

Course Title: Mastering GitHub Copilot with Python and Testing
Module 1: Introduction to GitHub Copilot (1.5 hour)
Overview of GitHub Copilot
What is GitHub Copilot?
How GitHub Copilot works
Setting up GitHub Copilot
Installation and configuration
Integration with popular IDEs (VS Code)
Basic Usage
Writing simple Python scripts with Copilot assistance
Accepting and modifying Copilot suggestions
Module 2: Advanced Python Programming with Copilot (2. hours)
Writing Complex Functions
Utilizing Copilot for advanced function creation
Best practices for function documentation and comments
Working with Data Structures
Lists, dictionaries, sets, and tuples
Advanced data manipulation
Object-Oriented Programming
Creating classes and objects
Using Copilot to streamline OOP design
Module 3: Python Libraries and Frameworks with Copilot (2.5 hours)
Standard Libraries
Using Python's built-in libraries (e.g., os, sys, datetime)
Popular Third-Party Libraries
NumPy, Pandas for data manipulation
Requests for HTTP requests
Matplotlib for plotting and visualization
Web Development Frameworks
Flask: Setting up a basic web app
Django: Creating models, views, and templates
Module 4: Introduction to Testing in Python (1.5 hour)
Why Testing is Important
Types of tests: Unit, Integration, System, and Acceptance
Setting Up a Testing Environment
Introduction to pytest

Writing your first test case
Module 5: Using Copilot for Writing Tests (1.5 hours)
Automating Test Creation
Generating unit tests with Copilot
Parameterized tests
Advanced Test Scenarios
Mocking and patching
Testing exceptions and error handling
Module 6: Best Practices and Real-World Projects (0.5 hour)
Best Practices for Using Copilot
Writing clear code to get better suggestions
Ethical considerations and code reviews