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**ASSESSMENT BRIEF**

**ACADEMIC YEAR 2022/23**  **TRIMESTER 1**

**LEVEL: 4**

**MODULE TITLE:** Data and Analytical Science

**MODULE CODE:** MOD008367

**COURSE(S): FdSc / BSc(Hons) Data Science**

GUIDELINE:

1. This assignment constitutes 60**%** of the overall module mark. It is a written report on two case studies. The maximum length for each case study should be no more than 1000 words. Both case studies are compulsory. The questions require application of theory to specific problems. You need to revise theoretical materials and examples from lecture and tutorial notes, books or other on-line resources in order to be equipped to carry out the analyses requested. Wherever suitable, justify the steps taken to answer a question, the choice of methods and formulae, and show your working and calculations.
2. The weighting of each part is indicated in each part. Marks are allocated for all aspects of the work, including calculations, evaluation and presentation of arguments.
3. Organise your assignment answers as a single report and save it in a .pdf or .docx file that includes your SID in the file name, e.g. ‘SID\_xxxxx\_Assignment 2’. Include your SID on the front page of your submission. Please include the text of the questions in your script and label the questions clearly.
4. Submit the assignment to Canvas by 2 pm on 31st March 2023

The report should incorporate the following two components:

# Case study 1.

Submit a report for the following case study using Linear programming. Calculate the optimised amount of money invested for each sector. Maximum equivalent 1000 words for this case study.

The portfolio package includes a set of alternative investments. The expected annual return of investments is shown below:

|  |  |
| --- | --- |
| Investment | Expected annual return rate (%) |
| Share A – manufacturing sector | 15.4 |
| Share B - manufacturing sector | 19.2 |
| Share C - food and beverage sector | 18.7 |
| Share D – food and beverage sector | 13.5 |
| Mutual fund E | 17.8 |
| Mutual fund Z | 16.3 |

Requirements:

* + Total amount is £90000.
  + Amount in shares of a sector no larger than 50% of total available.
  + Amount in shares with the larger return of a sector less or equal to 80% of sector’s total amount.
  + Amount in manufacturing company Β less or equal to 10% of the whole

share amount.

* + Amount in mutual funds less or equal to 25% of the amount in manufacturing shares.

# Case study 2.

Submit a portfolio of one case study using your own or derived data. You can select from either statistics, linear programming or differentiation modelling and can use Excel and/or MATLAB to assist your analysis. Maximum equivalent 1000 words for this case study.

# Marking scheme:

State the aims and objectives of the assignment, background introduction of the modelling methods used in the assignment. (10 marks)

Case study 1: (45 marks)

Scope, context and requirements.

Method, calculations and result discussions, research element (evidence of investigation via internet, Books), conclusions.

Case study 2: (45 marks)

Scope, context and requirements.

Method, calculations and result discussions, research element (evidence of investigation via internet, Books), conclusions.