



Course Title:

Modeling Physical Systems with Simscape

Course Purpose:

This one-day course focuses on modeling systems in several physical domains and combine them into a multidomain system in the Simulink® environment using Simscape™. Topics include:

- Creating models in various physical domains, such as electrical, mechanical, and hydraulic
- Interpreting Simscape diagrams
- Combining Simulink models and Simscape models
- Modeling energy transfer between different physical domains
- Creating user-defined Simscape components

Pre- requisites:

MATLAB Fundamentals course or equivalent experience using MATLAB.

Simulink for System and Algorithm Modeling course or equivalent experience using Simulink.



- ✓ 1 training day
- ✓ Hours: 09:00-17:00
- ✓ Total training hours: 8

Teaching method

The course combines lectures, demonstrations, and practical exercises in Simulink® and Simscape® environments, using original training books from MathWorks. The course is in Hebrew but the training materials are in English.

Products

- MATLAB
- Simulink
- Simscape

Course Objective:

Introduction to Simscape and the Physical Network Approach

עמוד מס' 1

Training Center Systematics - Contact information:

Phone number: 03-7660111 Ext: 6 **Email:** training@systematics.co.il

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

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

Working with Simscape Components

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

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

Connecting Physical Domains

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

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

Combining Simscape Models and Simulink Models

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

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

Creating Custom Components with the Simscape Language

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

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

עמוד מס' 2

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