UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

## Software Development Process (blended)

**2122-1-F1801Q154**

### Aims

Learn how to manage complex software projects using agile methods and DevOps,

Learn how to analyze project risks and costs,

Learn how to use formal, semi-formal and informal techniques for the analysis and specification of software requirements,

Learn how to design and develop complex software applications using modern Java frameworks.

### Contents

The course describes methods, techniques and technologies for managing complex software projects. The course is organized in three parts. The first part is dedicated to agile software processes, DevOps, cost estimation and risk analysis. The second part is dedicated to the analysis and specification of software requirements. The third part is dedicated to the design and development of software applications using modern Java frameworks and the J2EE technology

### Detailed program

Agile software processes (basic principles, Extreme Programming, Scrum) and DevOps.

Process management: project cost estimation, risk analysis, capability maturity model (CMMI)

Requirements engineering: introduction, domain understanding and requirements elicitation, requirements evaluation, requirements specification and documentation (natural language, diagrammatic notations, formal specifications), requirements quality assurance, requirements evolution.

Design and development: design patterns for enterprise applications; framework MVC (Spring); JPA - Java Persistence API

EJB 3.0, development of J2EE applications.

## Prerequisites

Basic knowledge of Java, SQL, and Web technologies (e.g., HTML, http, etc.)

## Teaching form

Lectures, exercises, self-assessment tests and e-learning material. The course is taught in Italian.

During covid-19 emergency, the lectures will be given online, both wth recorded lectures and synchronous meetings.

## Textbook and teaching resource

Textboooks (selected chapters)

Requirements Engineering, Axel van Lamsweerde, Wiley, 2009.

Patterns of Enterprise Application Architecture, Martin Fowler, Addison-Wesley, 2002.

Enterprise JavaBeans 3.0, O'Reilly Media, Richard Monson-Haefel, Bill Burke, 2006.

Online resources and articles available in the platform.

Self-assessment tests.

## Semester

First semester

## Assessment method

Two options available:

- assignments + written exams: the students who are active during the course can pass the exam by producing assignments in addition to taking a written exam

- written exam + oral assessment: otherwise, the students can pass the course by taking a written exam followed by an oral assessment.

*During COVID-19 emergency, the oral exams will be taken online.*

## Office hours

On appointment.