

# Business Intelligence tools

**Lecturer: Maria Chiara Debernardi**

## Language

English

## Course description and objectives

To manage a company, of any size, it is necessary to make decisions based on reliable information. Often in the company the data are badly organized, the data sources are heterogeneous, and it is difficult to extract useful information for the decision-making process. Business Intelligence aims to organize company data in a Data Warehouse (through the source integration and data cleaning processes), to analyze them and subsequently share the insights in an automated way.

The course aims both to provide an overview of the approaches used to introduce and manage a Business Intelligence system, and to teach how to share the information it produces inside the company, with a focus on data visualization.

Upon successful completion of this course, the students will be able to:

- understand the global architecture of a Business Intelligence system
- use a BI Self Service tool widely present in nowadays companies
- understand the logics and be able to produce meaningful BI reports for top and middle management

## Audience

The course is open to all Bocconi's Master of Science students. In particular it is targeted at:

- those who want to learn the fundamental aspects of Business Intelligence using a practical approach
- those who want to use a BI Self Service tool for their data analysis and reporting

The course is part of the Enhancing Experience activities that grant two credits exclusively to students attending at least 75% of lessons and passing the exam during the final lesson.

## Prerequisites

No prior coding experience, nor knowledge of Power BI or Power Query is assumed. A good knowledge of Microsoft Excel (i.e., pivot table, conditional formatting, IF function) is advantageous.

## Duration

20 hours

## Teaching mode

This course will take place exclusively in **synchronous mode** in the **IT classroom**. Online mode will not be provided.

The final test of the course will take place during the last day of class.

## Calendar

Lecture	Date	Time	Room
1	Thu 08/02/2024	18.15 - 19.45	InfoAS05
2	Fri 09/02/2024	14.45 - 16.15	InfoAS05
3	Mon 12/02/2024	18.15 - 19.45	InfoAS05
4	Thu 15/02/2024	18.15 - 19.45	InfoAS05
5	Mon 19/02/2024	18.15 - 19.45	InfoAS05
6	Thu 22/02/2024	18.15 - 19.45	InfoAS05
7	Mon 26/02/2024	18.15 - 19.45	InfoAS05
8	Thu 29/02/2024	18.15 - 19.45	InfoAS05
9	Mon 04/03/2024	18.15 - 19.45	InfoU01
10	Thu 07/03/2024	18.15 - 19.45	InfoAS04/05

## Syllabus of the course

Lecture	Topics
1	<p><b>Introduction to BI</b></p> <ul style="list-style-type: none"> <li>- What it is and why we need it</li> <li>- The elements of a BI system</li> <li>- Overview of Power BI Desktop</li> </ul> <p><i>Exercises</i></p>
2	<p><b>The Data Warehouse</b></p> <ul style="list-style-type: none"> <li>- What it is</li> <li>- From the DWH to the Data Lake</li> <li>- Getting data inside Power BI from diverse sources</li> <li>- The ETL phase</li> </ul> <p><i>Exercises</i></p>
3	<p><b>The data model</b></p> <ul style="list-style-type: none"> <li>- Fact table and dimension tables</li> <li>- The relationships between the tables</li> <li>- Merging and appending</li> </ul> <p><i>Exercises</i></p>
4	<p><b>Building a dynamic report</b></p> <ul style="list-style-type: none"> <li>- Data visualization: standard graphs and tables</li> <li>- New variables: hierarchies and groups</li> <li>- Slicers and filters</li> </ul> <p><i>Exercises</i></p>
5	<p><b>Introduction to DAX language</b></p> <ul style="list-style-type: none"> <li>- Data Analysis eXpression: how different from Excel?</li> <li>- New variables: calculated columns and measures</li> <li>- Working with time formulas</li> <li>- Quick measures</li> </ul> <p><i>Exercises</i></p>
6	<p><b>Expanding Power BI capabilities</b></p> <ul style="list-style-type: none"> <li>- New visuals from internet</li> <li>- Look for written scripts on web</li> <li>- Using R and Python inside Power BI (<i>only hints</i>)</li> <li>- The Q&amp;A feature: ask questions with natural language</li> </ul> <p><i>Exercises</i></p>

Lecture	Topics
7	<p><b>Improving the reports</b></p> <ul style="list-style-type: none"> <li>- Playing with maps: geo-maps, treemaps, heatmaps</li> <li>- Conditional formatting</li> <li>- Connecting pages in a report: buttons and drill trough</li> <li>- Using themes and templates</li> </ul> <p><i>Exercises</i></p>
8	<p><b>BI reports and more</b></p> <ul style="list-style-type: none"> <li>- Publishing and sharing results with BI Service</li> <li>- Not only printable reports</li> <li>- Effective reports and dashboards</li> </ul> <p><i>Exercises</i></p>
9	<p><b>The BI tools market</b></p> <ul style="list-style-type: none"> <li>- Microsoft BI ecosystem</li> <li>- Is there anything else than MS Power BI?</li> <li>- The vendors in the BI tools market</li> <li>- Evolutionary trends in the sector</li> </ul> <p><i>Exercises</i></p>
10	<p><b>Q&amp;A and final test</b></p> <ul style="list-style-type: none"> <li>- Recap exercise</li> <li>- Finding help and assistance</li> <li>- Last doubts and clarifications</li> <li>- <b>Exam</b> (<u>in presence!</u>)</li> </ul>

## Software used

### [Microsoft Power BI Desktop](#)

You can download it, using your Bocconi account, here: [microsoft/download](#)

It was decided to use this Personal BI application because it allows unlimited and free use with Bocconi student account, unlike other BI tools.

Please, note that **Power BI Desktop does not exist for Mac!** If you want to install it on your Mac, there are ways to install Windows applications on Mac machines. To practice independently at home, Bocconi will supply Windows Virtual Machine to Mac-user students.

## Suggested bibliography

The reference bibliography for the exam is based only on slides and commented exercises provided by the Lecturer.

Additional bibliography and free materials on the web will be provided during the course.

## Available seats

This activity is limited to **110** participants and reserved for **students of the Master of Science Programs**.

Registrations cannot be carried out once this number has been reached or after the closing of the registration period.

## Spreadsheet paths

This course can be intended as part of a wider path:

