Introduction to Scientific Working with LaTeX and Python

Course Schedule and Content Overview

Course Overview

This three-day course introduces bachelor and master students of economics and management to essential scientific tools: LaTeX for professional document preparation and Python for data analysis. No prior experience with either tool is required.

Daily Schedule:

- Morning Block: 9:00 AM - 12:00 PM
- Lunch Break: 12:00 PM - 1:00 PM
- Afternoon Block: 1:00 PM - 4:00 PM

Detailed Schedule

1 Day 1: Introduction to LaTeX and Scientific Writing

1.1 Morning (9:00 AM - 12:00 PM)

- Introduction to scientific writing principles
- LaTeX basics:
  - Getting started with Overleaf
  - Document structure and basic formatting
  - Sections, subsections, paragraphs
  - Text formatting (bold, italic, etc.)
  - Lists, tables, and basic figures

1.2 Afternoon (1:00 PM - 4:00 PM)

- Advanced LaTeX:
  - Mathematical equations and symbols (especially useful for finance/statistics)
  - Bibliography management with BibTeX
  - Using your institute's LaTeX template
  - Cross-referencing within documents
- Practice session: Create a simple structured document with equations

2 Day 2: Python Basics for Data Analysis

2.1 Morning (9:00 AM - 12:00 PM)

- Python environment setup with PyCharm
- Python fundamentals:
  - Variables, data types, operations
  - Control structures (if-else, loops)
  - Functions and modules
  - Understanding error messages

2.2 Afternoon (1:00 PM - 4:00 PM)

- Python for data handling:
  - Introduction to NumPy and Pandas
  - Reading data from CSV/Excel files
  - Data cleaning and preprocessing
  - Basic data exploration techniques
- Practice session: Import and clean a financial dataset

3 Day 3: Applied Data Analysis and Integration

3.1 Morning (9:00 AM - 12:00 PM)

- Data visualization with Matplotlib and Seaborn
- Basic statistical analysis in Python:
  - Descriptive statistics
  - Correlation analysis
  - Basic regression
- Exporting results from Python for LaTeX

3.2 Afternoon (1:00 PM - 4:00 PM)

- Mini-project: Analyze a financial/economic dataset
  - Apply data cleaning techniques
  - Perform basic analysis
  - Create visualizations
  - Export results and incorporate into a LaTeX document
- Discussion of further learning resources and applications