Components Based Design and Development

Computer Engineering Studies
Universidad Carlos III de Madrid

Course Presentation

Juan Llorens

Högskolan på Åland – Finland / Universidad Carlos III de Madrid - Spain

Juan.llorens@uc3m.es

Course objectives

To understand and learn the meaning, techniques, problems and needs of the Components based Software Design.

- To learn...
  - General fundaments of Components
  - Components Based Software Engineering
  - Object Models, Interface Models
  - What are Code Components, Executable Components , Patterns

- To develop your capacities of
  - Developing software based on Components
  - Solving integration problems

Course needs: Pre-requisites

In order to study CBD, the student must know:

- The principles of:
  - Abstraction
  - Solving problems

- Software Design...
  - Modelling: abstract representation of a system
  - Architectural Software Design
  - Detailed Software Design
  - with UML: a tool of representation and communication

- OO Software Development

Programme of the course

- Section I. Introduction
  - Unit 1. Presentation and Introduction
  - Unit 2. Virtual Teaching Technology
  - Unit 3. Summary of Software Engineering
  - Unit 4. Summary of Software Design

- Section II. Components Based Software Engineering
  - Unit 5. Components Based Software Engineering
  - Unit 6. Components Identification and Retrieval

- Section III. Components Models
  - Unit 7. Objects Models
  - Unit 8. Interface Models

- Section IV. High Level Components
  - Unit 9. Design Patterns
  - Unit 10. Architectural Design Patterns

Programme of the course: Practices

- Develop a Component (X2B), based on Components.
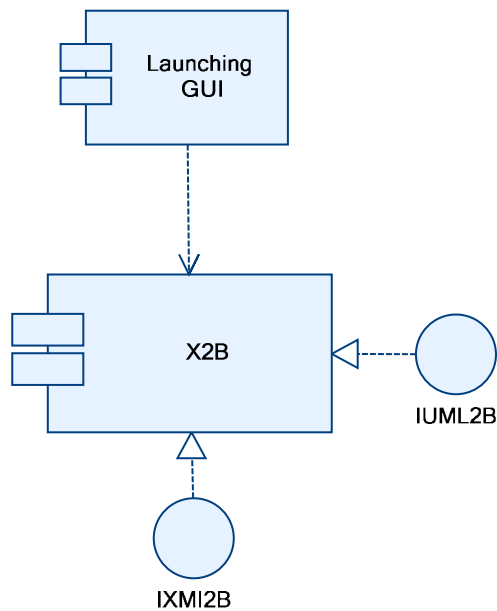
X2B: Available Documentation

- X2B Specifications:

- The Web:

- Microsoft Visual Studio C# Video courses

- Object Orientation technologies

- Software Engineering Courses documentation

Course Evaluation

- 100% Of the mark will come from the practical application

Bibliography

- Basics
  - Sommerville, I. Software Engineering (8th Edition). Pearson Education.
  - Braude, E. **Software Engineering**. An Object-Oriented Perspective. John Wiley & Sons, 2001.
  - Gamma, E. **Design Patterns**, Elements of Reusable Object-Oriented Software. Addison-Wesley, 1995
  - Martin Fowler, Kendall Scott. **UML Distilled. A Brief Guide to the Standard Object Modeling Language**. Addison-Wesley, 2004.