

Introduction to Data Analysis and Visualization

Study programme	YUFE Joint Bachelor in Urban Sustainability Studies
Academic year	2026/2027
Curriculum component	Minor: Urban Ecology
Year and semester	2nd year, 2nd semester
Course type	Elective
ECTS credits	5
Contact hours (L+S+E)	30+30+0
Language of instruction	English

Contact

Course coordinator

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Prerequisites

No requirements.

Course objectives

The course aims to introduce students to the fundamental concepts and methods of data analysis and visualization using accessible, low-code and AI- supported tools. Students will learn how to collect, organize, clean, explore, visualize, and interpret data, with particular attention to datasets and problems related to urban sustainability. The course also aims to develop students' ability to communicate data-driven findings clearly and critically, while considering ethical issues, inclusiveness, and potential bias in data and its representation

Learning outcomes

- Describe fundamental concepts and methods of data collection, organization, analysis, and visualization.
- Use spreadsheet-based, visualization, and AI-supported tools to clean, explore, and analyse datasets.
- Create and interpret appropriate data visualizations to identify and communicate patterns, trends, and relationships in data. Apply ethical principles to data analysis and visualization and communicate data-driven findings clearly, with attention to inclusiveness and potential bias.

Course content

- Introduction to data analysis and visualization. Data types, data sources and data collection. Data organization and preparation. Data cleaning and data
- quality. Descriptive statistics and exploratory data analysis. Principles of effective data visualization. Choosing appropriate visualization types. Visualizing
- distributions, comparisons, relationships and trends. Introduction to dashboards and interactive visualizations. AI-supported approaches to data analysis and

- visualization. Interpretation and communication of data-driven findings. Ethical issues, bias, inclusiveness and responsible data visualization. Applications of
- data analysis and visualization to urban sustainability problems and datasets.

Teaching and learning methods

lectures and seminars and workshops.

Assessment and grading

Student achievement is assessed through two mid-term exams and a final project. Each mid-term exam accounts for 30% of the final grade. The final project, including the analysis and visualization of a selected dataset and the presentation and interpretation of the results, accounts for 40% of the final grade. There is no separate final written exam. Assessment activity Points / % ILOs assessed Mid-term exam 1 30 ILO 1, ILO 2 Mid-term exam 2 30 ILO 2, ILO 3 Final project and presentation 40 ILO 1, ILO 2, ILO 3, ILO 4 Total 100 Students can earn a maximum of 100 points during the course. The first mid-term exam accounts for 30 points, the second mid-term exam for 30 points, and the final project and presentation for 40 points. To pass the course, students must earn at least 50 points in total. There is no separate final exam.

Grading scale

Grade	Percentage
5 (A)	90-100%
4 (B)	75-89.9%
3 (C)	60-74.9%
2 (D)	50-59.9%
1 (F)	0-49.9%