# Stateflow for Logic Driven System Modeling

## Prerequisites

MATLAB Fundamentals and Simulink for System and Algorithm Modeling.

<table>
<thead>
<tr>
<th>Day 1 of 2</th>
</tr>
</thead>
</table>
| **Modeling Flow Charts** | **Objective**: Implement decision flows with flow charts.  
Junctions and transitions  
Flow chart behavior  
Stateflow interface  
Conditions and condition actions  
Chart data  
Common patterns |
| **Modeling State Machines** | **Objective**: Implement state machines with state transition diagrams.  
State machine behavior  
State and transition actions  
Chart initialization  
Action execution order  
Flow charts within states  
Mealy and Moore charts |
| **Hierarchical State Diagrams** | **Objective**: Implement hierarchical diagrams to improve the clarity of state machine designs.  
Superstates and substates  
State data  
History junction  
Transition priority  
Action execution order |
| **Parallel State Diagrams** | **Objective**: Implement parallel states to model multiprocessing designs.  
Benefits of parallel states  
Chart/state decomposition  
Parallel state behavior |

<p>| Day 2 of 2 |</p>
<table>
<thead>
<tr>
<th>Section</th>
<th>Objective</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Events in State Diagrams</td>
<td>Use events within a Stateflow diagram to affect chart execution.</td>
<td>Using events in state diagrams, Broadcasting events, Behavior of state diagrams that contain events, Implicit events, Temporal logic operators</td>
</tr>
<tr>
<td>Calling Functions from Stateflow</td>
<td>Create functions in a Stateflow chart out of Simulink blocks, MATLAB code, and flow charts.</td>
<td>Types of functions, Simulink functions, MATLAB functions, Graphical functions</td>
</tr>
<tr>
<td>Truth Tables and State Transition Tables</td>
<td>Create flow charts and state transition diagrams in tabular form.</td>
<td>Truth tables, Conditions, decisions, and actions, State transition tables, States, transitions, and actions</td>
</tr>
<tr>
<td>Component-Based Modeling in Stateflow</td>
<td>Reuse Stateflow designs, constrain chart semantics, and interact with structured Simulink data.</td>
<td>Bus signals, Data types, Atomic subcharts, Data mapping, Chart reuse</td>
</tr>
</tbody>
</table>