# BCS Practitioner Certificate in Systems Modelling Techniques (UML) Training

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Duration: **4 Day**

The **BCS Practitioner Certificate in Systems Modelling Techniques (UML)** course develops the modelling skills required to communicate system requirements clearly and consistently to both business and IT stakeholders.

Looking at a system from only one perspective is rarely sufficient. Analysts and designers need to understand user interactions, processes, data structures and dynamic behaviour, using different models to represent each viewpoint. These models can then provide a structured foundation for more detailed system and software design.

Starting with an established set of requirements, the course focuses on modelling systems through selected **UML (Unified Modeling Language)** techniques. Participants create different types of models for different purposes while also examining how those models relate to, support and validate one another.

The programme covers techniques including **Use Case Diagrams, Activity Diagrams, Class Diagrams, Object Diagrams, State Machine Diagrams, Communication Diagrams and Sequence Diagrams**. A continuing case study gives participants the opportunity to apply the techniques within an integrated system scenario.

At the end of the course, participants may sit the**BCS Practitioner Certificate in Systems Modelling Techniques (UML)** examination. The qualification may also contribute towards the**BCS Diploma in Systems Development**.

## Prerequisites

Participants should have an understanding of the fundamentals of systems development.

Knowledge equivalent to the Systems Development Essentials course, or comparable practical experience in systems development, is recommended.

## Who Should Attend

This course is particularly suitable for:

- Business Analysts
- Systems Analysts
- Systems Designers
- Professionals responsible for modelling system requirements
- Practitioners who want to apply UML within business and systems analysis
- Candidates preparing for the BCS Practitioner Certificate in Systems Modelling Techniques
- Professionals working towards the BCS Diploma in Systems Development

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## What You Will Learn

By the end of the course, participants will be able to:

- Explain why modelling is required within systems development.
- Describe the importance of modelling techniques and modelling standards.
- Explain why system requirements should be represented from multiple perspectives.
- Select appropriate UML techniques for different modelling requirements.
- Model user requirements through use cases.
- Construct process models using **Activity Diagrams**.
- Build static structure models using **Class Diagrams**.
- Represent event-driven system behaviour using **State Machine Diagrams**.
- Evaluate how models support business objectives and system requirements.
- Explain the relationships between different modelling perspectives.
- Apply validation and verification principles to system models.
- Use models as a structured bridge towards more detailed design and development.

## Training Outline

### 1. Systems Modelling

The course begins by examining why modelling is important and where models fit within the Systems Development Lifecycle.

- The need for modelling
- Modelling standards
- Rationale for the selected modelling approach
- Modelling and the Systems Development Lifecycle
- The position of models within the development lifecycle
- Modelling systems from different perspectives
- Interaction between models
- Validating and verifying models

### 2. Systems Modelling in Context

Participants consider how modelling activities remain connected to wider organisational and system objectives.

- Monitoring analysis against business objectives
- Alignment with system requirements
- Using models as a bridge to design
- Supporting software package selection
- Moving from analysis towards development

### 3. Use Case Modelling

This section focuses on representing requirements from the user's perspective.

- Modelling user requirements
- Use cases

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- Actors
- System boundaries
- Use Case Diagrams
- Generalising actors and use cases
- Use case associations
- Use case descriptions
- Use case description templates
- Pre-conditions and post-conditions
- Main flows
- Alternative flows

Participants learn how to represent what users require from a system and how interactions with that system can be described systematically.

### 4. Activity Diagrams

Activity Diagrams are introduced as a technique for modelling processes and representing use case behaviour.

- Process modelling
- Activity Diagram concepts
- Modelling use case descriptions
- Representing process flows
- Activities and decision points

### 5. Static Modelling of Data

This section considers how the static structure of a system can be represented using UML.

- Rationale for analysis class modelling
- Objects and classes
- Representing classes
- Encapsulation
- Defining attributes
- Associations
- Generalisation
- Inheritance
- Abstraction
- Class Diagrams
- Object Diagrams

Participants develop models that represent the key objects and data structures within a system and the relationships between them.

### 6. Dynamic Modelling

The course then moves from static structure to the representation of system behaviour and interaction over time.

- State Machine Diagrams
- Modelling event-driven behaviour
- Use case realisation

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- Introduction to Communication Diagrams
- Sequence Diagrams
- Modelling interactions between objects

## 7. Interaction of Models

UML models are not treated as isolated deliverables. Instead, participants examine how different models describe related perspectives of the same system.

Key relationships include:

- Activity Diagrams and Use Cases
- Use Cases and the Class Model
- State Machine Diagrams and Use Cases
- Objects and Activity Diagrams

Understanding these relationships helps analysts check consistency and ensure that system requirements are represented coherently across the modelling set.

## 8. Case Study and Practical Application

A continuing **case study** is used throughout the course to give participants practical experience with the modelling techniques.

Participants work with the same system scenario to:

- Analyse requirements
- Select appropriate modelling techniques
- Construct UML models
- Explore relationships between models
- Review model consistency

This provides an integrated approach to systems modelling rather than treating each UML technique as an isolated exercise.