Level 5 Diploma in Foundations of Data Science Statistical Methods using Excel (951) 177 Credits

Unit: Descriptive Statistics **Exam Paper No.:** 1	**Guided Learning Hours:** 300 **Number of Credits:** 30
Prerequisites: Business terms and Excel knowledge.	**Corequisites:** A pass or higher in Diploma in Analytics or equivalence.
Aim: Descriptive Analytics is used to **describe data** and **derive insights** using *descriptive statistics, data visualization and queries*. Descriptive analytics involves finding "*what has happened*" in a specific business context using the past data. Analysing past data can provide insights that can assist organizations in taking appropriate decisions. The aim is to enable learners to use Excel to calculate **descriptive statistics** measures and build data visualization charts. On completions, learners will be able to implement: • **Measures of central tendency** - calculating Mean, Median and Mode • **Measure of Variation** - calculating Range, Variance and Standard Deviation • **Percentile / Quartiles** • **Measures of Shape** - SKEW, KURT, • **Drawing Charts** - Bar/Column Chart, Histogram, Box Plot (Box and Whiskers) • **Frequency Table**	
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 the concepts and role of statistics; including collecting, analysing, interpreting and presenting data finds.	1.1 Define sample and population in statistics. 1.2 Describe descriptive statistics. 1.3 Describe inferential statistics. 1.4 Describe measures of central tendency and measures of dispersion. 1.5 Demonstrate calculation of mean, median and mode. 1.6 Explore role of measures of central tendency in statistics. 1.7 Demonstrate real life uses of measures of central tendency. 1.8 Be able to calculate measures of central tendency.
2. Understand why primary objective of data science is comprehending data variability and causes of data dispersion.	2.1 Define variance. 2.2 Define standard deviation. 2.3 Describe causes of data dispersion. 2.4 Be able to calculate variance, standard deviation, coefficient of variance, inter-quartile range and range. 2.5 Describe why standard deviation is important. 2.6 Be able to compare and contrast range vs standard deviation and coefficient of variation vs std deviation. 2.7 Describe skewness of shape and outliers.
3. Understand the use of frequency tables, cumulative and relative frequency in statistics.	3.1 Describe purpose of frequency table. 3.2 Demonstrate how to calculate relative frequency. 3.3 Be able to calculate cumulative frequency.

	3.4 Demonstrate creating frequency distribution. 3.5 Demonstrate creating percent frequency distribution.
4. Understand the difference between statistics vs analytics in data science and descriptive vs inferential statistics.	4.1 Explore the role of statistics. 4.2 Describe importance of statistics in business. 4.3 Analyse uses of statistics in healthcare. 4.4 Be able to demonstrate how statistics is used in education. 4.5 Explain the importance of statistics in economics. 4.6 Describe the role of statistics in accounting. 4.7 Describe difference between cause-and-effect relationship in statistics.
Methods of Evaluation: A 2½ hour essay written paper with 5 questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in **Descriptive Statistics** with a weighting of 100%.	

Recommended Learning Resources: Descriptive Statistics

Text Books	• Fundamentals of Descriptive Statistics by Zealure Holcomb. ISBN-13 : 978-1884585050 • Statistics: An Introduction by Alan Graham. ISBN-13 : 978-1473652002. • Exploratory and Descriptive Statistics by Julie Scott Jones and John Goldring. ISBN-13 : 978-1526424716
Study Manuals 	BCE produced study packs
CD ROM 	Power-point slides
Software 	Excel