

# Contents

<b>Syllabus</b>	<b>1</b>
Data Visualization Module . . . . .	1
Lecture 1: Introduction to the course . . . . .	1
Lecture 2: Nested model . . . . .	1
Lecture 3: Visual encoding . . . . .	1
Lecture 4: Common charts . . . . .	1
Lecture 5: Static plotting in Python . . . . .	2
Lecture 6: Geographical plotting in Python . . . . .	2
Lecture 7: Visualize static networks in Python . . . . .	2
Lecture 8: Interactive Views . . . . .	2

## Syllabus

### Data Visualization Module

#### Lecture 1: Introduction to the course

Introduction to the Data Visualization module; textbooks; definitions and terminology; visual perception; pre-attentive attributes; Gestalt principles

[21/02/2024] [[slides](#)]

reading material: Chapter 1 ([Munzner 2014](#))

---

#### Lecture 2: Nested model

Analysis framework: nested model; data abstraction (what); common types of data; task abstraction (why)

[28/02/2024] [[slides](#)]

reading material: Chapter 2,3,4 ([Munzner 2014](#))

resources: Tamara Munzner, Visualization Analysis & Design class, 2021 [[video Chapter 2](#)]; [[video Chapter 3](#)]; [[video Chapter 4](#)]

---

#### Lecture 3: Visual encoding

Visual encoding; marks and channels; color in visualization; color palette; color deficiency; color spaces

[06/03/2024] [[slides](#)]

reading material: Chapter 5: Marks and Channels, Chapter 10: Map Color and Other Channels ([Munzner 2014](#))

resources: [VizPalette](#) resources: Tamara Munzner, Visualization Analysis & Design class, 2021 [[video Chapter 5-a](#)]; [[video Chapter 5-b](#)] [[video Chapter 10-a](#)]; [[video Chapter 10-b](#)]; [[video Chapter 10-c](#)]

---

#### Lecture 4: Common charts

Visualize tabular data; common visual idioms and charts; scatterplot; (stacked) bar chart; streamgraph; dot/line chart; Gantt chart; slopegraph; heatmap; radial bar chart; star plot; radar plot; pie chart; coxcomb chart; parallel coordinates; dual-axis charts; Visual vocabulary

[13/03/2024] [[slides](#)]

**reading material:** Chapter 7: Arrange Tables ([Munzner 2014](#))

**resources:** [Visual Vocabulary](#) **resources:** Tamara Munzner, Visualization Analysis & Design class, 2021 [[video Chapter 7-a](#)]; [[video Chapter 7-b](#)]

### Lecture 5: Static plotting in Python

Static plotting in Python; basic plotting in matplotlib; style and personalize plots; towards more advanced plotting in matplotlib; introduction to seaborn; rules of thumb in data visualization

[20/03/2024] [[slides-a](#)] [[slides-b](#)]

**resources:**

- matplotlib: [Examples](#) | [Tutorial](#) | [User guide](#)
- seaborn: [Gallery](#) | [Tutorial](#) | [API](#)

### Lecture 6: Geographical plotting in Python

The importance of spatial thinking; exploring spatial phenomena visually; how to create informative thematic cartography; main thematic cartography types and rules of thumbs; pitfalls of using spatial data in computational disciplines

[27/03/2024] [[slides](#)]

### Lecture 7: Visualize static networks in Python

Visualize static networks using NetworkX and Matplotlib

[03/04/2024]

### Lecture 8: Interactive Views

How to handle complexity; manipulate: change, select, navigate; facet: juxtapose, partition, superimpose; reduce: filter, aggregate, embed

[10/04/2024] [[slides](#)]

**resources:** Tamara Munzner, Visualization Analysis & Design class, 2021 [[video Chapter 11-12a](#)] [[video Chapter 11-12b](#)] [[video Chapter 13](#)] [[video Chapter 14](#)]

Munzner, T. 2014. *Visualization Analysis and Design*. AK Peters Visualization Series. CRC Press. <https://books.google.it/books?id=dznSBQAAQBAJ>.