

HINDU COLLEGE, AMRITSAR

PG Department of Computer
Science & Applications

Advance Data Analysis & Visualization Using Power Bi

Add on Courses

Er. Krishan Kumar

Admission Incharge

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Rakesh Joshi

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K. Krishan Kumar

PG Department of Computer Science & Applications

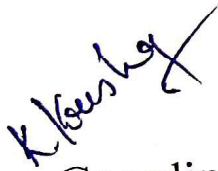
Academic Year 2022-23

Date 10/08/2022

NOTICE

All the students of our institute are hereby informed that the PG Department of Computer Science & Applications is going to start value added Certification course on 16 January 2023, as per the following schedule: -

| Course Name | Timing(Monday to Friday) |
|--|--------------------------|
| Advance data analysis and Visualization using Power BI | 8.20 AM to 9 AM |



Course Coordinator

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Course:- Advance data analysis and Visualization using Power BI

Outcome

- Understand the key concepts and benefits of Microsoft Power BI for data analytics and business intelligence.
- Navigate and utilize Power BI Desktop proficiently for creating, designing, and sharing reports and dashboards.
- Connect to various data sources, import data, and perform data transformation and cleaning using Power Query.
- Master the use of DAX (Data Analysis Expressions) to perform calculations, create measures, and solve complex analytical scenarios.

Syllabus

1.Introduction to Microsoft Power BI Course

An Introduction to Microsoft Power BI Course, Download and Install Microsoft Power BI Desktop, Download MS Power BI Supporting Files

2. Learn Data Analysis and Data Visualization using Power query, DAX and Visualizations

Microsoft Power BI data sources and how to connect them.

- Power BI - Connect to data sources like Excel, CSV and Website
- Power BI - Connecting to other data sources in Microsoft Power BI
- Combine data from multiple excel files - Use Query Editor to reduce data set
- Power BI - Power Query Editor - An overview
- Power BI - M Query Language - An Overview
- Renaming, Editing and Error handling in Power Query advanced editor
- Consolidate and add custom data types in Power BI using M formula language
- Change data types, replace values, group data, transpose and unpivot
- Text column functions (split , format, merge and extract columns)
- Append data to a query, Insert custom columns and index column
- Build relation between tables, merge data, show and hide queries
- How to Lookup tables in a data set using Microsoft Power BI
- Adding Text Formulas in Custom Columns and Conditional Formulas
- Power BI - Power Query List function
- Group by aggregation and find sum by unique column values in Power Query
- Power BI - Date Function in Power Query
- Power BI - Number Functions in Power Query
- Percentage, Percent of, Fill Up and Fill Down in Power Query
- Power BI - Add Prefix and Suffix to a Text in Power Query
- Power BI - Dynamically Merge Related Data Spilled Out in Different Columns
- Power BI - How to GroupBy All Rows in Power Query
- 3 Ways to Extract Text and Numbers from a string using Power Query
- Power BI - How to Reduce row data with Power Query
- Power BI - Get Top N records using List .Range function in Power Query
- Power BI - IF Error function in Power Query
- Power BI - Merge tables based on conditions
- Power Query Let and Nested Let statement
- Power BI - Create Functions in Power Query - Part 1
- Power BI - Create Functions in Power Query - Part 2

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- Power BI - How to Add Parameters in a Data Table using Power Query
- Power BI - Group By Maximum Value in a table using Power Query
- How to use Fill Up or Fill Down in your data based on conditions
- Power BI - How to Index columns in Power Query to get value of previous row
- Power BI - How to do conditional join or conditional merge using Power Query
- Power BI - How to use IF Function in Power Query
- Power BI - Dynamically change column names using Power Query
- How to create a delimited list in Power Query
- Power BI - Create Dynamic Start date & End date for data tables in Power Query
- Power BI - Match data based on Approximate or Close Match in Power Query
- Power BI - How to Combine tables with Different Columns
- Power BI - How to work with Nulls or Blank values in Power Query
- Power BI - How to create a Dynamic Calendar table in Power Query
- Power BI - How to Pivot data in Power Query
- Power BI - How to Filter data based on Multiple Criteria using Power Query
- How to Summarize and Group data using Power Query
- Power BI - Dynamically Rank with Ties in Power Query
- Power BI - Find TopN rows in each group using Power Query
- Power BI - For Each Group create a Row Number using Power Query
- Power BI - Retain recent records and remove duplicate records
- Power BI - How to perform VLOOKUP in Power Query
- Power BI - Extract Min date & Max date for column category dynamically
- How to use SUMIF between two table using Power Query
- Power BI - How to add Zeros before Numbers in Power Query
- Power BI - Complete Hidden Function List in Power Query
- An overview of Power BI Report View (Filters, Visualizations, Fields)
- An overview of Visualizations (Text, chart, Cards, Table, Slicer, Filters)
- Q&A feature in Microsoft Power BI
- Power BI - Import data and Create Relationships - Transform data using DAX
- DAX Lookup function - Add a calculated column & get details from a lookup field
- Create a DAX function with calculated column to find Product of two columns
- DAX function with calculated column to Divide & find difference of two columns
- DAX Aggregate Functions such as SUM & SUMX
- DAX Aggregate Functions such as MIN & MAX
- DAX Aggregate Functions AVERAGE
- Power BI Data Visualization - Create a Simple Dashboard
- DAX COUNT, COUNTA, COUNTAX, COUNTROWS, COUNTX, COUNTBLANK & DISTINCTCOUNT
- DAX Logical Functions - AND, OR, NOT, IF, NESTED IF, IFERROR, TRUE, False & SWIT
- DAX Text Functions such as COMBINEVALUES, SEARCH, FIND, EXACT and TRIM
- DAX Text Functions such as CONCATENATE, REPLACE, LEFT, RIGHT, MID and LEN
- DAX Text Functions such as SUBSTITUTE, FIXED and FORMAT
- DAX Date Functions such as MINUTE, HOUR, DAY, MONTH, QUARTER, Year
- DAX WEEKDAY, WEEKNUM, DATE, TODAY, NOW, CALENDAR and CALENDAR AUTO Functions
- DAX Advanced Date Functions - DATEDIFF, DATESBETWEEN and DATESINPERIOD
- DAX DATEADD Function
- DAX EDATE and EOMonth Functions
- Calculate MTD, QTD, YTD (Cumulative Total in Power BI)
- DAX ISBLANK, ISNUMBER, ISTEXT, ISNONTEXT, ISERROR, ISODD, ISEVEN & ISLOGICAL
- DAX Contains Function - Basic and Advanced Function
- MONTH, OPENINGBALANCEQUARTER & OPENINGBALANCEYEAR
- CLOSINGBALANCEMONTH, CLOSINGBALANCEQUARTER & CLOSINGBALANCEYEAR
- DAX such as Function MAX, MAXA, MAXX
- DAX Function such as FIRSTNONBLANKVALUE & LASTNONBLANKVALUE
- DAX Function such as FIRSTNONBLANK and LASTNONBLANK
- DAX Function GENERATESERIES
- DAX Function such as EXCEPT, All and ALLEXCEPT

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- DAX Function such as ALLSELECTED and SELECTEDVALUE
- DAX Function such as VALUE, ERROR, IN
- DAX Function such as UPPER and LOWER
- DAX Function TREATAS
- DAX Function HASONEVALUE
- DAX Function such as UNION and CROSSJOIN
- DAX Function PARENT and CHILD
- DAX Function PARALLELPERIOD
- DAX Function TopN
- DAX Function such as GROUPBY
- DAX Logical Function - Data Forecasting
- DAX Function such as HASONEFILTER vs HASONNEVALUE
- DAX Function such as ISFILTERED vs ISCROSSFILTERED
- Allocation Calculation using GroupBy, Current Group & Generate
- Measures vs Calculated Columns in Power BI
- How to fix dates formatted as Text in Power Query
- Calculate the SUM of Distinct Values using DAX in Power BI
- Dynamic Conditional Formatting for Values & Totals in Power BI
- Month & Quarter data comparison using DAX DATEADD & SAMEPERIODLASTYEAR
- How to Hide or Unhide Measures using a Slicer in Power BI
- How to calculate Cumulative Discount using DAX in Power BI
- How to Custom Sort data tables and charts using DAX in Power BI
- Create a Data Model with Targets and Goals using Dax in Power BI
- Limit Table or Matrix Visualization till user selected date using DAX in Power BI
- How to calculate Same Period Last Month using DAX in Power BI
- How to create an Index based on two or more columns in Power BI
- How to calculate MAX and MIN of a measure using DAX in Power BI
- Power BI - How to use DAX INDEX function in Power Query
- Create Dynamic Pricing model with DAX in Power BI
- How to create Virtual Tables in Power BI using DAX
- Power BI - Identify uptrend and downtrend in Sales based on a time period
- Calculate Quartiles using DAX PERCENTILEX.INC & DAX PERCENTILEX.EXC
- DAX Product and DAX PRODUCTX function in Power BI
- How to find the age based on Date of Birth in Power BI
- DAX ROUND, ROUNDUP, ROUNDDOWN Functions in Power BI
- DAX RAND and RANDBETWEEN Functions in Power BI
- DAX RANKX Function Static VS Dynamic Ranking in Power BI
- How to work with Multiple Fact Tables using DAX in Power BI
- Create Smart Narrative Summaries in Power BI
- How to create fiscal year or financial year date table in Power BI
- Create and use what-if parameters to Visualize Data in Power BI
- Create Dynamic Greetings using DAX in Power BI
- Calculate Variance (DAX VAR.S) & Standard Deviation (DAX STDEV.S)
- Calculate Mean, Median and Mode using DAX in Power BI
- How to use DAX PRICE Function in Power BI
- How to Forecast data in Power BI - Example 1
- How to Forecast data in Power BI - Example 2
- How to Forecast data in Power BI - Example 3
- Collapse & Expand measures & visuals dynamically in Power BI
- How to Group & display categories based on a criteria using DAX
- Learn different types of charts in Power bi - Part 1
- Learn different types of charts in Power bi - Part 2
- Learn different types of charts in Power bi - Part 3
- Learn different types of charts in Power bi - Part 4
- Learn different types of charts in Power bi - Part 5
- Create a Funnel chart in Power BI

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- Create a Scatter chart & Bubble chart in Power BI
- Create a Waterfall chart in Power BI
- Create Visuals using Power BI Q&A option
- How to create a Pareto chart in Power BI
- Create a dynamic Gauge chart in Power BI
- Create a Decomposition Tree visual in Power BI
- Create a Key Influencer visual in Power BI
- Better ways to display data in a Matrix visualization in Power BI
- How to create a Slope chart in Power BI
- How to use report themes in Power BI

3. Dashboard 1- Target vs Actual Comparison

- Data Modeling using DAX - Create Interactive Dashboard Visuals - 1
- Data Modeling using DAX - Create Interactive Dashboard Visuals - 2

4. Dashboard 2- Quality Analysis

- Data Modeling using DAX - Create Interactive Dashboard Visuals - 1
- Data Modeling using DAX - Create Interactive Dashboard Visuals - 2

5. Dashboard 3- Multipage Digital Marketing

- Data Modeling using DAX - Create Interactive Dashboard Visuals - 1
- Data Modeling using DAX - Create Interactive Dashboard Visuals - 2
- Data Modeling using DAX - Create Interactive Dashboard Visuals - 3

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List of Students for

Advance data analysis and Visualization using Power BI

The following students have been enrolled in Add on course.

| Roll Number | Name |
|-------------|---|
| 7701 | Gitish Kumar Gitish Kumar |
| 7703 | Tanvi Arora Tanvi Arora |
| 7704 | Anitya Sharma Anitya Sharma |
| 7712 | Kapil Kapil |
| 7713 | Karan Sharma Karan Sharma |
| 7719 | Agam Mehra Agam Mehra |
| 7722 | Sunil Sunil |
| 7727 | Nishan Singh Nishan Singh |

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Register of Daily Attendance of Date Analysis using Power 102

AMRITSAR.

Class for the month of Jan March

| Roll No. | Name of Scholar | 16/01 | 17/01 | 18/01 | 19/01 | 20/01 | 21/01 | 23/01 | 24/01 | 25/01 | 27/01 | 28/01 | 30/01 | 31/01 | 1/02 | 4/02 | 5/02 |
|----------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|
| 7701 | Gitesh kumar | P | P | P | A | P | P | P | P | P | P | A | P | P | P | P | P |
| 7703 | Tanvi Arora | P | A | P | P | P | P | A | P | P | A | P | P | P | A | P | P |
| 7704 | Amitya Sharma | A | P | P | P | P | P | P | A | P | P | P | P | A | P | P | P |
| 7712 | Kapali | P | A | P | P | P | P | P | A | P | P | P | P | A | P | P | P |
| 7713 | Karan Sharma | P | A | P | P | P | P | P | A | P | P | P | P | P | P | P | P |
| 7719 | Agam | P | P | P | P | P | A | A | P | P | P | P | P | P | P | P | P |
| 7722 | Sunil | A | P | P | A | P | P | P | P | P | P | P | P | P | P | P | P |
| 7727 | Nishan Singh | P | A | P | A | P | P | P | P | P | P | P | P | P | P | P | P |

| 6/02 | 7/02 | 8/02 | 9/02 | 10/02 | 11/02 | 12/02 | 14/02 | 15/02 | 16/02 | 18/02 | 20/02 | 21/02 | 22/02 | 24/02 | No. of Attendances for the month | No. of Attendances brought forward | Total |
|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------------------|------------------------------------|-------|
| P | P | P | P | P | P | P | P | A | P | P | P | P | P | P | | | |
| P | A | P | P | P | A | P | P | A | P | P | P | P | P | P | | | |
| P | P | A | P | P | P | P | A | P | P | P | P | P | P | P | | | |
| A | P | P | P | P | P | P | A | P | P | P | P | P | P | P | | | |
| P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | | | |
| P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | | | |
| P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | | | |

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Register of Daily Attendance of _____

Class for the month of Jan March

| Roll No. | Name of Scholar | 25/02 | 27/02 | 28/02 | 01/03 | 2/03 | 3/3 | 4/3 | 6/3 | 11/3 | 13/3 | 14/3 | 15/3 | 17/3 | 18/3 |
|----------|-----------------|-------|-------|-------|-------|------|-----|-----|-----|------|------|------|------|------|------|
| 7701 | Gurtej Kumar | P | P | P | A | P | P | P | P | P | A | P | P | P | P |
| 7703 | Tanvi Aurora | P | A | P | P | P | P | P | P | P | P | P | A | P | P |
| 7704 | Amitya Sharma | P | P | P | P | A | P | P | A | P | P | P | P | A | P |
| 7712 | Hopil | A | A | P | P | P | P | P | P | P | P | A | P | P | P |
| 7713 | Karan Sharma | P | P | P | P | P | P | P | P | P | P | P | P | A | P |
| 7719 | Agam | P | A | P | P | P | P | P | P | P | P | P | P | P | A |
| 7722 | Sunil | P | A | P | P | P | P | P | P | P | P | P | P | P | P |
| 7727 | Nishan Singh | P | P | P | P | P | P | P | P | A | P | A | P | P | P |

| |
|----------------|
| - Gurtej Kumar |
| - Tanvi Aurora |
| - Amitya |
| - Hopil |
| - Karan |
| - Agam |
| - Sunil |
| - Nishan Singh |

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TEST OF ADVANCE DATA ANALYSIS AND VISUALISATION
USING POWER BI
(Add on course)

allowed - (Hour)

MM: 60

1. What is Power BI?
 - a. A business analytics tool
 - b. A database management system
 - c. A project management software.
 - d. A graphic design tool
2. Which of the following is a data visualization feature in Power BI?
 - a. Chart.
 - b. Word processing
 - c. Video editing
 - d. Animation
3. Which programming language is used to create custom visuals in Power BI?
 - a. Python.
 - b. C#
 - c. Java
 - d. R
4. Which of the following is NOT a data source that can be used in Power BI?
 - a. Excel spreadsheets
 - b. JSON files
 - c. Oracle databases
 - d. Adobe Photoshop files
5. Which of the following is a data transformation feature in Power BI?
 - a. Data modelling
 - b. Data visualization
 - c. Data exploration
 - d. Data cleansing
6. Which of the following is a visualization option in Power BI?
 - a. Pivot table
 - b. Histogram
 - c. Bubble chart
 - d. All of the above
7. What is a dashboard in Power BI?
 - a. A visual representation of data that provides an at-a-glance view of key metrics
 - b. A report that contains detailed information about a specific topic or area
 - c. A data source that provides access to raw data for analysis
 - d. A collaboration tool that allows users to share and work on data together
8. What is a measure in Power BI?
 - a. A calculation based on data in a dataset
 - b. A visualization option for displaying data
 - c. A filter that restricts the amount of data displayed in a report
 - d. A connection to a data source
9. Which of the following is a way to filter data in Power BI?
 - a. Slicer
 - b. Histogram
 - c. Scatter plot
 - d. Line chart
10. What is the purpose of Power Query in Power BI?
 - a. To import, transform, and combine data from various sources
 - b. To create custom visuals for data visualization
 - c. To analyze and visualize data
 - d. To create and manage data models
11. What is the purpose of Power Pivot in Power BI?
 - a. To import and transform data from various sources
 - b. To create and manage data models
 - c. To analyze and visualize data
 - d. To share reports and dashboards with other users
12. Which of the following is a way to create a new measure in Power BI?
 - a. Using DAX formula language
 - b. Using SQL query language
 - c. Using Python programming language
 - d. Using JavaScript programming language
13. What is the purpose of Power View in Power BI?
 - a. To create and share reports and dashboards
 - b. To import and transform data from various sources

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- c. To analyze and visualize data
- d. To create and manage data models

14. Which of the following is a way to share a report or dashboard in Power BI?

- a. Publish to the Power BI service
- b. Export to a PDF file
- c. Share via email
- d. All of the above

15. What is the purpose of the Power BI service?

- a. To create and manage data models
- b. To import and transform data from various sources
- c. To analyze and visualize data
- d. To share reports and dashboards with other users

16. Which of the following is a way to connect to a data source in Power BI?

- a. Using a web browser
- b. Using a command-line interface
- c. Using an API
- d. All of the above

17. What is the purpose of the Query Editor in Power BI?

- a. To create and manage data models
- b. To import and transform data from various sources
- c. To analyze and visualize data
- d. To share reports and dashboards with other users

18. Which of the following is a way to filter data in Power BI?

- a. Using a slicer
- b. Using a chart
- c. Using a table
- d. All of the above

19. Which of the following is a way to create a hierarchy in Power BI?

- a. Using the Fields pane
- b. Using the Filters pane
- c. Using the Visualizations pane
- d. Using the Pages pane

20. Which of the following is a way to create a calculated column in Power BI?

- a. Using DAX formula language
- b. Using SQL query language
- c. Using Python programming language
- d. Using JavaScript programming language

21. What is the purpose of the Q&A feature in Power BI?

- a. To allow users to ask natural language questions and get answers from data
- b. To create and share reports and dashboards
- c. To analyze and visualize data
- d. To create and manage data models

22. Which of the following is a way to create a report in Power BI?

- a. Using the Power BI desktop application
- b. Using the Power BI service
- c. Using a mobile app
- d. All of the above

23. What is the purpose of the Power BI mobile app?

- a. To create and share reports and dashboards
- b. To analyze and visualize data
- c. To view and interact with reports and dashboards on mobile devices
- d. To create and manage data models

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24. Which of the following is a way to create a dashboard in Power BI?

- a. Using the Power BI desktop application
- b. Using the Power BI service
- c. Using a mobile app
- d. All of the above

25. What is the purpose of the Power BI API?

- a. To allow integration with other applications and services
- b. To analyze and visualize data
- c. To create and share reports and dashboards
- d. To create and manage data models

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