Course : Design and Design patterns

advanced practices for object design

Practical course - 2d - 14h00 - Ref. PAT

Price : 1500 CHF E.T.

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The power of object design makes software modelling a specialist job where expertise can only gained through experience of and feedback from the field. This course will allow you to acquire operational skills in designing applications and to obtain improvements in productivity through the use of patterns. The many case studies will teach you to model and produce components and applications that can be upgraded and re-used, and to understand the main design patterns.

Intended audience

Architect. Project leader. Analyst. Designer/Developer. People in charge of methodology.

Prerequisites

A base Knowledges in object's language, Java if possible.

Practical details

Hands-on work

The hands-on work modelling in UML and Java will allow the participants to handle the principles of design, identify the main patterns, and master the related tools.

Course schedule

1 Presentation of the design function

- Review of the basic notions of OO and UML programming. UML notation diagrams. Its advantages for design.
- The challenges for the design: increasing re-use without restraining enhancements.
- Re-use through inheritance: advantages and disadvantages.

PARTICIPANTS

Architect. Project leader. Analyst. Designer/Developer. People in charge of methodology.

PREREQUISITES

A base Knowledges in object's language, Java if possible.

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 The basic principles in object design

- The evolution strategy with the Open/Closed Principle (OCP).
- Effective re-use through inheritance and interfaces: the Liskov Substitution Principle (LSP)
- The concept of polymorphism.
- The impact of object design on project life cycles.

Hands-on work
Illustration of the division of responsibilities between classes.

3 The principles for organisation into packages

- The package as a design unit with the Reuse/Release Equivalency Principle (REP) and the Common Reuse Principle (CRP).
- Dividing up packages thanks to the Common Closure Principle (CCP).
- Organisation between packages: Acyclic Dependencies Principle (ADP) and Stable Dependencies Principle (SDP).

Hands-on work
The construction and hierarchical organisation of packages.

4 The principles for constructing classes

- Managing dependencies logically with the Dependency Inversion Principle (DIP).
- Reducing noticeable complexity with the Interface Segregation Principle (ISP).
- Allocating responsibilities with the GRASP principle.

5 The principles of design patterns

- The technical principles of designing an object application.
- How to re-use experience when designing and developing object applications: design patterns as software solutions.
- The origins and scope of the patterns.
- The advantages and limitations of design patterns.
- Design patterns as a response to technical problems.
- Resolving recurrent problems and ensuring a long life for developments.

6 Gamma and GoF: the founding principles

- The pattern catalogue of the "gang of four".
- The objectives and advantages.
- Isolating the creation of objects from their use with creational patterns for objects: factory, singleton and prototype.
- Refining the assignment of responsibilities through behavioural patterns: chain of responsibility, method pattern and ob
- Improving the structuring of classes with structure patterns: adapter, facade and composite.

Hands-on work
Example of designing and programming with the GoF patterns.

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.

Dates and locations

REMOTE CLASS

2026 : 16 Mar., 15 June, 14 Sep., 7 Dec.