Università degli Studi di L'Aquila - Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica

Course catalogue

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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)

Teachers: Romina Eramo (romina.eramo@di.univaq.it)

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)**	Topics of the module include: • 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 On successful completion of this module, the student should : • To have solid knowledge of methods and techniques in Object Oriented Programming (OOP). 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. 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 skils in programming also through the use of tools like IDEs. 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.
3	**Course prerequisites**	Basic notions of imperative and object-oriented programming.
4	**Teaching methodsand language**	**Language**: Italian **Reference textbooks** • Gamma, Helm, Johnson, Vlissides (GoF), ***Design Patterns: Elements of Reusable Object-Oriented Software*** . Addison-Wesley. • Bruce Eckel, ***Thinking in Java 4 ed. - Concorrenza e interfacce grafiche***. Pearson. (vol. 3) • Bruce Eckel, ***Thinking in Java 4 ed. - I fondamenti***. Pearson. (vol. 1) . • Bruce Eckel, ***Thinking in Java 4 ed. - Tecniche avanzate***. 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.