Assessment Brief - Exam

| **Academic Year** | **22-23** |
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| **Semester** | **1** |
| **Module Number** | **CMM020** |
| **Module Title** | **Data Visualisation and Analysis** |
| **Module Co-ordinator** | **Ines Arana** |
| **Assessment Method** | **Practical Examination** |
| **Date / Week(s) of Exam** | **25 April 2023 (date to be confirmed)** |
| **Duration of Exam** | **3 hours examination (including a 30 minute quiz) plus 30 minutes submission.** |
| **Open book or closed book?** | **Selected materials** |
| **On campus or Online?** | **On campus** |
| **Calculator permitted?** | **There is a calculator available on the computer. No additional calculator is allowed.** |

| What knowledge and/or skills will I develop by undertaking the exam? |
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| You will use the principles and techniques involved in the displaying of data to provide greater insight into the information contained within the data. |
| **On successful completion of the assessment students will be able to achieve the following Learning Outcomes:**   1. Describe and compare different methods of displaying a variety of data types. 2. Fit data to appropriate models and draw valid conclusions. 3. Evaluate and re-design given examples of information visualisation. 4. Develop solutions to display and analyse information effectively. |
| **Please also refer to the Module Descriptor, available from the module Moodle study area.** |

| What is expected of me in this exam? |
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| You will undertake FOUR tasks as follows:   * **Task 1** – you will use univariate statistics to analyse a given dataset. You will then use plots to show and discuss the distribution of given variables.   Learning outcomes: 1 and 4.  Related course content: lecture 6 and related lab(s).   * **Task 2** – you will produce and discuss a suitable plot for each given set of requirements.   Learning outcomes:.  1, 3 and 4.  Related course content:.  Lectures 1 to 5 and related labs.   * **Task 3** – you will undertake a bi-variate analysis and linear regression task   Related course content: lectures and labs on linear regression.  Learning outcomes: 2 and 4.  Related course content:.  Lectures 6 and 7 and related labs.   * **Task 4** – you will complete an online quiz. The time limit for this quiz appears in the cover page. For some of the answers, you may need to run R code. If any question needs R code, this R code should be included in the Rmd file (see submission details).   Learning outcomes: 1, 2, 3 and 4.  Related course content: lectures 1, 2, 3, 4, 5, 8, 9 and 10 and related labs.  Note that tasks 1, 2 and 3 require you to include text with your discussions, comments and evaluation. |
| Procedure The CMM020 assessment will be a Practical Examination done in-person and on-campus under examination conditions in a computer laboratory. It is an INDIVIDUAL piece of work.  You will have access to selected course materials:   * You will be able to use lecture notes and lab worksheets. * You will not have access to lab solutions or any external resources or assistance (e.g. textbooks, personal notes or files, or internet access).   You are expected to: demonstrate knowledge and understanding of data visualisation and analysis as well as the skills required to apply visualisation and analysis techniques to one or more given datasets and to interpret and critically evaluate the results obtained using R Markdown within R Studio.  The duration of the practical examination appears on the front page and is divided into time to undertake the tasks and submission time. You must not carry out any additional work during the submission time other than submitting. Please note that the quiz has a 30 minute maximum duration from the time the quiz is accessed. The quiz will not be available during submission time.  You should submit two files to the practical examination dropbox as follows:   * An R markdown (Rmd) file – see detailed description below. * An html file, which has been produced by knitting the Rmd file.   The quiz (task 4) will be undertaken via CampusMoodle and your answers will have been submitted at the time of undertaking the quiz.  Rmd file: this file contains all your work for each task in order. You are required to present the following for each task:   * A heading: the keyword “Task” followed by the task number, at the section level (i.e. use one hash). For example, for task 3 use   # Task 3  in a single line, ensuring that the preceding and the following lines are blank.   * R block(s): use one or more R blocks for the code for the task. Ensure that either they do not contain any code to view or print large amounts of data or that the relevant R blocks contain the right settings so that output is not produced. * Text: use text outside the R blocks to justify your decisions and to interpret, discuss and evaluate the results obtained.   The practical examination will be invigilated. A member of academic staff will be present in the examination room to clarify any misunderstanding about the questions and assistance with file upload if required.  Adverse circumstances which may have affected your performance in the examination must be reported on an Extenuating Circumstances Claim Form within 5 working days of the examination date. |

| How will I be graded? | |
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| A grade will be provided for each criterion on the feedback grid which is specific to the assessment.  The overall grade for the assessment will be calculated using the algorithm below. At the end of the module, you will have received separate subgrades which will be combined as follows. | |
| **A** | At least 50% of the feedback grid to be at Grade A, at least 75% of the feedback grid to be at Grade B or better, and normally 100% of the feedback grid to be at Grade C or better. |
| **B** | At least 50% of the feedback grid to be at Grade B or better, at least 75% of the feedback grid to be at Grade C or better, and normally 100% of the feedback grid to be at Grade D or better. |
| **C** | At least 50% of the feedback grid to be at Grade C or better, and at least 75% of the feedback grid to be at Grade D or better. |
| **D** | At least 50% of the feedback grid to be at Grade D or better, and at least 75% of the feedback grid to be at Grade E or better. |
| **E** | At least 50% of the feedback grid to be at Grade E or better. |
| **F** | Failing to achieve at least 50% of the feedback grid to be at Grade E or better. |
| **NS** | Non-submission. |

Grading grid

| **GRADE** | **A** | **B** | **C** | **D** | **E** | **F** |
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| **DEFINITION / CRITERIA (WEIGHTING)** | **EXCELLENT**  Outstanding  Performance | **COMMENDABLE/VERY GOOD**  Meritorious  Performance | **GOOD**  Highly Competent Performance | **SATISFACTORY**  Competent  Performance | **BORDERLINE FAIL** | **UNSATISFACTORY**  Fail |
| **CRITERION 1**  DATA ANALYSIS    **(25%)** | All key univariate statistics are applied effectively to all required variables.  The results are used to produce an excellent critical discussion of the main characteristics of required variables.  The required plots have been generated correctly, with professionally looking presentation. Excellent critical comment on the plots.  Professional coding. | Almost all key univariate statistics are applied effectively to all required variables with minor deficiencies. One key statistic may be missing.  The results are used to critically discuss the main characteristics of required variables with minor deficiencies or omissions.  The required plots have been generated correctly, and their presentation is very good, failing in at most one characteristic per plot.   Very good coding. | Most key univariate statistics are applied to almost all variables. Two key statistics may be missing.  The results are used to critically discuss the main characteristics of at least one numeric and one nominal variable with some deficiencies.  The required plots have been generated correctly and their presentation is good, failing in at most 2 characteristics per plot.   Good coding. | Key univariate statistics are applied to at least half of the required variables. Three key statistics may be missing.  The results are used to discuss the characteristics of at least one numeric and one nominal variable with some deficiencies. The discussion may lack critical appraisal.  At least one plot has been generated correctly with some deficiencies.  Code is at least coherent, although it may contain errors. | Univariate statistics are applied to at least half of the required variables.  Very little discussion which may contain some inaccuracies.  At least one plot has been attempted, although it may contain serious errors. | Major problems with the application of univariate statistics to the data or no work submitted.  Discussion may contain serious errors or be missing.  Both plots may be missing. |
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| **CRITERION 2**  VISUALISATIONS  **(25%)** | The required plots have been generated correctly, and their design is excellent for most plots, including all the information required to interpret them. One plot may have a few minor deficiencies. Excellent, insightful discussion of the key information contained in the plots for almost all plots.  Professional coding. | The required plots have been generated correctly, with minor deficiencies.  Very good design for most plots, with each plot showing both the data and almost all the information required to interpret them.  Insightful discussion of the key information contained in the plots for most plots.  Very good coding. | Most of the required plots have been generated correctly, with minor deficiencies. One plot may have serious deficiencies.  Good design for most plots. At least 2 plots show both the data and some of the information required to interpret them.  Some of the key information contained in the plots is discussed for at least 2 plots, but may lack critical appraisal.  Good coding. | At least 2 of the required plots have been generated correctly, with minor deficiencies. One plot may not have been attempted.  Good design for at least 2 plots, including both the data and some of the information required to interpret them.  Some of the key information contained in the plots is discussed for at least one plot, but may lack critical appraisal.  Coherent coding. | At least one of the required plots has been attempted, although the code may contain deficiencies and it may not run. Sufficient progress has been made to demonstrate knowledge and understanding of how to show the data.  There is a lack of discussion or the discussion contains errors. | No demonstration of knowledge and understanding of how to plot the data for any of the plots. |
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| **CRITERION 3**  **BI-VARIATE ANALYSIS AND LINEAR REGRESSION**    **(25%)** | The relationship between given pairs of variables is investigated correctly. Correct, clear and concise statement regarding the relation between each of the required pairs of variables.  Relevant checks for the suitability of linear regression are undertaken correctly. The results of these checks are clearly and correctly interpreted.  A linear model is built where appropriate. The model is explained correctly.  For each of the required predictions, either the prediction is obtained correctly using the model or a justification is given for why a prediction would be unwise.  Professional coding. | The relationship between given pairs of variables is investigated correctly.  Relevant checks for the suitability of linear regression are undertaken correctly with at most one omission. Most results are interpreted.  A linear regression model is built and explained, with minor deficiencies.  For almost all of the required predictions, either the prediction is obtained correctly using the model or a justification is given for why a prediction would be unwise.  Very good coding. | The relationship between pairs of variables is investigated correctly. The interpretation of results may be missing.  At least one relevant check for the suitability of linear regression is undertaken and interpreted correctly.  A linear regression model is built. At least one feature of the model is explained.  For at least one of the required predictions, either the prediction is obtained correctly using the model or a justification is given for why a prediction would be unwise.  Good coding. | The relationship between pairs of variables is investigated correctly for at least one pair. The interpretation of results may be missing.  At least one check for the suitability of linear regression is undertaken although the interpretation of results may be missing.  A linear model is built. The explanation of the model may be missing.  The predictions may be missing.  Coherent coding. | The investigation into the relationship between pairs of variables may be missing.  A linear model is obtained but the checks to determine its suitability may be missing. | Little effort. |
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| **CRITERION 4**  **QUIZ**  **(25%)** | At least 12 questions answered correctly. | At last 10 questions answered correctly. | At least 8 questions answered correctly. | At least 7 questions answered correctly. | At least 5 questions answered correctly. | Little effort. |
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| What else is important to my exam? |
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| What is plagiarism? “Plagiarism is the practice of presenting the thoughts, writings or other output of another or others as original, without acknowledgement of their source(s) at the point of their use in the student’s work. All materials including text, data, diagrams or other illustrations used to support a piece of work, whether from a printed publication or from electronic media, should be appropriately identified and referenced and should not normally be copied directly unless as an acknowledged quotation. Text, opinions or ideas translated into the words of the individual student should in all cases acknowledge the original source” ([RGU 2022](https://www.rgu.ac.uk/files/469/2021-22/1526/Regulation-A3-2-Student-Conduct-Procedure---2021-22.pdf)). What is collusion? “Collusion is defined as two or more people working together with the intention of deceiving another. Within the academic environment this can occur when students work with others on an assignment, or part of an assignment, that is intended to be completed separately“ ([RGU 2022](https://campusmoodle.rgu.ac.uk/pluginfile.php/5293639/mod_resource/content/2/content/index.html#/lessons/rBmduIUswGjg5JM_oOPSZRypliSTpT_n)).  For further information please see [Academic Integrity](http://campusmoodle.rgu.ac.uk/course/view.php?id=76611). |
| What if I’m unable to sit the exam?  * The University operates a [Fit to Sit Policy](https://www.rgu.ac.uk/files/309/Student-Forms/812/Fit-to-Sit-Policy---Self-Certification.pdf) which means that if you undertake an assessment then you are declaring yourself well enough to do so. * If you are unable to sit the exam, you should submit a [Deferral Request Form](https://www.rgu.ac.uk/files/309/Student-Forms/1567/Deferral-Request-Form---Self-Certification.docx) no later than five working days after the date of the exam. This form is available on the RGU [Student and Applicant Forms](https://www.rgu.ac.uk/about/governance/academic-governance/student-and-applicant-forms) page. * Further support is available from your Course Leader. |
| What additional support is available?  * [RGU Study Skills](https://campusmoodle.rgu.ac.uk/course/view.php?id=88648) provide advice and guidance on academic writing, study skills, maths and statistics and basic IT. * [RGU Library guidance on referencing and citing.](https://library.rgu.ac.uk/referencing-and-refworks) * [The Inclusion Centre: Disability & Dyslexia](https://www.rgu.ac.uk/life-at-rgu/support-advice-services/the-inclusion-centre-disability-dyslexia). * Your Module Coordinator, Course Leader and designated Personal Tutor can also provide support. |
| What are the University rules on assessment?  * The University Regulation ‘[A4: Assessment and Recommendations of Assessment Boards](https://www.rgu.ac.uk/about/governance/academic-governance/academic-regulations)‘ sets out important information about assessment and how it is conducted across the University. * Guidance notes for written examinations can be found in the document [Guidelines and guidance notes](https://www.rgu.ac.uk/files/312/Examination-Procedures/841/Section-2---Guidelines-and-Guidance-Notes.pdf). * The University has [general guidance for students on Remote Computer-Based Assessment (RCBA) Examinations](https://www.rgu.ac.uk/files/312/Examination-Procedures/1240/Guidance-for-Students---Remote-Computer-Based-Assessment-RCBA-Examinations.pdf) which relates to exams that are being taken in home / remote environments and are not subject to invigilated exam conditions on the University Campus. |
| Can I use a dictionary?  * Permission to use a simple, paper-based translation dictionary will only be granted to students whose first language is not English. A [Translation Dictionary Approval Form](https://www.rgu.ac.uk/files/314/Exam-Proformas-and-Exemplars/857/Translation-Dictionary-Approval-Form.pdf) must be completed in order for a student to receive permission to use a translation dictionary in examinations. * Guidance on the use of dictionaries in examinations can be found in the document [Guidelines and guidance notes](https://www.rgu.ac.uk/files/312/Examination-Procedures/841/Section-2---Guidelines-and-Guidance-Notes.pdf). |
| Can I use a calculator?  * Unless it is permitted by the School and stated on the examination paper that calculators are permitted, calculators may not be used. * Guidance on the use of calculators in examinations can be found in the document [Guidelines and guidance notes](https://www.rgu.ac.uk/files/312/Examination-Procedures/841/Section-2---Guidelines-and-Guidance-Notes.pdf). |