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 for students of the Master of Science Programs. Upon successful completion of the course (attendance of at least 75% of the scheduled hours and passing the final exam), students will get 2 credits and an Open Badge, sharable across the web (LinkedIn) or personal CV.

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	Mon 03/02/2025	18.15 - 19.45	InfoAS04
2	Tue 04/02/2025	18.15 - 19.45	InfoAS04
3	Mon 10/02/2025	18.15 - 19.45	InfoAS04
4	Tue 11/02/2025	18.15 - 19.45	InfoAS04
5	Mon 17/02/2025	18.15 - 19.45	InfoAS04
6	Tue 18/02/2025	18.15 - 19.45	InfoAS04
7	Mon 24/02/2025	18.15 - 19.45	InfoAS04
8	Tue 25/02/2025	18.15 - 19.45	InfoAS04
9	Mon 03/03/2025	18.15 - 19.45	InfoAS04
10	Tue 04/03/2025	18.15 - 19.45	InfoAS04/05

Syllabus of the course

Lecture	Topics
1	**Introduction to BI** - What it is and why we need it - The elements of a BI system - Overview of Power BI Desktop *Exercises*

Lecture	Topics
2	**The Data Warehouse** - What it is - From the DWH to the Data Lake - The ETL phase - Getting data inside Power BI from diverse sources *Exercises*
3	**The data model** - Fact table and dimension tables - The relationships between the tables - PBI data model - Merging and appending *Exercises*
4	**Building a dynamic report** - Data visualization: standard graphs and tables - New variables: hierarchies and groups - Slicers and filters - Best practices *Exercises*
5	**Introduction to DAX language** - Data Analysis eXpression: how different is it from Excel? - New variables: calculated columns and measures - Quick measures - Working with time formulas *Exercises*
6	**Expanding Power BI capabilities** - New visuals from the web - Looking for written scripts - Using R and Python inside Power BI (*hints only*) - The Q&A feature: ask questions with natural language *Exercises*
7	**Improving the reports** - Playing with maps: geo-maps, treemaps, heatmaps - Conditional formatting - Connecting pages in a report: buttons and drill trough - Using themes and templates *Exercises*

Lecture	Topics
8	**BI reports and more**
	- Publishing and sharing results with BI Service
	- Not only printable reports: mobile and dashboards
	- Microsoft BI ecosystem for personal BI
	Exercises
9	**The BI tools market**
	- Evolutionary trends in the sector
	- Is there anything else than MS Power BI?
	- The vendors in the BI tools market
	- Finding help and assistance
	Exercises
10	**Q&A and final test**
	- Recap exercise
	- Last doubts and clarifications
	- **Exam** (<u>in presence</u>!)

Software used

Microsoft Power BI Desktop
You can download it using your Bocconi account here: microsoft/download

We will 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!** To practice independently at home, Bocconi will supply a Windows Virtual Machine with Power BI installed to all the enrolled students (installation specifications will be shared in Blackboard).

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**.

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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:

Basic skills	ICDL / MOS Associate →	Certifications
Advanced skills	Computer Science / ICDL Advanced / MOS Expert →	Curricular course and/or certifications
Specialized skills	Python for Excel — Analisi dei dati con Excel — Data analysis and visualization with Power BI — Applicazioni finanziarie con Excel	
Professional skills	Reporting e dashboard con Excel — Big Data and predictive analytics — Business Intelligence Tools — Data analysis & modeling con Power Query	

Path #1
(Coding)

Path #2
(Data analysis and strategic reporting)

Path #3
(Finance)