

Module 1: Creating and Distributing Packages

- Using *pip*
- Basic directory structure
- The *setup.py* file
- Sharing, storing, and installing packages
- Documentation
- License
- Testing principles and techniques
 - **unittest** – Unit testing framework
 - **Pytest** – framework to write tests

Module 2: Design Patterns

- Object-oriented design principles and the concept of design patterns
- The *Singleton* Design Pattern
- The *Factory* Pattern
- The *Façade* Pattern
- The *Proxy* Pattern
- The *Observer* Pattern
- The *Command* Pattern
- The *Template Method* Pattern
- Model-View-Controller
- The *State Design* Pattern

Module 3: Interprocess Communication

- multiprocessing — Process-based parallelism
- threading — Thread-based parallelism
- subprocess — Subprocess management
- Multiprocessing synchronisation
 - **queue** — A synchronized queue class
 - **socket** — Low-level networking interface
 - **mmap** — Memory-mapped file support

Module 4: Python Network Programming

- Python Socket Module
 - Introduction to sockets
 - Server Socket Methods
 - Client socket methods
 - General socket methods
 - Client-Server vs. Peer-to-peer
 - Other Internet nodules

Module 5: Python-MySQL Database Access

- Relational databases – fundamental principles and how to work with them
- MySQL vs. rest of the world
- **CRUD** Application