visualisation tools and predictive models can help benefit all the end users of a healthcare system. Big data analytics needs to bridge data mining and healthcare informatics communities.

# The aim of this coursework is to demonstrate data analytics and data visualisation that could be used in healthcare. Apart from the hands-on skills learned from developing the platform, independent work skills and report-writing skills will be enhanced.

# The assessment has two parts, which are given below:

# Part A

# You need to search for open datasets, import some medical data and manipulate the data by using appropriate visualisation tools or libraries of your choice. The visualisation of the chosen dataset must be documented with providing rationale behind using either of the tools, and its relevance in the healthcare sector.

# Some sources of open datasets which can be explored:

* [Google Dataset search](https://datasetsearch.research.google.com/)
* [Data.gov.uk](https://data.gov.uk/search?filters%5Btopic%5D=Health)
* [WHO](https://www.who.int/data/collections)
* [Dataverse](https://dataverse.harvard.edu/dataverse/harvard?q=&types=datasets&sort=dateSort&order=desc&page=1)
* [Office for National Statistics](https://www.ons.gov.uk/)

# You can also use other relevant sources to gather your health dataset. Your report should justify your choice of datasets and be informed by research.

# Data Preparation: Assess the quality of your data using suitable techniques. Clean the data if and as necessary. Your report should document and justify any techniques you have utilised to assess the quality of the data. Your justification must be informed by research.

1. Data Exploration: Utilise suitable data mining tools and analysis techniques to find significant patterns and trends (SPSS, Excel, Tableau, WEKA, Python libraries, etc). Explain the patterns you have observed.

# Part B

Your report should clearly present a proposal on how you identified a problem in the dataset and how you can construct a model to make predictions or forecast trends.

# Data Modelling and Visualisation: Use appropriate tools to perform some visualisation on the chosen dataset. The choice is yours, based on your future intention of work and also the familiarity of the tool. Your report should document and justify the techniques you have used to mine and analyse the data and the patterns or trends that were discovered. Finally, construct a model that can make some predictions or forecast trends.

# Evaluation: Critically evaluate your results and compare your findings to other similar studies.

# For both part A and B, it is important to provide evidence (related work) from the literature and case study examples for your chosen tool in the healthcare data analysis domain.

# You will need to produce screenshots of data analysis and visualisation results and code snippets where appropriate (your artefacts) within the report. You should also submit your artefacts, i.e, Python codes/ Tableau files/ demo etc in a zipped folder.

# NOTE: You will be expected to demonstrate your artefacts (short presentation or recorded video up to 7 minutes maximum as specified by the module leader, this will be communicated to you closer to date).

**You should submit 2 files:**

* + Your report as a word or pdf document separately uploaded
  + Your dataset/source code/Tableau files/ Recorded demo/video/link to video or any data files as a zip file

# Assessment criteria

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| **COM618 Coursework Assessment (100%)** | | | | | | | | | | |
| **COM618 Level 6**  **Numerical Scale** | **0 (0-19) Fail** | **2  (20-29)  Fail** | **3  (30-39)  Fail** | **4   (40-49)  Pass** | **5  (50-59)  Pass** | **6  (60-69)  Merit** | **7   (70-79)  Distinction** | **8  (80-89)  Distinction** | **9 (90-99)  Distinction** | **10   (100)  Distinction** |
| **No attempt, No submission, Absent** | **Poor, unsatisfactory, weak** | **Inadequate, incomplete, limited** | **Basic, satisfactory, acceptable** | **Reasonable, fair, appropriate** | **Competent, good, effective** | **Strong, proficient, very good** | **Articulated, highly impressive, excellent** | **Superb, outstanding, original** | **Extraordinary, flawless, publishable (or industry standard)** |
| **Knowledge & Understanding** | | | | | | | | | | |
| **Given Grade ( )** | | | | | | | | | | |
| **Knowledge and Understanding**  Introduction and Method  **Weight (20%)** | **No attempt.** | Demonstrates a poor understanding of the introduction and methodology. | Inappropriately or inadequately expressed introduction and methodology. | Evidence that appropriate methods have been applied in a planned fashion to resolve specified research question. Expressed in an appropriate academic writing style | Research methodology for collection and analysis of data clearly stated and derived from literature with some analysis and justification of the approach used | Detailed use of literature to develop appropriate methodology for collection and analysis of data based on clearly defined criteria, supported and justified by a wide range of sources. | Good analysis of research question and literature clearly leads to a detailed methodology and method for collection and analysis of data, with an good level of justification and support for the proposed approach. | Very good analysis of research question and literature clearly leads to a detailed methodology and method for collection and analysis of data, with a very good level of justification and support for the proposed approach. | Excellent analysis of research question and literature clearly leads to a detailed methodology and method for collection and analysis of data, with an excellent level of justification and support for the proposed approach. | Comprehensive and robust analysis of research question and literature clearly leads to a detailed methodology and method for collection and analysis of data, with an excellent level of justification and support for the proposed approach. |
| **Cognitive Skills** | | | | | | | | | | |
| **Grade Given ( )** | | | | | | | | | | |
| **Assessment of cognitive skills**  Results, Analysis and Conclusion  **Weight (40%)** | No attempt. | The results are of poor quality, with weak analysis and conclusion. | Contains inaccuracies and omissions.  The results are of poor quality, with incomplete analysis and an inadequate conclusion. | Simple tools used to generate basic results, with simple analysis, writing in an appropriate academic style. | Range of tools used to analyse a good quality dataset, conclusions supported by and linked to some theory | High-quality dataset, Detailed analysis with high level of supporting theory arriving at logical conclusions with analysis of the validity of the conclusion. | Good, high-quality dataset. Excellent analysis of data, highly theorized with a detailed and good quality conclusion considering all parameters of the study. | Very good, high-quality dataset. Excellent analysis of data, highly theorized with a detailed and very good quality conclusion considering all parameters of the study. | Excellent, high-quality dataset. Excellent analysis of data, highly theorized with a detailed and excellent quality conclusion considering all parameters of the study. | Comprehensive, high-quality dataset. Excellent analysis of data, highly theorized with a detailed and excellent quality conclusion considering all parameters of the study. |
| **Practical and Professional Skills, and Transferable Skills** | | | | | | | | | | |
| **Given Grade ( )** | | | | | | | | | | |
| **Practical and Professional Skills, and Transferable Skills**  Professionalism and Communication  **Weight (40%)** | **No attempt.** | Poorly quality communication and presentation of information, lack of appropriate referencing. No clear evidence of supporting literature. | Inadequate quality communication and presentation of information, lack of appropriate referencing. Little evidence of supporting literature. | Basic communication and presentation of information, writing in an appropriate academic style which meets university requirements. | Good quality of academic writing and presentation, clearly articulating key elements of the report and supporting with appropriate images and referencing style. Uses a range of good quality appropriately cited sources. | A high quality of academic writing clearly presents the data, articulating and illustrating key concepts well and making use of a wide range of high quality, appropriately cited sources. | A very high-quality professional standard of communication and presentation of information, at high level of academic writing. Good use of high-quality literature supports all aspects of the project. | Excellent quality of communication and presentation of information, at a publishable level of academic writing. Excellent use of high-quality literature supports all aspects of the project. | Professional quality of communication and presentation of information, at a publishable level of academic writing. Comprehensive use of high-quality literature supports all aspects of the project. | Extraordinary  Professional quality of communication and presentation of information, at a publishable level of academic writing. Comprehensive use of high-quality literature supports all aspects of the project. |

**Use of AI in this Assessment**

Generative AI is permitted at Solent University under specific conditions and must continue to follow the university’s rules around Academic Misconduct and the AI and Academic Integrity policy. In this assessment, you are allowed to use AI for the following tasks:

**Generative AI may only be used to:**

* **Assist with improving your report writing**
* **But it must not be used to solve any part of the assessment.**
* **It must not be used to provide solutions for any aspect of the assessment.**

**If it is found that Generative AI has been used to solve this assessment, the report will be subject to failure or referred for academic misconduct. Please be aware.**

AI and Academic Integrity Policy

# Learning Outcomes

This assessment will enable you to demonstrate in full or in part your fulfilment of the following learning outcomes identified in the Module Descriptor:

**Living CV**

As part of the University's Work Ready, Future Ready strategy, you will be expected to build a professional, Living CV as you successfully engage and pass each module of your degree.

The Living CV outputs evidenced on completion of this assessment are:

1.

2.

Please add these to your CV via the Living CV builder platform on Solent Futures Online [Solent Futures Online](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fsolentfutures.careercentre.me%2Fprogrammes%2F%3FprogrammeID%3DThzJ%252bRbk%252bQXoSlEaujPR0g%253d%253d&data=04%7C01%7Cian.harris%40solent.ac.uk%7Cf1bda34c4d564e82f6cb08da067fdf48%7Cd684e4cd491a4577bf33546478d72e3c%7C0%7C0%7C637829443517919744%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000&sdata=ObCFbM3zY7CgU6SVNtitaq1udg0%2Bzlp1GuCAJ1y1utw%3D&reserved=0)

# Important Information

[Solent University Academic Regulations 2024-25](https://students.solent.ac.uk/official-documents/quality-management/academic-handbook/2o-assessment-principles-and-regulations.pdf)

# Late Submissions

You are reminded that:

1. If this assessment is submitted late i.e. within 7 calendar days of the submission deadline, the mark will be capped at 40% if a pass mark is achieved;
2. If this assessment is submitted later than 7 calendar days after the submission deadline, the work will be regarded as a non-submission and will be awarded a zero;
3. If this assessment is being submitted as a referred piece of work, then it must be submitted by the deadline date; any Refer assessment submitted late will be regarded as a non-submission and will be awarded a zero.

[Assessment regulations](https://www.solent.ac.uk/about/documents/assessment-regulations.pdf)

# Extenuating Circumstances

The University’s Extenuating Circumstances (EC) procedure is in place if there are genuine short term exceptional circumstances that may prevent you submitting an assessment. You are able to self-certify for up to two assessment dates in any semester without supporting evidence for an extension of up to seven calendar days for coursework or to defer an exam to the resit period.

Alternatively, if you are not 'fit to study’ (or you have used up your two self-certification opportunities), you can request:

* an extension to the submission deadline of 7 calendar days, or
* a request to submit the assessment at the next opportunity, i.e. the resit period (as a Defer without capping of the grade).

In both instances you must submit an EC application with relevant evidence. If accepted under the university regulations there will be no academic penalty for late submission or non-submission dependent on what is requested. You are reminded that EC covers only short-term issues (20 working days) and that if you experience longer term matters that impact on your learning then you must contact the Student Hub for advice.

Please find a link to the EC policy below:

[Extenuating Circumstances](https://students.solent.ac.uk/official-documents/quality-management/academic-handbook/2p-extenuating-circumstances.pdf)

# Academic Misconduct

Any submission must be your own work and, where facts or ideas have been used from other sources, these sources must be appropriately referenced. The University’s Academic Regulations includes the definitions of all practices that will be deemed to constitute academic misconduct. You should check this link before submitting your work.

Procedures relating to student academic misconduct are given below:

[Academic Misconduct](https://students.solent.ac.uk/official-documents/quality-management/academic-handbook/4l-student-academic-misconduct-procedure.pdf)

**Ethics Policy**

The work being carried out must be in compliance with the university Ethics Policy. Where there is an ethical issue, as specified within the Ethics Policy, then you will need an ethics release or ethics approval prior to the start of the project.

The Ethics Policy is contained within Section 2S of the Academic Handbook:

[Ethics Policy](https://staff.solent.ac.uk/official-documents/quality-management/academic-handbook/2s-solent-university-ethics-policy.pdf)

**Grade marking**

The University uses an numeric grade scale for the marking of assessments. More detailed information on grade marking and the grade scale can be found on the portal and in the Student Handbook.

[Grade Marking Scale](https://staff.solent.ac.uk/official-documents/quality-management/academic-handbook/2o-assessment-regulations-annex-1-grade-marking-scale.pdf)

**Guidance for online submission through Solent Online Learning (SOL)**

[Online Submission](http://learn.solent.ac.uk/onlinesubmission)