

## **B302EN Data analysis**

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5 ECTS

### **Objectives – Course description**

This course is an introduction to the knowledge and practical skills needed to develop a solid foundation in data visualization and to design and develop stories based on these data (Data Storytelling)

### **Learning content**

The course is divided into modules:

- Module 0: Introduction to Analytics
- Module 1: Data World
- Module 2: Data Actors
- Module 3: Data Collection
- Module 4: Data Cleaning
- Module 5: Data Analysis
- Module 6: Data Interpretation
- Module 7: Data visualization
- Module 8: Data Storytelling
- Module 9: Dashboards

### **Learning outcome**

At the end of the course, the student will demonstrate :

Module 0:

- know and understand the terms related to Analytics.
- be able to identify the main types of Analytics, define and describe them
- be able to describe and explain the Analytics process

Module 1:

- knows, understands and can define terms related to the world of data.
- can identify and explain big data
- can categorise, explain and organise data
- is able to describe and explain data governance and data management
- is able to identify, understand and apply the various data regulations
- be able to discuss and critique the concept of data ethics

#### Module 2:

- be able to identify, name and describe the different actors in the data world
- is able to state and explain the flow of data

#### Module 3:

- knows, understands and can define terms related to data collection
- is able to identify, explain and apply the data collection process
- is able to design and produce a data collection
- be able to distinguish between different data storage systems and choose the appropriate one
- be able to identify data sources and categorise data in these different sources

#### Module 4:

- knows, understands and can define data cleaning terms
- is able to clean, prepare and transform a data file for use in analysis

#### Module 5:

- knows, understands and can define terms related to data analysis
- can identify the 4 types of analysis and describe them
- is able to select and apply analytical techniques

#### Module 6:

- knows, understands and can define terms related to data interpretation
- is able to name, define and explain by example the main biases and pitfalls

#### Module 7:

- knows, understands and can define terms related to data visualisation
- is able to plan and design a visualisation
- is able to select, differentiate and produce a visualisation according to a given objective
- is able to use a visualisation tool
- be able to name, describe, distinguish, select and create visualisations based on the principles of visualisation

- is able to recommend and create an audience-based visualisation

#### Module 8:

- knows, understands and can define data storytelling terms
- is able to describe and explain the basic elements of a story
- is able to design, structure and present a story

- is able to establish the relationship between visualisation and storytelling and to delimit the scope of each

- be able to analyse the structure of a story

Module 9:

- knows, understands and can define data dashboard terms

- is able to identify and describe the different elements of a dashboard

- is able to design and produce a dashboard

### **Methodology**

By course we mean: face-to-face, asynchronous (or synchronous) distance learning and asynchronous personal work.

The course consists of: lectures, exercises and case studies, oral presentations by students, feedback and coaching.

Reading articles, video clips, exercises and learning by doing will complement the plenary lecture.

Learning outcomes At the end of the course, the student will demonstrate :

Module 0:

- Know and understand the terms related to Analytics.

- be able to identify the main types of Analytics, define and describe them

- be able to describe and explain the Analytics process

Module 1:

- knows, understands and can define terms related to the world of data.

- can identify and explain big data

- can categorise, explain and organise data

- is able to describe and explain data governance and data management

- is able to identify, understand and apply the various data regulations

- be able to discuss and critique the concept of data ethics

Module 2:

- be able to identify, name and describe the different actors in the data world

- is able to state and explain the flow of data

Module 3:

- knows, understands and can define terms related to data collection

- is able to identify, explain and apply the data collection process

- is able to design and produce a data collection
- be able to distinguish between different data storage systems and choose the appropriate one
- be able to identify data sources and categorise data in these different sources

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- knows, understands and can define data cleaning terms
- is able to clean, prepare and transform a data file for use in analysis

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- knows, understands and can define terms related to data analysis
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- knows, understands and can define terms related to data interpretation
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- is able to plan and design a visualisation
- is able to select, differentiate and produce a visualisation according to a given objective
- is able to use a visualisation tool
- be able to name, describe, distinguish, select and create visualisations based on the principles of visualisation
- is able to recommend and create an audience-based visualisation

#### Module 8:

- knows, understands and can define data storytelling terms
- is able to describe and explain the basic elements of a story
- is able to design, structure and present a story
- is able to establish the relationship between visualisation and storytelling and to delimit the scope of each
- be able to analyse the structure of a story

#### Module 9:

- knows, understands and can define data dashboard terms
- is able to identify and describe the different elements of a dashboard

- is able to design and produce a dashboard

Essential course materials, without which learning is not possible, without which the student cannot follow the course effectively and which are essential for the preparation of the assessment (e.g. exercises, practical work, etc.).

Learning material

Materials available on Moodle. (course slides and exercise files)

Student's personal notes

A computer is essential in class.

### **Evaluation**

30% End of learning assessment outside the first term Work

70% End of first semester assessment Online assessment

For the work, penalties will be applied in case of late submission.

The following schedule will apply:

Less than 1 day late, -20%.

Between 1 and 2 days late, -35%.

Between 2 and 3 days late, -50%.

More than 3 days late, 0 at work