Module 1: Introduction to Software Testing

- **Overview of Software Testing**
  - What is software testing?
  - Importance and objectives of testing
  - Types of testing: Manual vs. Automated
- **Software Development Life Cycle (SDLC)**
  - SDLC phases
  - Role of testing in SDLC
- **Software Testing Life Cycle (STLC)**
  - STLC phases
  - Entry and exit criteria
  - Deliverables in each phase

Module 2: Basic Concepts of Manual Testing

- **Fundamentals of Testing**
  - Testing principles
  - Testing levels: Unit, Integration, System, and Acceptance
  - Testing types: Functional and Non-functional testing
- **Software Testing Terminologies**
  - Defect, Bug, Error, and Failure
  - Test case, Test plan, and Test script
  - Severity and Priority
- **Testing Techniques**
  - Static and Dynamic testing
  - Black-box, White-box, and Grey-box testing
  - Verification vs. Validation

Module 3: Test Planning and Documentation

- **Test Planning**
  - Objectives of test planning
  - Components of a test plan
  - Risk analysis and mitigation
- **Test Documentation**
  - Writing test cases and test scenarios
  - Creating test data

- ○ Traceability matrix
- **Test Design Techniques**
  - ○ Equivalence Partitioning
  - ○ Boundary Value Analysis
  - ○ Decision Table Testing
  - ○ State Transition Testing

Module 4: Test Execution and Reporting

- **Test Execution**
  - ○ Preparing for test execution
  - ○ Executing test cases
  - ○ Logging defects
- **Defect Lifecycle**
  - ○ Defect reporting and tracking
  - ○ Defect lifecycle stages
  - ○ Tools for defect management (e.g., JIRA, Bugzilla)
- **Test Reporting**
  - ○ Test summary reports
  - ○ Metrics and measurements in testing
  - ○ Communicating test results effectively

Module 5: Specialized Testing Types

- **Functional Testing**
  - ○ Smoke and Sanity testing
  - ○ Regression testing
  - ○ User Acceptance Testing (UAT)
- **Non-Functional Testing**
  - ○ Performance testing (Load, Stress, and Volume)
  - ○ Security testing
  - ○ Usability testing
- **Other Specialized Testing**
  - ○ Compatibility testing
  - ○ Localization and Internationalization testing
  - ○ Mobile application testing

Module 6: Testing Tools and Environment

- **Test Management Tools**
  - ○ Introduction to test management tools
  - ○ Features and benefits of tools like TestRail, Quality Center
- **Defect Tracking Tools**
  - ○ Introduction to defect tracking tools
  - ○ Features and benefits of tools like JIRA, Bugzilla
- **Test Environment Setup**
  - ○ Setting up the test environment
  - ○ Test bed creation

- ○ Configuration management

Module 7: Agile and DevOps Testing

- **Agile Testing**
  - ○ Introduction to Agile methodology
  - ○ Agile testing principles and practices
  - ○ Roles and responsibilities in Agile teams
- **Scrum Framework**
  - ○ Scrum events and artifacts
  - ○ Sprint planning and execution
  - ○ Role of testers in Scrum
- **DevOps and Continuous Testing**
  - ○ Introduction to DevOps
  - ○ Continuous Integration and Continuous Delivery (CI/CD)
  - ○ Role of testing in DevOps

Module 8: Advanced Topics and Best Practices

- **Risk-Based Testing**
  - ○ Identifying and assessing risks
  - ○ Prioritizing testing efforts based on risk
- **Test Automation Overview**
  - ○ Benefits and challenges of test automation
  - ○ When to automate and when not to automate
- **Best Practices in Manual Testing**
  - ○ Test case design and optimization
  - ○ Effective defect reporting
  - ○ Collaboration and communication in testing teams

Conclusion and Final Project

- **Final Project**
  - ○ Developing a comprehensive test plan for a sample application
  - ○ Writing and executing test cases
  - ○ Defect logging and reporting
- **Course Review and Q&A**
  - ○ Recap of key concepts
  - ○ Addressing student questions and feedback
- **Certification**
  - ○ Course completion certificate
  - ○ Guidance on further learning paths and resources