II.2318 – Software Engineering and Java Programming

General information

Module Title: Software Engineering and Java Programming
Module ID: II.2318
Module leader: Gilles CARPENTIER
ECTS: 4
Average amount of work per student: 14 supervised sessions of 3 hours + personal work
Teamwork: no
Keywords: Object technology, UML, Java, JEE, Spring

Presentation

The software development activity combines design and programming. Applying the right methods and using the best code generation tools leads to better developer productivity and improved quality.

Educational objectives

Specialized skills

- Design a software or hardware technological object with safe and standardized operation
    - Mastering the design phases
    - Identify and implement design processes and tools, including:
        - Use of object technology, including object-oriented analysis and UML notation
        - Java Language Learning
        - Using JEE (Spring) Development Canvas
- Act in project mode
    - Knowing how to act as a project manager
        - Detailed requirements specification: moving from "business model" to "analysis model"
        - Technical specification of requirements: basis for project developments and achievements

Prerequisite

- Programming

Content/Program

Concepts

- Object Technology
- Classes, objects, attributes, constructors, methods,
- Relationships (dependence, associations, inheritance)
- UML notation, class diagram
- Java
- Object Collections
- Streams
- Swing GUI
- Servlet
- JSP
- JDBC
- Grails

- ROO
- Spring, GWT, vaadin

Know-how

- Transformation of a verbal logic into a formal logic (specifications -> UML)
- Design, test an object model

Tools used

- Umbrello, Modelio, BlueJ, eclipse, Spring Tool Suite

Subsequent mobilizations at ISEP

- The content of this module can be reused for II.3510 (Mobile Application Development)

Pedagogical methods

Learning methods

- Each session presents a concept, its UML notation and its Java implementation.

Evaluation methods

- 2 exams on the translation of a specification into a class diagram

Language of work

- English

Bibliography, Webography, Other sources

- Objects first with Java (David J. Barnes, Michael Kölling)