1. Introduction to Python and PyQt6

* + Python basics and syntax
  + What is PyQt6?
  + Installing PyQt6
  + Setting up your development environment

2. Getting Started with PyQt6

* + Creating your first PyQt6 application
  + Understanding PyQt6 widgets
  + Layout management in PyQt6
  + Event handling in PyQt6

3. PyQt6 Widgets in Depth

* + Commonly used widgets (buttons, labels, text boxes, etc.)
  + Advanced widgets (tables, trees, dialogs, etc.)
  + Custom widgets and subclassing

4. Styling and Theming in PyQt6

* + Using style sheets to customize widget appearance
  + Applying themes to your PyQt6 application

5. PyQt6 Signals and Slots

* + Understanding signals and slots in PyQt6
  + Connecting signals to slots
  + Emitting custom signals

6. Integrating Scientific Libraries with PyQt6

* + Introduction to popular scientific libraries (NumPy, SciPy, Matplotlib, etc.)
  + Using scientific libraries in PyQt6 applications
  + Visualizing scientific data with PyQt6 and Matplotlib

7. Signal Processing with PyQt6

* + Fundamentals of signal processing
  + Introduction to PyQt6's signal processing capabilities
  + Processing and filtering signals in real-time applications

8. Real-Time Data Visualization with PyQt6

* + Introduction to real-time data visualization
  + Updating PyQt6 widgets dynamically
  + Building real-time applications with PyQt6

9. PyQt6 and Data Analysis

* + Loading and processing data in PyQt6 applications
  + Analysing data using scientific libraries
  + Presenting data analysis results with PyQt6

10. Advanced PyQt6 Techniques

* + Multi-threading in PyQt6 applications
  + Internationalization and localization
  + Packaging and distributing PyQt6 applications

11. Case Studies and Practical Examples

* + Building a scientific data analysis tool with PyQt6
  + Developing a real-time monitoring application
  + Showcasing advanced PyQt6 features in real-world scenarios