Syllabus

Course Description

Course Title	Introduction to Programming
Course Code	76401
Course Title Additional	
Scientific-Disciplinary Sector	INFO-01/A
Language	English
Degree Course	Bachelor in Informatics and Management of Digital Business
Other Degree Courses (Loaned)	Bachelor in Computer Science
Lecturers	Prof. Chiara Ghidini, Chiara.Ghidini@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/49601
Teaching Assistant	
Semester	First semester
Course Year/s	1
CP	9
Teaching Hours	60
Lab Hours	30
Individual Study Hours	135
Planned Office Hours	27
Contents Summary	• Data types and expressions • Basic data structures and generics • Functions and parameter passing • Conditionals and loops • Arrays and collections • Classes and objects • Basic Input/Output • Exception handling • Recursion
Course Topics	The objective of the course is to teach the fundamental principles

	of programming. We will focus especially on imperative programing as the basic way to learn: (1) the basics of programming and programming elements; (2) the basics of algorithmic thinking; and (3) The basics of writing code. As programming language, we will use a subset of the Java language, mainly restricted to its imperative part. The student will learn how programs can be constructed, and also structured in more files/objects in order to solve a problem. Students will learn how to solve computational problems with well-designed programs that implement effective solutions. The learning will be based on examples, from very simple ones to more complex. We will use the Java programming language and the integrated development environment (IDE), so the goal is to train the student capability to develop java applications in this environment. The final objective for the student is to acquire the ability to solve basic algorithmic problems in a Java-based application.
Keywords	Programming, Algorithms, Java, Object Oriented
Recommended Prerequisites	There are no specific prerequisites. Basic notions of mathematics and set theory will be used.
Propaedeutic Courses	
Teaching Format	The course includes frontal lectures with exercises, lab sessions, and individual programming projects.
Mandatory Attendance	Not mandatory, but highly recommended.
Specific Educational Objectives and Learning Outcomes	Type of course: "di base" for L-31 Scientific area: "Formazione informatica di base" for L-31 The objective of the course is to teach the fundamental principles of programming. We will focus especially on imperative programing as the basic way to learn: (1) the basics of programming and programming elements; (2) the basics of algorithmic thinking; and (3) The basics of writing code. As programming language, we will use a subset of the Java language, mainly restricted to its imperative part. The student will learn how programs can be constructed, and also structured in more files/objects in order to solve a problem. Students will learn how to solve computational problems with well-designed programs that implement effective solutions. The learning will be based on examples, from very simple ones to more complex.

	We will use the Java programming language and the integrated development environment (IDE), so the goal is to train the student capability to develop java applications in this environment. The final objective for the student is to acquire the ability to solve basic algorithmic problems in a Java-based application. Knowledge and understanding: • D1.3 - Know the basic principles of programming. Applying knowledge and understanding: • D2.2 - Ability to solve algorithmic problems using programming methods. • D2.17 - Know how to manage small projects for the development of information systems and how coordinate small working groups. Communication skills • D4.5 - Ability to collaborate in interdisciplinary teams to achieve IT objectives. Learning skills • D5.1 - Learning ability to undertake further studies with a high degree of autonomy.
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	The assessment consists of a a final written exam, performed using laptops provided by the Faculty of Engineering, consisting both of practical components (coding questions) and theoretical components (questions about the basic notions of computer science and programming languages). The practical questions are designed to evaluate learning outcomes related to the application of acquired knowledge, critical thinking, communication, and learning skills. Specifically, students are expected to write code capable of effectively solving a basic computing problem. The theoretical questions assesse knowledge and understanding, the ability to apply that knowledge, and the student's learning skills. It includes verification questions and transfer-of-knowledge

	questions.
Evaluation Criteria	The practical questions will be assessed based on the correctness and quality of the solution, including the relevance and effectiveness of the implemented functions. Written exam answers will be evaluated based on their correctness and clarity.
Required Readings	John Lewis and William Loftus, Java Software Solutions, Pearson, 2018. Kathy Sierra, Bert Bates, Trisha Gee, Head First Java, 3rd Edition. O'Reilly Media, Inc. Cay S. Horstmann, Brief Java: Early Objects. Wiley Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it
Supplementary Readings	The Java Tutorials: https://docs.oracle.com/javase/tutorial/
Further Information	Software used: IntelliJ IDEA (https://www.jetbrains.com/idea/)
Sustainable Development Goals (SDGs)	Industry, innovation and infrastructure, Quality education