<div align="center">**SCHEMA DEL PROGRAMMA DI INSEGNAMENTO IN LINGUA INGLESE**</div>

A.A. 2021/2022

PREREQUISITES

Basic knowledge about databases and Data Analytics

DEVELOPMENT OF THE COURSE

The course includes both practical and theoretical lessons.

Knowledge and understanding

The aim of the course is to study the main tools for Data Analytics and Business Intelligence according to Gartner's Magic Quadrant, which are Qlik, Tableau and Power BI. For each of them, we will study their ability to support the end user during the loading, extraction, manipulation and analysis of data. These tools are mainly studied through exercises on data from different contexts. In this course, an overview of time series analysis is also included, along with a study of an approach with both the previous tools and Python.

Capacity to apply knowledge and understanding

At the end of the course, the student will be able to work in team to create Data Analytics projects. Specifically, the student will know which solution to use depending on the context and how to build an effective dashboard for the end user. The student will be able to interpret data and present their findings in order to support their discussion.

Transversal skills

The course is based on group projects, which fosters the ability to work with other colleagues, manage conflict, and communicate effectively. Data from heterogeneous contexts will be presented throughout the course, which is an opportunity to engage with challenging scenarios.

PROGRAM

(1) Introduction to Data Analytics and Business Intelligence tools.

(2) Data Storytelling and Dashboard Design.

(3) Qlik Sense. Study of the Qlik Sense Cloud platform. Creation of a collaborative environment. Loading data via table mode, bubble mode, and script editor. Manipulation of data through Qlik

Sense interface and data loading script. Create measurements and dimensions. Create visualizations, dashboards, and stories.

(4) Tableau Desktop and Tableau Prep. Load and manipulate data in Tableau Desktop. Marks, Cards, Show Me. Create Worksheets, Dashboards, and Stories. Create measures and dimensions. Trend analysis and evaluation. Time series forecasting and accuracy metrics calculation. Data loading and manipulation using Tableau Prep.

(5) Power BI Desktop. Analysis of the three components: Power Pivot for data modeling, Power Query for data extraction and manipulation, Power View for data visualization. Data Analysis eXpressions (DAX) for creating measures and dimensions. Study of a solution to integrate temporal analysis. Integration with Python, R and Marketplace. Queries with M, Parameters, Functions.

(6) Time Series Analysis. Study of the time series characteristics. Algorithms for time series prediction and evaluation of prediction accuracy.

Learning Evaluation Methods Examination

The exam involves Data Analytics group projects and an oral test in which these projects will be discussed. The projects will require the use of Qlik Sense, Tableau Desktop and Power BI Desktop on different real-world datasets chosen by the students.

Learning Evaluation Criteria

Through the developed projects, the student must show the comprehension of the fundamental course concepts and the required skills on the main Data Analytics and Business Intelligence solutions. The highest evaluation is given to students who demonstrate excellent knowledge of the tools, excellent ability to interpret and present the results obtained from the analyses.

Learning Measurement Criteria

The student learning will be measured with a maximum of 30 points, possibly cum laude.

Final Mark Allocation criteria

The evaluation depends mainly on the quality of the projects and the contribution that the student gave to them. During the oral test, the quality of the projects presentation and the knowledge of the course topics are evaluated.

RECOMMENDED READING

Slides provided by the professor.

- M. Mahler, J. I. Vitantonio, "Mastering Qlik Sense: Expert techniques on self-service data analytics to create enterprise ready Business Intelligence solutions". Packt, 2018.
- D. G. Murray, "Tableau Your Data!: Fast and Easy Visual Analysis With Tableau Software". Wiley, 2015.
- D. Clark, "Beginning Power BI: A Practical Guide to Self-Service Data Analytics". Apress, 2017.
- C. N. Knaflic "Storytelling With Data: A Data Visualization Guide For Business Professionals". Wiley, 2015.
- R. H. Shumway, D. S. Stoffer, "Time Series Analysis and Its Applications: With R Examples". Springer, 2010.