# CANoe Workshop

## Agenda VectorAcademy

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| **Duration:** | 3 Days |
| **Target Group:** | CAN Users (controller development, motor vehicle electrical, test planning and execution) |
| **Prerequisites:** | An understanding of the terminology and basic operation of electronic control modules is helpful, but not required. General understanding of the C programming language. |
| **Goal:** | Knowledge about the CAN network and characteristics of the CAN and CAN FD protocol. Introduction to CANoe including the use of the analysis functionality as well as saving measurement data, perform analysis of saved data, and use CANoe to send CAN messages. Gain the understanding on how to create and enhance rest bus simulations with CANoe using the CAPL programming language. |

### 1 | CAN Network — 3.5 h

- Physical layer of CAN networks
- Information transport: Bus access rules, message prioritization
- Message structure, data content
- Data protection and error handling
- Differences with the new CAN FD standard

### 2 | Overview about CANoe — 0.5 h

- Application area of CANoe
- Components and configuration of a CANoe measurement system

### 3 | Network Description – Databases — 1.5 h

- Messages, signals and network nodes
- CAN database and CANdb++ Editor

### 4 | Measurement and Analysis — 3.5 h

- Introduction into the graphical user interface
- Dataflow and measurement setup
- Data tracing, statistic monitoring and signal analysis
- Configuration of analysis windows and function blocks
- Filters to reduce the volume of data

### 5 | Data Logging — 1.5 h

- Recording data traffic and supported logging file formats
- Employment of specific trigger conditions
- Import and export of data into and out of several analysis windows
- Data conversion
- Offline analysis

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### 6 | Send Options — 2.0 h

- Interactive Generator Block
- Visual Sequence
- Replay Block

### 7 | Diagnostics — 0.5 h

- Use of diagnostic description files in CANalyzer
- OBD II standard diagnostics requests

### 8 | Simulation and Modeling with CANoe for CAN — 1.0 h

- Signal Server Concept and Interaction Layer
- Creating a configuration for simulation and modeling
- System Panel, Nodes and Network Panels
- Generate signal runs with signal generators

### 9 | Creating panels and integrating them — 1.0 h

- Introduction to the Panel Designer
- Creating display and control panels
- Integrating panels in CANoe
- Panels in combination with signal generators

### 10 | Introduction to CAPL — 1.0 h

- Usage of CAPL
- Introduction to the CAPL browser
- Network nodes and program nodes
- Variables, operators, conditions and loops

### 11 | Signal-oriented CAPL — 3.0 h

- CAPL with Signal Server and Interaction Layer
- Controlling network nodes
- Signal manipulation with CAPL
- Working with timers
- System variables

### 12 | CAPL for CAN — 1.0 h

- Introduction to message oriented CAPL
- Message analysis with CAPL
- Event procedures for CAN