



Automotive Python Scripting & ECU Simulation – Premium Course

2-MONTH PREMIUM

Full Practical | Multi-Protocol | Remote TESAF Access | PCAN Simulation

This version covers the entire automotive communication stack and trains you to use Python in ANY HIL platform that supports Python automation:

TESAF, dSPACE (AutomationDesk, SCALEXIO), Vector VT System, NI LabVIEW, NI VeriStand, ETAS LABCAR, OPAL-RT, Speedgoat, Typhoon-HIL, AVL, Simulink Real-Time.

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WEEK 1 – Python Automation Setup

Practical:

- Python + automotive libraries
- PCAN USB configuration
- TESAF automation environment
- Python as CAPL alternative
- First CAN automation script

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WEEK 2 – CAN, CAN-FD, CAN-XL Advanced

- Real CAN, CAN-FD, CAN-XL scripting
- TESAF CAN Simulation window

- PCAN trace logging
 - Parsing ASC/BLF logs
 - Multi-instance CAN communication
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WEEK 3 – ISO-TP Advanced

- Full multi-frame automation
 - Flow-control testing
 - Timing validation
 - End-to-end ISO-TP automated test in TESAF
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WEEK 4 – UDS Advanced

- Session control automation
 - DID read/write automation
 - Routine control
 - Security Access simulation
 - UDS tester with TESAF diagnostic panel
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WEEK 5 – LIN Communication

- lin-python scripting
 - Master/slave simulation
 - TESAF LIN node integration
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WEEK 6 – OBD-II Automation

- PID reading
 - Live dashboards
 - OBD-II simulation in TESAF ECU
 - PCAN PID analysis
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WEEK 7 – DoIP + Ethernet

- Socket programming
- DoIP discovery

- Routing Activation
- UDS on IP
- TESAF Ethernet module simulation

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WEEK 8 – ECU Simulation + Automation Framework

- Python ECU simulator (CAN + DoIP)
- Fault injection
- pytest automation framework
- PDF/HTML reporting
- Complete TESAF automation workflow
- PCAN trace verification

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OUTCOME (PREMIUM)

You will be able to:

- Use Python as a full CAPL alternative
- Automate TESAF, dSPACE, Vector VT, NI, ETAS, OPAL-RT HIL workflows
- Build full ECU simulators
- Develop complete diagnostic testers
- Implement multi-protocol automated testing
- Generate automated test reports

1-MONTH ESSENTIAL

Python + CAN + CAN-TP + UDS (Theory + Limited Basic Practical)

WEEK 1 – Foundations

- ECU overview
- Python essentials
- python-can, cantools, UDSonCAN theory
- Overview of HIL systems supporting Python
- Why Python is a CAPL alternative
- TESAF & PCAN environment introduction

Basic Demo: Installing Python automotive packages.

WEEK 2 – CAN Protocol

Theory: Arbitration, ID, DBC, bit-timing

Basic Practical:

- Sending CAN frames with Python
- Viewing frames in PCAN
- Viewing traffic in TESAF basic viewer

WEEK 3 – ISO-TP / CAN-TP

Theory: Segmentation, flow control, timing

Basic Demo: Multi-frame request & response using Python + PCAN

WEEK 4 – UDS Diagnostics

Theory:

- Session Control
- DID Read/Write
- Routine Control
- DTC concepts

Basic Practical:

- Python UDS: 0x10, 0x22, 0x19
- Verify responses in PCAN trace
- Check timestamps in TESAF console

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OUTCOME (ESSENTIAL)

- Understand CAN + CAN-TP + UDS
- Write basic Python scripts
- Use Python as an introduction to CAPL-alternative scripting
- Ready for Premium practical automation