

|                                 |                                                    |
|---------------------------------|----------------------------------------------------|
| <b>Subject Code:</b> 1ET1100405 | <b>Subject Title:</b> Data Analysis using Power BI |
| <b>Prerequisite</b>             | --                                                 |

**Course Objective:** Microsoft Power BI is used to find insights within an organization's data. Power BI can help connect disparate data sets, transform and clean the data into a data model and create charts or graphs to provide visuals of the data. Power BI streamlines data analysts' work and makes it easy to connect, transform and visualize data.

| Teaching Scheme (Hours per week) |          |           |        | Evaluation Scheme (Marks) |                       |                       |                       |       |
|----------------------------------|----------|-----------|--------|---------------------------|-----------------------|-----------------------|-----------------------|-------|
| Lecture                          | Tutorial | Practical | Credit | Theory                    |                       | Practical             |                       | Total |
|                                  |          |           |        | University Assessment     | Continuous Assessment | University Assessment | Continuous Assessment |       |
| 3                                | 1        | 2         | 5      | 70                        | 30                    | 30                    | 20                    | 150   |

| Subject Contents |                                                                                                                                                                                                                                                                    |             |            |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| Sr. No           | Topic                                                                                                                                                                                                                                                              | Total Hours | Weight (%) |
| 1                | Understanding Business Intelligence and Power BI – The BI process, Power BI Desktop Software, Sample Code and Supporting Materials, The Power BI Architecture                                                                                                      | 4           | 10         |
| 2                | Using Power BI Visualization – Power BI Desktop, Interacting with a Power BI Report, Changing the Data with Slicers and Filters, Navigating Power BI Reports, Drill Down and Drill through, Buttons, Bookmarks                                                     | 5           | 15         |
| 3                | Creating Visualizations - Basic Data Visualizations, Interactivity, Geographic Visualizations, Visualization Formatting, Report Page, Charts, Table and Matrix, Pie Chart, Donut Chart, Treemap, Advanced Formatting Dialog Boxes, The Visualization Analytics Tab | 7           | 20         |
| 4                | Building Data Models - Loading Data with Power BI, Transforming Data During the Data Import, Repeating and Changing the Data Import, Relationships and Intermediate Tables, Power BI Transformation Reference                                                      | 5           | 15         |
| 5                | Model Building, Measuring Up - Creating a Tabular Model in Power BI, Creating Relationships, User-Friendly Models, Formatting and Categories, Measures and Calculated Columns, DAX Variables                                                                       | 5           | 15         |
| 6                | DAX Language Reference - DAX Operators, DAX Functions, Table-Valued Functions, Aggregate Functions, DAX Functions for Time Analytics, Additional DAX Functions                                                                                                     | 5           | 15         |
| 7                | Additional Power BI Desktop Features - Synonyms, Linguistic Schemas, Display Folder, What-If Parameters, Performance Analyzer, Import and Export                                                                                                                   | 4           | 10         |

**Course Outcome:**

After learning the course, the students should be able to:

- Understand Business Intelligence and self-service analytics
- Explore the tools and features of Microsoft Power BI
- Create and format effective data visualizations
- Incorporate advanced interactivity and custom graphics
- Build and populate accurate data models

**Course Learning Outcomes (CLO):**

| CLO  | Description                                                 | Bloom's Taxonomy Level  |
|------|-------------------------------------------------------------|-------------------------|
| CLO1 | Understand Business Intelligence and self-service analytics | Understanding           |
| CLO2 | Explore the tools and features of Microsoft Power BI        | Understanding, Applying |
| CLO3 | Create and format effective data visualizations             | Applying                |
| CLO4 | Incorporate advanced interactivity and custom graphics      | Analyzing               |
| CLO5 | Build and populate accurate data models                     | Analyzing, Evaluating   |

**Mapping of CLOs with POs & PSOs**

| Course<br>Learning<br>Outcomes | Program Outcomes (POs) |     |     |     |     |     |     |     |     |      |      |      | Program Specific<br>Outcomes(PSOs) |      |      |      |
|--------------------------------|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------------------------------------|------|------|------|
|                                | PO1                    | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1                               | PSO2 | PSO3 | PSO4 |
| CLO1                           | M                      | H   | M   | H   | H   | M   | L   |     | M   | M    | M    | M    | M                                  | H    | L    | L    |
| CLO2                           | M                      | M   | H   | M   | M   | M   | L   |     | M   | M    | L    | L    | H                                  | M    | M    | M    |
| CLO3                           | H                      | M   | H   | M   | H   | H   | M   |     | M   | L    | M    | M    | H                                  | M    | M    | M    |
| CLO4                           | H                      | H   | M   | H   | H   | H   | L   |     | M   | M    | M    | L    | H                                  | M    | M    | M    |
| CLO5                           | M                      | H   | H   | H   | M   | M   | L   |     | M   | M    | M    | L    | M                                  | H    | M    | M    |

H:High, M:Medium, L:Low

**List of References:**

1. Power BI Data Analysis and Visualization By Suren Machiraju, Suraj Gaurav, Publisher: De Gruyter.
2. Data Analysis with Microsoft Power BI, 1st Edition By Brian Larson.

**List of Experiments:**

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

- (1) To study BI architecture.
- (2) Changing the Data with Slicers and Filters.
- (3) Navigating Power BI Reports.
- (4) Creating Visualizations.
- (5) Creating a Tabular Model in Power BI.
- (6) Use of DAX Functions.
- (7) Study of additional Power BI Desktop Features.