# Solent University

# Coursework Assessment Brief

# Assessment Details

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| Module Title: | Data Analytics and Visualisation |
| Module Code: | COM725 |
| Module Leader/Tutor: | Dr Drishty Sobnath |
| Level: | 7 |
| Assessment Title: | Project (Software product and technical report) |
| Assessment Number: | AE2 |
| Assessment Type: | Software product and report |
| Restrictions on Time/Word Count: | 2500 words plus artefacts |
| Consequence of not meeting time/word count limit: | It is essential that assignments keep within the time/word count limit as stated above (with a +/-10% margin). Any work beyond the maximum time/word length permitted might be disregarded and not be accounted for in the final grade. However, there is no penalty for submitting below or above the page/word count, but students should be aware that there is a risk they may not maximise their potential mark. |
| Individual/Group: | Individual |
| Assessment Weighting: | 60% |
| Issue Date: | Week starting 16th May 22 |
| Hand In Date: | 1st September 2022 4pm (TBC) |
| Planned Feedback Date: | Within 4 working weeks after the hand-in |
| Mode of Submission: | On-line (via ‘Solent Online Learning’) |
| Number of copies to be submitted: | 1 (Online only) |
| Anonymous Marking | No |

# Assessment Description

Data analytics is booming in every industry, and healthcare data analytics is no exception. Healthcare data analysts help improve healthcare outcomes using data from a variety of sources. Most commonly, healthcare analysts work on the business side of medicine, improving patient care, or streamlining the way things are run. Healthcare industries are generating large amounts of data and 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 and to provide the right intervention to clients, businesses are adapting methods such as personalised care, visualisation tools and predictive models that can help benefit all end users or their clients.

# The aim of this coursework is to demonstrate data analytics and data visualisation that could be used for a fictitious company dealing with health data. Apart from the hands-on skills learned from developing the platform, independent work skills and report-writing skills will be enhanced.

**Task**

# 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. 1000 upwards

# Some sources of open datasets which can be explored:

* [Google Dataset search](https://datasetsearch.research.google.com/)
* [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. You should add the link to your original dataset and/or submit your dataset.

# Part B

# 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 a combination of data mining tools and analysis techniques to find significant patterns and trends (Excel, Tableau, WEKA, Python libraries, etc) as demonstrated in class.
2. 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 the familiarity of the tool. Your report should document and justify the techniques (backed up with relevant literature) 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.
3. Evaluation: Critically evaluate your results and compare your findings to other similar studies.

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. These should be added in the report and any additional materials can be added in an appendix if needed. Using a combination of tools will demonstrate your breadth and knowledge and ultimately be of benefit to you.

# You will need to produce screenshots of data analysis and visualisation results and code snippets where appropriate (your artefacts) within the report. It is important to provide evidence (related work) from the literature and case study examples for your chosen tool for the data analysis. 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 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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| Grades: F1-F3 | Grades: D1-D3 | Grades: C1-C3 | Grades: B1-B3 | Grades: A1-A4 |
| Introduction and Method (Weighting 1/3) | | | | |
| Inappropriate or poorly 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. | Comprehensive 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. |
| Results, Analysis and Conclusion (Weighting 1/3) | | | | |
| Poor quality or limited results, Poorly or inappropriately analysed data. | 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. | Comprehensive, high quality dataset. Excellent analysis of data, highly theorized with a detailed and excellent quality conclusion considering all parameters of the study. |
| Professionalism and Communication (Weighting 1/3) | | | | |
| Poorly quality communication and presentation of information, lack of appropriate referencing. Little or no clear 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. | 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. |

# Learning Outcomes

This assessment will enable students to demonstrate in full or in part the learning outcomes identified in the Module descriptors.

# Late Submissions

Students are reminded that:

1. If this assessment is submitted late i.e. within 5 working 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 5 working 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.

<https://students.solent.ac.uk/official-documents/quality-management/academic-handbook/2o-assessment-principles-regulations-temporary-amendments-for-covid-19-contingency-plans.pdf>

# Extenuating Circumstances

The University’s Extenuating Circumstances procedure is in place if there are genuine circumstances that may prevent a student submitting an assessment. If students are not 'fit to study’, they can either request an extension to the submission deadline of 5 working days or they can request to submit the assessment at the next opportunity (Defer). In both instances students must submit an EC application with relevant evidence. If accepted by the EC Panel there will be no academic penalty for late submission or non-submission dependent on what is requested. Students are reminded that EC covers only short-term issues (20 working days) and that if they experience longer term matters that impact on learning then they must contact the Student Hub for advice.

Please find a link to the EC policy below:

<https://students.solent.ac.uk/official-documents/quality-management/academic-handbook/2p-extenuating-circumstances.pdf>

# Academic Misconduct

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

Procedures relating to student academic misconduct are given below:

<https://students.solent.ac.uk/official-documents/quality-management/academic-handbook/4l-student-academic-misconduct-procedure.pdf>

**Ethics Policy**

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

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

<https://staff.solent.ac.uk/official-documents/quality-management/academic-handbook/2s-solent-university-ethics-policy.pdf>

**Grade marking**

The University uses a letter grade scale for the marking of assessments. Unless students have been specifically informed otherwise their marked assignment will be awarded a letter grade. More detailed information on grade marking and the grade scale can be found on the portal and in the Student Handbook.

<https://students.solent.ac.uk/official-documents/quality-management/academic-handbook/2o-annex-3-assessment-regulations-grade-marking-scale.docx>

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

<http://learn.solent.ac.uk/onlinesubmission>