

# Outline: Matplotlib

## Seminar on Selected Tools Week 3 — Matplotlib

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## 1 Introduction

## 2 Examples

# Section 1

## Introduction

# Basic Usage

- 1 Module `matplotlib.pyplot`
- 2 Function `pyplot.plot()`, `pyplot.show()`
- 3 Arguments control plot styles, like `cm`, `title`, `xlim`
- 4 Other functions: `fill()`, `scatter()`, `contour()`
- 5 Auxiliary plot components: `legend()`, `colorbar()`, `text()`
- 6 Additional control: `set_aspect()`, `set_xlim()`

# Concepts

- 1 Figure, subplot, axes and axis
- 2 Backend
- 3 Colormap, mappable and colorbar

# Minimal example

- 1 `pyplot.figure()`
- 2 `fig.add_subplot()` or `fig.add_axes()`
- 3 `ax.plot()`, `ax.fill()` or `\verbax.scatter()`: plotting commands
- 4 `ax.set_aspect()`, `ax.set_xlim()`: customizing commands
- 5 `pyplot.savefig()`
- 6 `pyplot.show()`
- 7 `pyplot.close()`

## Section 2

### Examples

# Popular plots

- 1 Graph or lines: `plot()`
- 2 Scatter plots: `scatter()`
- 3 Contour: `contour()`
- 4 Vector field: `quiver()`
- 5 Images and matrices: `imshow()` and `matshow()`
- 6 Histogram: `hist()`
- 7 Surfaces: `plot_surface()`



# Other components

- 1 Colorbar: `colorbar()`
- 2 Legend: `legend()`
- 3 Grids: `grid()`
- 4 Aspect: `set_aspect()`
- 5 Viewport: `set_xlim()` and `set_ylim()`
- 6 Title: `title()`

# Further examples

See the official Gallery for examples with figures.