

The Theory and Practice of Model-Based Software Engineering

Duration	3 days
Audience:	Software architects, development team managers, project managers, product managers, software developers, programmers
Pre-requisites:	Participants should be familiar with the basic principles of software engineering and have some experience with object-oriented programming
Brief Description:	This course teaches the theory and pragmatics of model-based software engineering. Special emphasis is placed on modeling languages and tool technology.

Description:

Model-Based Software Engineering focuses on modern software engineering methods, technologies, and processes used in professional development projects. It covers both the pragmatic engineering elements and the underlying theory of the model-based approach to the analysis, design, implementation, and maintenance of complex software-intensive systems.

Students successfully completing this unit will have a strong practical and theoretical understanding of the modern software development cycle as applied in industrial settings. In particular, they will be familiar with the latest model-based software engineering approaches necessary for successfully dealing with today's highly complex and challenging software systems.

Target Audience

Software architects, development team managers, project managers, product managers, software developers, programmers.

Course Level

Intermediate

Course Pre-requisites

Participants should be familiar with the basic principles of software engineering and have some experience with object-oriented programming

Course Objectives

Providing a deeper understanding of current model-based languages and supporting technologies. Attendees will know how to design domain-specific modeling languages, and approaches to model transformation methods. Special focus is placed on the application of agile methods.

Course Outline:

- The role and nature of model-based methods in SE

The theory of modeling language design

In-depth knowledge of the UML 2 modeling language

Approaches to model transformations

Approaches to automated code generation

Model analyses methods

Basics of MBSE tooling

Key elements of MBSE methodologies

Industrial application of MBSE (experience and issues)

System and multi-model development

Architectural design using MBSE

Relevant research areas and directions

MBSE process models (e.g., agile modeling)