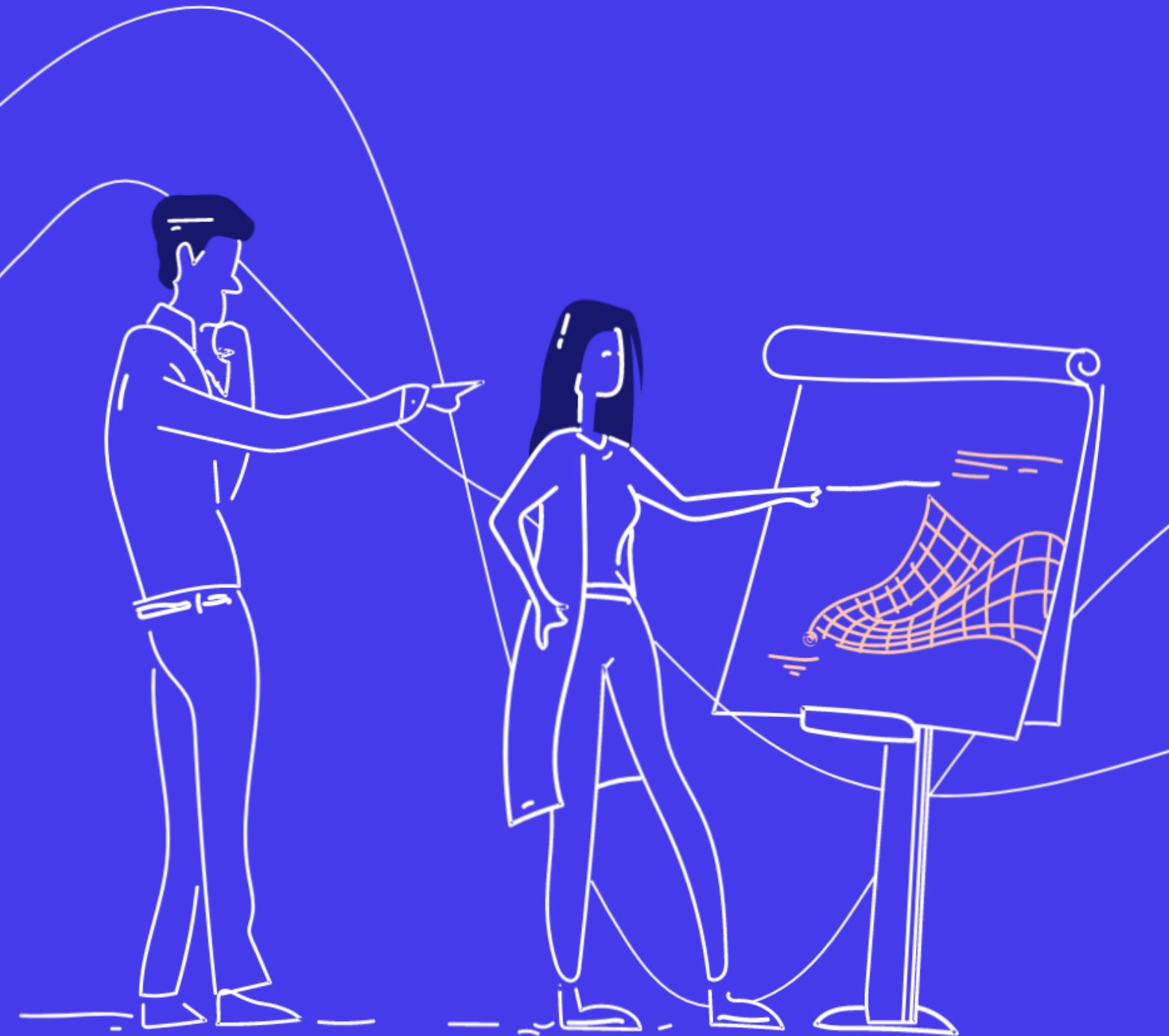sciengineer

Modeling Physical Systems with Simscape

SciEngineer's training courses are designed to help organizations and individuals close skills gaps, keep up-to-date with the industry-accepted best practices and achieve the greatest value from MathWorks® and COMSOL® Products.

Modeling Physical Systems with Simscape

This one-day course discusses how to model systems in several physical domains such as electrical, mechanical, and hydraulic. This course focuses on interpreting Simscape diagrams, combining them with Simulink models, modeling energy transfer between different physical domains, and creating userdefined Simscape components.

Prerequisites

MATLAB Fundamentals and Simulink Fundamentals

DURATION

1 day

LEVEL

Medium

TOPICS

Day 1

- Introduction to Simscape and the Physical Network Approach
- Working with Simscape Components
- Connecting Physical Domains
- Combining Simscape Models and Simulink Models
- Creating Custom Components with the Simscape Language

Introduction to Simscap and the Physical Network Approach

Working with Simscape Components

Connecting Physical Domains

OBJECTIVE: Become familiar with the Simscape environment by modeling a simple electrical system.

OBJECTIVE: Interpret Simscape block diagrams and identify the physical variables in Simscape by modeling a mechanical system.

OBJECTIVE: Connect models from different physical domains to create a single, multidomain model.

- Introduction to Simscape
- Differences between Simulink and Simscape
- Building and simulating a model in Simscape
- Guidelines for Simscape modeling

- Describing Simscape component fundamentals
- Using the Simscape Foundation Library
- Setting initial conditions
- Logging physical variables

- Creating multidomain physical components
- Modeling ideal and nonideal connections between physical domains
- Dividing components into subsystems
- Parameterizing models

Combining Simscape Models and Simulink Models

Creating Custom Components with the Simscape Language

OBJECTIVE: Add Simulink blocks to a Simscape model to increase modeling flexibility.

OBJECTIVE: Leverage the Simscape language to create custom physical components in Simscape.

- Connecting physical signals and Simulink signals
- Performing operations on physical signals
- Controlling physical models
- Solving models with Simscape and Simulink blocks

- Simscape language
- Custom component workflow
- Complete custom component example

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Expand your knowledge