UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Software Specification and Design

2425-2-E3101Q109

Aims

The student will achieve the skills necessary to develop software projects of medium/large dimensions. In particular the student will be able to analyze a problem, write a requirement specification, analyze and design a solution, implement a component of the analyzed system exploiting the development environment and versioning system introduced in the course.

Contents

Introduction to software engineering and software development processes, focusing on analysis and design activities. Application of UML for modeling and patterns for design.

Detailed program

1. Introduction to software engineering and software processes
2. Applying UML for modeling
3. Requirements Analysis
4. Object-oriented analysis
5. Object-oriented design
6. Designing objects with responsibility using GRASP patterns
7. Applying desgin patterns
8. Test-driven development
9. Refactoring

Prerequisites

Knowledge on an object-oriented language like Java.

Teaching form

The lessons of the course are in italian, with some slides and papers to study in English.

Lessons, laboratory sessions, classroom exercises, laboratory exercises and homework

The lessons will be taken in presence.

6 lessons of 2 hours in presence
10 lessons of 2 hours in presence with students interactions
10 activities of 2 hours with exercises and students interactions.
8 laboratory activities of 3 hours in presence with students interactions

Textbook and teaching resource

Larman, Applicare UML e i pattern – analisi e progettazione orientata agli oggetti, Pearson, 5° ed, 2020.

I. Sommerville, Ingegneria del Software, Pearson, 10° ed, 2017. (solo due capitoli).

M. Fowler, UML Distilled, Peason, last edition.

Slide, articles and tutorials on some topics of the course.

Semester

Second semester

Assessment method

Traditional Examination:
Assessment of learning consists of a written test with exercises and some questions on the entire course syllabus and then a compulsory oral test. The two tests will be graded in thirtieths by making a weighted average between the two tests (tends to be: oral 40% and written 60%).

Pre-examination (just at the end of the lessons):
The assessment for students taking the course consists of an extension of a project assigned during the lab activity and a compulsory oral test. The two tests will be graded in thirtieths by taking a weighted average between the two tests (tends to be: oral 40% and written 60%).

For the grade to be awarded, it is also STRICTLY REQUIRED that BOTH tests (Project/Written and Oral) be rated SUFFICIENT by the teacher. Sufficiency is established by grade thresholds for the two parts (at least 18 in the oral part and at least 16 in the project part).

Assigned exercises during the Labs, graded in a range of 0-4.
The overall activity of the Labs will be evaluated and will allow between 0-4 points that will be added to the final grade if a sufficiency has been obtained in the traditional or pre- examination (at least 18 in the oral test and at least 16 in the written test).

Office hours

Francesca Arcelli Fontana: by appointment.

Oliviero Riganelli by appointment.

Sustainable Development Goals