



## Course Title:

### **Stateflow for Logic Driven System Modeling**

## Course Purpose

This two-day course shows how to implement complex decision flows and finite-state machines using Stateflow®. The course focuses on how to employ flow graphs, state machines, and truth tables in Simulink designs. Topics include :

- Flow graphs
- State machines
- Hierarchical state machines
- Parallel state charts
- Events in state charts
- Functions in state charts
- Truth tables
- State transition tables
- Design considerations

## Pre- requisites

MATLAB® Fundamentals and Simulink® for System and Algorithm Modeling. Knowledge of C programming is helpful.



- ✓ 2 training days
- ✓ Hours: 09:00-17:00
- ✓ Total training hours: 16

## Teaching method

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

עמוד מס' 1

### **Training Center Systematics - Contact information:**

**Phone number:** 03-7660111 Ext: 5 **Email:** [training@systematics.co.il](mailto:training@systematics.co.il)

**Website:** <http://www.systematics.co.il/mathworks>



## Course Objective:

### Modeling Flows Graphs

**Objective:** Implement decision flows with flow graphs.

- Junctions and transitions
- Flow graph behavior
- Stateflow interface
- Conditions and condition actions
- Chart data
- Common patterns

### Modeling State Machines

**Objective:** Implement state machines with state diagrams.

- State machine behavior
- State and transition actions
- Chart initialization
- Action execution order
- Flow graphs within states

### Hierarchical State Machines

**Objective:** Implement hierarchical diagrams to improve clarity of state machine designs.

- Superstates and substates
- State data
- History junction
- Transition priority
- Action execution order

### Parallel State Charts

**Objective:** Implement parallel states to model multiprocessing designs.

- Benefits of parallel states
- Chart/state decomposition
- Parallel state data
- Parallel state behavior

עמוד מס' 2

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### Using Events in State Charts

**Objective:** Use events within a Stateflow chart to affect chart execution.

- Using events in state charts
- Broadcasting events
- Behavior of state charts that contain events
- Implicit events
- Temporal logic operators

### Calling Functions from State Charts

**Objective:** Create functions in a Stateflow chart out of Simulink blocks, MATLAB code, and flow graphs.

- Types of functions available
- Simulink functions
- MATLAB® functions
- Graphical functions

### Truth Tables and State Transition Tables

**Objective:** Create flow graphs and state charts in table form.

- Truth tables
- Conditions, decisions, and actions
- State transition tables
- States, transitions, and actions

### Design Considerations in Stateflow

**Objective:** Reuse Stateflow designs, constrain chart semantics, and interact with structured Simulink data.

- Mealy and Moore charts
- Data types
- Bus signals
- Atomic subcharts
- Data mapping
- Chart reuse

עמוד מס' 3

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