

Since 2007, Making IT Experts & Products

Python Course: Embedded Software Testing with

Duration: 120 Hrs (Changeable) | Fees: Individual / Batch

Since 2007, Nestsoft TechnoMaster has been providing training, internships, and services in IT technologies, both online and offline, with the expertise of **over 250 industry experts**. We have delivered internships, training, and seminars to more than 50,000 students, resulting in numerous success stories. **We offer 100% placement support through JobsNEAR.in**

Our Courses/Internship

- Python/Django Fullstack
- Artificial Intelligence
- Machine Learning
- Data Science
- Software Testing (All)
- Wordpress, Woocommerce
- Digital Marketing, SEO
- Php/MySQL, Laravel
- Flutter, Android, IOS
- Asp.net MVC
- Web Design, Javascript
- Angular JS, React JS
- CCNA, MCSA, CCNP
- AWS, GCP, Azure
- Odoo, Salesforce, Sap
- Microsoft Excel
- Ethical Hacking



Syllabus on the Next Page ..



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Introduction to Embedded Systems

- * Fundamentals of embedded systems
- * Microcontrollers, microprocessors, sensors, and actuators
- * Embedded hardware and software architecture
- * Firmware development and testing concepts

Python Programming Fundamentals

- * Python syntax, variables, data types, and operators
- * Conditional statements, loops, and functions
- * Lists, dictionaries, tuples, and strings

File handling, exception handling, and modules

- * Object-oriented programming fundamentals

Embedded Communication Protocols

- * Serial communication fundamentals
- * UART, SPI, and I2C protocols
- * Working with serial ports using Python
- * Sending commands and receiving device responses
- * Communication error detection and troubleshooting

Python Test Automation

- * Principles of automated software testing
- * Writing automated test scripts using Python
- * Unit testing with unittest and pytest
- * Test fixtures, assertions, and parameterized tests
- * Test data management and reusable test functions

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Firmware Testing and Validation

- * Firmware functionality and requirement-based testing
- * Boot-up, reset, and initialization testing
- * Input/output and peripheral testing
- * Boundary-value and negative testing
- * Firmware regression and compatibility testing

Hardware Software Integration Testing

- * Hardware-software interaction testing
- * Sensor and actuator validation
- * Device communication and interface testing
- * Hardware fault simulation and error handling
- * Integration test case design and execution

Test Frameworks and Debugging

- * Developing reusable Python test frameworks
- * Debugging embedded devices and firmware issues
- * Logging, test evidence, and failure analysis
- * Automated test reports and result analysis
- * Continuous integration fundamentals for testing

Practical Projects

- * Automated serial communication testing using Python
- * Sensor data validation and threshold testing
- * Firmware command-response verification

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- * Automated regression testing for an embedded device
- * Final project: Python-based embedded system test automation framework

Career Preparation

- * Writing professional test cases and test reports
- * Embedded testing best practices
- * Technical interview preparation
- * Project documentation and portfolio development

(Click on Course for more details)

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- Thank You -

N.B: This syllabus is not final and can be customized as per requirements / updates.

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