

# Day 1

## Module 01 - Course Introduction

- Course Introduction

## Module 02 - Introduction to SysML

- What is SysML
- Overview of Diagrams
- Overview of MBSE
- Overview of Frameworks

## Module 03 - Block Definition Diagram (Part 1)

- Block Definition Diagram
- Blocks
  - Structural Features
  - Behavioral Features
- Modeling with BDDs in CSM

## **Module 04 - Packages and Model Structure**

- Package Diagram
- Packages and Namespace
- System Architecture vs Model Architecture
- Specialized Packages
- Common Practices
- Modeling with Packages in CSM

## **Module 05 - Block Definition Diagram (Part 2)**

- Relationships
- Ports
- Other Kinds of Blocks (Value Types, Interface Blocks, Constraints, Actors)
- Modeling with Ports and Other Kinds of Blocks in CSM

## **Day 2**

### **Module 06 – Internal Block Diagrams**

- Internal Block Definition Diagram
- IBD Model Elements
- Modeling with IBDs
- Modeling with IBDs in CSM

## **Module 07 – Activity Diagrams (Part 1)**

- Activity Diagrams
- Activities and Actions, and Object Nodes
- Control Flows and Object Flows
- Activity Partitions and Allocation
- Modeling with Activity Diagrams in CSM

## **Module 08 – Activity Diagrams (Part 2)**

- Token Flow
- Control Nodes and Guards
- Specialized Actions

- Modeling with Control Nodes and Specialized Actions in CSM

## **Module 09 – Sequence Diagrams**

- Lifelines
- Messages
- Constraints
- Combined Fragments
- Modeling with Sequence Diagrams in CSM

## **Module 10 – State Machine Diagrams**

- States and Regions
- Transitions, Events and Guards
- Actions and Effects
- Pseudo States
- Modeling with State Machines in CSM

# Day 3

## Module 11 – Requirements Diagram

- Requirements Diagram
- Modeling Requirements and Extended Requirements
- Requirements Relationships and Traceability
  - Requirement to Requirement
  - Requirement to Model Element
- Requirements Tables and Matrices
- Modeling Requirements in CSM

## Module 12 – Use Case Diagrams

- Use Case Diagram
- Use Cases and Actors
- Use Case Template
- Includes and Extends
- Modeling Use Cases in CSM

## Module 13 – Constraints and Parametric Diagrams

- Constraints and Constraint Blocks
- Parametric Diagrams
  - Constraint Parameters
  - Value Properties
  - Binding Connectors
- Modeling Parametric Diagrams in CSM

## **Module 14 – Cross Cutting Relationships and Model Analysis**

- Cross Cutting Relationships (Allocation and Dependency)
- Analysis using Tables and Matrices
- Analysis using Relation Maps
- Impact Analysis using Suspect Links
- Performing Model Analysis in CSM

## **Day 4 and 5**

### **MBSE Workshop Module 01 – Model Lifecycle Management**

- Model Architecture and Package Structure
- Design Authority and using Projects
- Modeling Standards and Style Guides
- Model Change Management

## **MBSE Workshop Module 02 – Developing the Concept Model**

- Modeling User Needs
- Modeling System Level Requirements
- Developing the System Concept Model
- Lab

## **MBSE Workshop Module 03 – Developing the Logical Model**

- Modeling Logical System and Component Requirements
- Modeling Logical System and Component Structure
- Modeling Logical System and Component Behavior
- Modeling Quantitative Properties and Constraints
- Traceability to the Concept Model
- Lab

## **MBSE Workshop Module 04 – Developing the Physical Model**

- Modeling Physical Implementation of Structure
- Allocating Behavior to Components
- Modeling Instances and Conducting Trades
- Traceability to the Logical Model
- Lab

## **MBSE Workshop Module 05 – Wrap-up**

- Extending SysML (Profiles and Stereotypes)
- Review of MBSE and the SE Lifecycle
- Questions