

Simulink for Automotive System Design

Prerequisites

MATLAB Fundamentals for Automotive Applications

| Day 1 of 2 | |
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| Creating and Simulating a Model | <p>Objective: Create a simple Simulink model, simulate it, and analyze the results.</p> <ul style="list-style-type: none">Introduction to the Simulink interfacePotentiometer systemSystem inputs and outputsSimulation and analysis |
| Modeling Programming Constructs | <p>Objective: Model and simulate basic programming constructs in Simulink.</p> <ul style="list-style-type: none">Comparisons and decision statementsVector signalsPWM conversion systemZero crossingsMATLAB Function block |
| Modeling Discrete Systems | <p>Objective: Model and simulate discrete systems in Simulink.</p> <ul style="list-style-type: none">Discrete signals and statesPI controller systemDiscrete transfer functions and state-space systemsMultirate discrete systems |
| Modeling Continuous Systems | <p>Objective: Model and simulate continuous systems in Simulink.</p> <ul style="list-style-type: none">Continuous statesThrottle systemContinuous transfer functions and state-space systemsPhysical boundaries |
| Day 2 of 2 | |
| Solver Selection | <p>Objective: Select a solver that is appropriate for a given Simulink model.</p> <ul style="list-style-type: none">Solver behaviorSystem dynamicsDiscontinuitiesAlgebraic loops |

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| Developing Model Hierarchy | Objective: Use subsystems to combine smaller systems into larger systems. Subsystems Bus signals Masks |
| Modeling Conditionally Executed Algorithms | Objective: Create subsystems that are executed based on a control signal input. Conditionally executed subsystems Enabled subsystems Triggered subsystems Input validation model |
| Combining Models into Diagrams | Objective: Use model referencing to combine models. Subsystems and model referencing Model referencing workflow Model reference simulation modes Model workspaces Model dependencies |
| Creating Libraries | Objective: Use libraries to create and distribute custom blocks. Creating and populating libraries Managing library links Adding a library to the Simulink Library Browser |