

Modeling Multibody Mechanical Systems with Simscape

Prerequisites

MATLAB Fundamentals, Simulink for System and Algorithm Modeling, and Modeling Physical Systems with Simscape

Day 1 of 1	
Introduction to Multibody Simulation	<p>Objective: Discuss the components that make up mechanical models and how to define them in Simscape Multibody.</p> <ul style="list-style-type: none">TerminologySolidsCoordinate framesJointsVisualization
Refining Components	<p>Objective: Create custom and complex rigid bodies, and parameterize parts for reusable Simscape Multibody models.</p> <ul style="list-style-type: none">Defining geometriesCreating compound bodiesSpecifying body interfacesParameterizing bodies for reuse
Assembling Mechanisms	<p>Objective: Define and configure kinematics of a multibody machine in Simscape Multibody.</p> <ul style="list-style-type: none">Reusing existing componentsSpecifying degrees of freedomSensing and logging simulation resultsAdding stiffness and damping to jointsSetting initial conditionsGuiding and verifying an assembled mechanism
Importing CAD Models	<p>Objective: Import existing parts and mechanisms from CAD platforms into Simscape Multibody.</p> <ul style="list-style-type: none">Visualizing bodies with CAD geometriesIdentifying the different CAD import workflowsExporting from CAD softwareImporting into Simscape MultibodyFeatures captured by Simscape Multibody Link
Connecting to Simscape and Simulink	<p>Objective: Illustrate the ways that Simscape Multibody blocks can interact with Simscape and Simulink blocks.</p> <ul style="list-style-type: none">Adding a combustion model using SimscapeActuating the piston headSensing constraint forces on jointsAdding a control system for throttleCreating a multidomain physical model

