



Programme of Course "Object-Oriented Software Design"

- Code: DT0208
- Type of course unit: Compulsory (Bachelor Degree in Computer Science curriculum General)
- Level of course unit: Undergraduate Degrees
- Semester: 2

Number of ects credits: (Bachelor Degree in Computer Science) 6 (workload 150 hours)

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1	Course objectives	The focus of the course is on achieving advanced knowledge of the Object-Oriented Programming paradigm and the Object-Oriented Software Engineering, and experience with the JAVA language.
2	Course content and learning outcomes (dublin descriptors)	<p>Topics of the module include:</p> <ul style="list-style-type: none"> • Introduction to the Object-Oriented paradigm • Introduction to the Object-Oriented Software Engineering • Requirements definition, systems architecture design, software design • Java: Classes, objects, inheritance, collections, interfaces and exceptions. • Advanced aspects of JAVA: execution, documentation, threads, I/O, AWT, JDBC • Design Patterns <p>On successful completion of this module, the student should :</p> <ul style="list-style-type: none"> • To have solid knowledge of methods and techniques in Object Oriented Programming (OOP). <p>To understand the fundamental OOP concepts of Objects and their usage, Class design, Interfaces, Relationships between Classes, Inheritance, Polymorphism. To applying acquired knowledge to Java programming.</p> <p>To provide a description of a problem and to design a first solution by: -defining the requirements of the system; - performing an analytical description of the system architecture, relevant entities and relationships in an application domain; and finally -designing the software of the system. To demonstrate skill in OO design to propose and communicate solutions. To show skills in programming also through the use of tools like IDEs.</p> <p>To exploit the acquired knowledge and abilities to solve problems in a larger variety of contexts. To demonstrate the capacity for reading and understand other texts on related topics.</p>
3	Course prerequisites	Basic notions of imperative and object-oriented programming.
4	Teaching methods and language	<p>Language: Italian</p> <p>Reference textbooks</p> <ul style="list-style-type: none"> • Gamma, Helm, Johnson, Vlissides (GoF), <i>Design Patterns: Elements of Reusable Object-Oriented Software</i> . Addison-Wesley. • Bruce Eckel, <i>Thinking in Java 4 ed. - Concorrenza e interfacce grafiche</i>. Pearson. (vol. 3) • Bruce Eckel, <i>Thinking in Java 4 ed. - I fondamenti</i>. Pearson. (vol. 1) . • Bruce Eckel, <i>Thinking in Java 4 ed. - Tecniche avanzate</i>. Pearson. (vol. 2)
5	Assessment methods	The exam consists of a project to be developed in groups of at most four students, with its oral discussion.