Course : UML 2, modeling for real-time embedded systems

Practical course - 4d - 28h00 - Ref. USE
Price : 2420 CHF E.T.

Structured around a comprehensive case study, this course will enable you to master the essential UML notations and the main uses of a modeler within an embedded system development process, from system specification to software design, the most important aspect of the course.

Teaching objectives

At the end of the training, the participant will be able to:

- Conduct the various activities of an embedded software development process using UML
- Master the specifics of UML modeling for embedded systems
- Acquire good software design practices
- Master the fundamentals of UML implementation using a modeler (e.g. Enterprise Architect)

Intended audience
Software architects and embedded systems designers and developers.

Prerequisites
Basic knowledge of embedded systems software engineering and object technology.

Practical details
Case study
Complete case study, from embedded system requirements to design, using UML modeling software

Course schedule

1 **Introduction to UML and the approach**

- The project approach and systems and software engineering activities. Importance of software design activities.
- UML within the project approach. The different diagrams. The notion of stereotype and profile.

PARTICIPANTS
Software architects and embedded systems designers and developers.

PREREQUISITES
Basic knowledge of embedded systems software engineering and object technology.

TRAINER QUALIFICATIONS
The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS
The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

2 Specifying embedded system requirements

- Functional and non-functional requirements. FURPS approach.
- Defining the players.
- Defining use cases. Use case diagram.
- Illustration of use case scenarios using sequence diagrams.
- Synthesis of system behavior with the state diagram.

3 Embedded system design (awareness)

- Static system view: definition of HW and SW elements. Composite structure diagram. Interface definition.
- Dynamic view of the system: description of how use cases are realized by the elements. Sequence diagram.
- System hardware architecture. Deployment diagram.

4 Software design - static modeling

- Code architecture. Layered patterns. Structuring into packages.
- Identify classes, attributes and operations.
- Association relationships between classes. Class diagram.
- Generalization relationships. Class diagram.

5 Software design - dynamic modeling

- Communication patterns (requests/responses and notifications).
- Software status management. State diagram.
- Define operations.
- Design-level use case scenarios. Description of interactions using sequence diagrams.

6 Software design - deployment modeling

- Definition of deployable components and their interfaces. Component diagram.
- Deploying components on the hardware architecture. Deployment diagram with components.

Dates and locations

REMOTE CLASS
2026 : 23 June, 29 Sep., 1 Dec.

TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.