Level 4 Cert in Statistics for Data Science (949) 156 Credits

Unit: Measures of Position **Exam Paper No.:** 3	**Guided Learning Hours:** 260 **Number of Credits:** 26
Prerequisites: Mathematical terms and Excel knowledge.	**Corequisites:** A pass or higher in Certificate in Excel or equivalence.
Aim: The five-number summary values, namely: minimum, Q1, median (Q2), Q3, and maximum are used to locate a particular point within the dataset; hence the name measures of location. Other measures are range (difference between the greatest and lowest value); the difference between the upper and lower quartiles is interquartile range (Q3-Q1). These however, are is not measure of location but measures of spread. Quartiles divide data into four equal parts. Deciles divides data into 10 equal parts and percentiles divides data into 100 equal parts. To find the location of a percentile, the formula is equal to k divided by 100 * n + 1; where n is the number of number of data items (number of numbers in the set) and k is the subscript; for example, to find the 25th percentile; k is 25. In this module, learners will learn to calculate percentile, decile values, values corresponding to a given percentile and coefficient of quartile deviation. Also, making a table with frequency, relative frequency and cumulative relative frequency will be covered.	
Required Materials: Recommended Learning Resources.	**Supplementary Materials:** Lecture notes and tutor extra reading recommendations.
Special Requirements: The unit requires a combination of lectures, demonstrations, discussions, and hands-on labs.	

Intended Learning Outcomes:	**Assessment Criteria:**
1. Understand how measures of position (or quantiles) statistical techniques are used to describe the exact standing or location of a specific data point relative to an entire dataset; including how they divide data into equal parts.	1.1 Describe quartiles, deciles and percentiles. 1.2 Be able to answer 1st, 2nd and 3rd quartile questions. 1.3 Differentiate quartiles vs deciles. 1.4 Define the relationship between 10 (decile) and 100 (percentile). 1.5 Demonstrate calculating Q1, Q2 and Q3 using percentiles.
2. Understand the formula for the location of a percentile and the process of how to find exact location of a specific percentile in a dataset.	2.1 Demonstrate using the location of a percentile formula. 2.2 Be able to calculate the location of the 25th percentile (1st Quartile). 2.3 Demonstrate calculating the Location of the 2nd Quartile (Mean; 50th Percentile). 2.4 Be able to calculate the Location of the 75th Percentile. 2.5 Be able to calculate the values corresponding to different percentiles.
3. Understand the importance of deciles in data analysis in their role to instantly reveal relative standing, highlight outliers, and enable the comparison of data at a glance without getting lost in raw numbers.	3.1 Describe a decile. 3.2 Explain the relationship between decile and percentile. 3.3 Be able to calculate the value of a given decile. 3.4 Demonstrate intuitively linking quartiles, deciles and percentiles. 3.5 Be able to calculate percentile from a given value.
4. Understand frequency table values comprising of Frequency, Relative Frequency and Cumulative Relative Frequency.	4.1 Describe the relationship between frequency, relative frequency and cumulative relative frequency. 4.2 Demonstrate calculating the Relative Frequency. 4.3 Be able to calculate Cumulative Relative Frequency (CRF). 4.4 Demonstrate using frequency table values to calculate percentiles.

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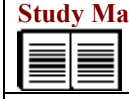
5. Understand the Coefficient of Quartile Deviation as a relative measure of dispersion that is used to compare the spread of datasets regardless of their units of measurement.	4.5 Be able to use Cumulative Relative Frequency (CRF) to calculate deciles. 5.1 Describe coefficient of quartile deviation. 5.2 Be able to calculate coefficient of quartile deviation. 5.3 Describe the relationship between Interquartile Range (IQR), Quartile Deviation and Coefficient of Quartile Deviation. 5.4 Demonstrate Coefficient of Quartile Deviation (CQD) formula. 5.5 Describe the difference between location of the quartile and the value of the quartile.
Methods of Evaluation: A 2-hour written examination paper with Section A and Section B. Section A has 40 multiple choice questions. Section B has three essay questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in **Measures of Position** with a weighting of 100%.	

Recommended Learning Resources: Measures of Position

Text Books	• Statistics Informed Decisions Using Data by Michael Sullivan III. ISBN-13 : 978-0131871496 • Statistics All-in-One For Dummies by Deborah J. Rumsey. ISBN-13 : 978-1119902560 • Statistics Topics by Salil Mehta. ISBN-13 : 978-1499273533
Study Manuals 	BCE produced study packs
CD ROM 	Power-point slides
Software 	Excel

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