CORSO DI LAUREA: Corso di Laurea Magistrale in Tecnologie e Linguaggi della Comunicazione - LM-59 (Technologies, Codes and Communications)

INSEGNAMENTO: Data Analysis & Visualization

CFU: 6

EVENTUALE ARTICOLAZIONE IN MODULI: 3 modules – Data engineering, Data visualization, Data story telling

ANNO DI CORSO: secondo

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RISULTATI DI APPRENDIMENTO DELL'INSEGNAMENTO:

By the course, students will be able to manage data from the gathering to the visualization, passing by the pre-processing and the middle-analysis.

In detail, the fundamental themes are:
- Data gathering
- Data pre-processing and engineering
- Data analysis
- Data visualization
- Misleading visualizations
- Storytelling with data

The analysis will be developed in Microsoft Power BI.

Active participation during the course and individual study will allow the student to achieve the following learning outcomes:
1.   **Knowledge and understanding**: students will be able to gather data, to organize them before the analysis, the main analysis to synthesize them and, finally, to properly visualize them by graphs to support a telling with them.
2.   **Applied knowledge and understanding**: the course is mainly applied to real data sets. In details, the course is structured by case studies by means of the student may learn the proper technicalities to detect issues and the ability to visualize data by means of Microsoft Power BI.
3.   **Making judgments:** Being able to analyse data by the course in an independent and critical way. Knowing how to evaluate tools and methods autonomously and critically for the data visualization.
4.   **Communication skills:** Being able to properly communicate data without misleading; acquiring the ability for discussion by choosing the best tool to telling a data story.

5. **Learning skills**: Acquiring the ability to explore and explain data and to visualize them.

PROGRAMMA DETTAGLIATO

- **I. Data Engineering (Microsoft)**
  - Introduction to data and data sources
  - Data architectures and reference patterns
  - Pre-processing techniques to transform/enrich data
  - Deep dive on the visualization part and powerBI
  - Practices
- **II. Data Visualization with Microsoft Power BI**
  - Tables and cross tables
  - Charts
  - Plots
  - Graphs for distribution
  - Map graphs
  - Practices
- **III. Storytelling with data**
  - The importance of context and of the audience
  - Cluttering and strategies for visualizing data
  - Basics of narrative
  - Case studies

EVENTUALI PROPEDEUTICITA' CONSIGLIATE (Preliminary knowledge)

None

MODALITA' DI SVOLGIMENTO DELL'ESAME (Final exam)

The exam is written/practice, based on a project work developed during the course. The project consists in a report on data describing a social and contemporary phenomenon with the aim to evaluate the acquired capability during the course. The teacher may also ask questions not directly related to the case study dealt with. For non-attending students, elaborations on pc will be required during the exam.

CRITERI DI VALUTAZIONE DELL'INSEGNAMENTO

With respect to knowledge, it will be evaluated the students' capacity to analyse data and to proper select the data visualization tool.
With respect to the applied knowledge the student will be evaluated based on his/her ability to manage the software.
With respect to the making judgment the student will be evaluated in the basis of his/her sensitivity to comment data. About the communication and learning skills the student will be evaluated on the capability to select the proper tool for setting the data story telling.

CRITERI DI ATTRIBUIZIONE DEL VOTO FINALE

Maximum score is given for students perfectly comfortable with the tool of analysis and able to collect, pre-process, analyse and visualize data but also to be able to proper comment them.

MATERIALE DIDATTICO

Teaching materials is based on slides and case studies elaborated by the teachers. Moreover, textbooks are listed below:

- https://download.microsoft.com/download/0/8/1/0816F8D1-D1A5-4F60-9AF5-BC91E18D6D64/Microsoft_Press_ebook_Introducing_Power_BI_PDF_mobile.pdf

- Arnold, Jeremey. Learning Microsoft Power BI: Transforming Data Into Insights. Cina, O'Reilly Media, 2022.

- Data Visualization and Analysis with Power BI (DA-100) (microsoft.com)

- Knaflic, C. N. (2015). Storytelling with Data: A Data Visualization Guide for Business Professionals. Germania: Wiley.

CONSIGLI DEL DOCENTE