# Level 5 Adv Diploma in Data Science & Business Analytics
# (952) 210 Credits

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| **Unit:** Advanced Power BI & Data Modelling Techniques<br><br>**Exam Paper No.: 2** | **Guided Learning Hours:** 300<br><br>**Number of Credits:** 30 |
| **Prerequisites:** Knowledge of file types, charts and Excel Basics | **Corequisites:** A pass or higher in Diploma in Data Analytics or equivalence. |
| **Aim:** **Power BI** is more than just a piece of software, it is really a huge collection of services offered by Microsoft for **modeling**, **analysing**, and **visualising data**. In short, **Data Modeling**, is the process of organizing and preparing data for storing it in a database. It involves filtering and cleaning up data. It helps to ensure data is consistent and accurate when **analysing** it. **Data Visualization** is the graphical representation of data. The Power BI Service runs on Microsoft infrastructure, which means it is a cloud-based Software as a Service (SaaS). Power BI uses an application called Power Query to connect to one or more data sources and perform all of the necessary data preparation steps to build Data Model. Learners will use the Report Editor in Power BI Desktop to build Data Visualizations including all of charts, tables, maps, and other content that helps tell the story of data.<br><br>Why do we need Business Intelligence?<br>• Helps create visualisations and reports instantaneously<br>• Helps organisations produce progressive information from unwanted data.<br>• Helps management make better decisions<br>• Helps monitor organisational services | |
| **Required Materials:** Recommended Learning Resources. | **Supplementary Materials:** Lecture notes and tutor extra reading recommendations. |
| **Special Requirements:** This is a hands-on unit, hence practical use of computers is essential. Requires intensive lab work outside of class time. | |
| **Intended Learning Outcomes:**<br><br>1. Understand how to transform data in Power BI; including importing data, changing, removing and merging columns.<br><br>2. Understand the different Power BI functions used in analysing data, calculating Columns and Measures using Data Analysis Expression (DAX) functions. | **Assessment Criteria:**<br><br>1.1 Describe difference between Load and Transform Data<br>1.2 Describe column data types.<br>1.3 Describe Power BI Data Analysis Expression (DAX)<br>1.4 Be able to formulate function syntax.<br>1.5 Define Power Query Editor<br>1.6 Demonstrate renaming files and removing columns.<br>1.7 Demonstrate creating a new column<br>1.8 Be able to join 2 columns<br>1.9 Demonstrate closing Power Query<br><br>2.1 Demonstrate using AGGREGATE functions (MIN \| MAX \| AVERAGE \| SUM \| SUMX).<br>2.2 Be able to use COUNT functions (DISTINCTCOUNT \| COUNT \| COUNTA \| COUNTROWS \| COUNTBLANK)<br>2.3 Demonstrate using Logical functions (AND \| OR \| NOT \| IF \| IFERROR)<br>2.4 Be able to use TEXT functions (REPLACE \| SEARCH \| UPPER \| FIXED \| CONCATENATE) |

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| | 2.5 Describe and be able to use DATE functions (DATE \| HOUR \| WEEKDAY \| NOW \| EOMONTH \| CALENDAR).<br>2.6 Demonstrate using Information functions (ISBLANK \| ISNUMBER \| ISTEXT \| ISNONTEXT \| ISERROR).<br>2.7 Describe primary calculations (Calculated Columns and Calculated Measures)<br>2.8 Describe difference between calculated measures and columns<br>2.9 Demonstrate creating calculated measures<br>2.10 Demonstrate creating calculated tables<br>2.11 Describe how to manage Time-based Data.<br>2.12 Demonstrate use of grouping, card visuals and conditional formatting.<br>2.13 Demonstrate use of slicers. |
| 3. Understand how Power BI reports drives business decision making through the power of data visualisation tools. | 3.1 Demonstrate using various visualisation tools: Clustered Bar/Column Chart, Line Charts and Area Charts Combination Charts and Ribbon Charts, Pie Chart, Doughnut chart and Tree-Maps , Maps, Funnel Chart, Gauge and Cards and Tables & Matrices.<br>3.2 Use Visual table to demonstrate (i) DAX Evaluation Context (Row Context, Filter Context) (ii) Time Series Analysis (YTD Sales, Prior Year totals) (iii) Semi-Additive Measures (Closing Balance, Opening Balance) (iv) Context Transition (Adding Row Filters to Filter Context, Context DAX)<br>3.3 Describe and be able to implement pivot and unpivot in Power BI. |
| 4. Understand the importance of sports analytics, the use of expressions and evaluation of sporting results to build models than can lead to better decisions that adds value. | 4.1 Describe spanning tree protocols.<br>4.2 Be able to build an expression.<br>4.3 Describe conditional column transformations.<br>4.4 Be able to convert date into integer.<br>4.5 Demonstrate how to use Join data types in Power BI.<br>4.6 Describe column quality feature.<br>4.7 Be able to plot sporting history data.<br>4.8 Be able to use measure to make different calculations. |
| **Methods of Evaluation:** A 3-hour written examination paper with five essay questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake coursework/projects in **Advanced Power BI & Data Modelling Techniques** with a weighting of 100%. | |

## Recommended Learning Resources: Advanced Power BI & Data Modelling Techniques

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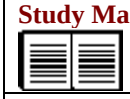
| **Text Books** | • Mastering Microsoft Power BI by Brett Powell. ISBN-13 : 978-1788297233<br>• Beginning Microsoft Power BI by Dan Clark. ISBN-13 : 978-1484256190<br>• Power BI - Business Intelligence Clinic by Roger F. Silva. ISBN-13 : 978-1726793216 |
| **Study Manuals**  | BCE produced study packs |
| **CD ROM**  | Power-point slides |
| **Software**  | Power BI |