

## COURSE DESCRIPTION – ACADEMIC YEAR 2023/2024

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| <b>Course title</b>                    | <b>Computer Programming</b>   |
| <b>Course code</b>                     | 76258   |
| <b>Scientific sector</b>               | INF/01  |
| <b>Degree</b>                          | Bachelor in Informatics and Management of Digital Business (L-31)   |
| <b>Semester</b>                        | 1   |
| <b>Year</b>                            | 1   |
| <b>Credits</b>                         | 10  |
| <b>Modular</b>                         | No  |
| <b>Total lecturing hours</b>           | 60  |
| <b>Total lab hours</b>                 | 30  |
| <b>Attendance</b>                      | Not mandatory, but highly recommended.  |
| <b>Prerequisites</b>                   | There are no specific prerequisites. Basic notions of mathematics and set theory will be used.  |
| <b>Course page</b>                     | <a href="https://ole.unibz.it/">https://ole.unibz.it/</a>   |
| <b>Specific educational objectives</b> | <p>Type of course: "di base" for L-31<br/>         Scientific area: "Formazione informatica di base" for L-31</p> <p>The objective of the course is to teach the fundamental principles of programming. We will use an object-oriented approach and the student will learn how objects and classes can be programmed to "speak" and "cooperate" 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.</p> <p>We will use the Java programming language and an 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 translate a set of functional requirements into a graphical and interactive Java-based application.</p> |
| <b>Lecturer Contact</b>                | <a href="#">Francesco Ricci</a> and <a href="#">Andrea Corradini</a><br>Francesco Ricci: Office POS 2.17, Faculty of Computer Science, Piazza Domenicani 3, <a href="mailto:francesco.ricci@unibz.it">francesco.ricci@unibz.it</a> , +39 0471 016971<br>Andrea Corradini: Office POS 1.04, first floor, Faculty of Computer Science, Piazza Domenicani 3, <a href="mailto:andrea.corradini@unibz.it">andrea.corradini@unibz.it</a>  |
| <b>Scientific sector of lecturer</b>   | INF/01 / NO SSD   |
| <b>Teaching language</b>               | English   |
| <b>Office hours</b>                    | By previous appointment by e-mail   |
| <b>Lecturing Assistant (if any)</b>    | <a href="#">David Massimo</a>   |
| <b>Contact LA</b>                      | Piazza Domenicani 3, Office 2.14, <a href="mailto:david.massimo@unibz.it">david.massimo@unibz.it</a> , +39 0471 016144  |
| <b>Office hours LA</b>                 | To be arranged beforehand by email.   |
| <b>List of topics</b>                  | <ul style="list-style-type: none"> <li>• Basic algorithms and data structures</li> <li>• Data types and expressions</li> </ul>  |

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|  | <ul style="list-style-type: none"> <li>• Classes and objects</li> <li>• Conditionals and loops</li> <li>• Object-oriented design</li> <li>• Arrays and collections</li> <li>• Input/Output and exception handling</li> <li>• Inheritance and polymorphism</li> <li>• Recursion</li> </ul>  |
| <b>Teaching format</b>                                     | Frontal lectures interleaved with exercises, labs with exercises and programming assignments, individual programming projects.   |
| <b>Learning outcomes</b>                                   | <p>Knowledge and understanding:</p> <ul style="list-style-type: none"> <li>• D1.3 - Know the basic principles of programming.</li> </ul> <p>Applying knowledge and understanding:</p> <ul style="list-style-type: none"> <li>• D2.2 - Ability to solve algorithmic problems using programming methods.</li> <li>• D2.17 - Know how to manage small projects for the development of information systems and how coordinate small working groups.</li> </ul> <p>Communication skills</p> <ul style="list-style-type: none"> <li>• D4.5 - Ability to collaborate in interdisciplinary teams to achieve IT objectives.</li> </ul> <p>Learning skills</p> <ul style="list-style-type: none"> <li>• D5.1 - Learning ability to undertake further studies with a high degree of autonomy.</li> </ul>  |
| <b>Assessment</b>  | <p>Programming Project and a final exam (written). During the course, assignments will be given and evaluated.</p> <p>In the project and assignments parts of the exam we will assess the learning outcomes related to the application of the acquired knowledge, the ability to make judgments and the communication and learning skills. In fact, the goal of the project is to design a computer application that can effectively interact with a user. The project part must be positively evaluated to be allowed to attend the written exam. In the assignments, the students will reply to transfer of knowledge questions and programming exercises.</p> <p>In the written exam, there will be verification questions, transfer of knowledge questions and exercises. The learning outcome related to knowledge and understanding, applying knowledge and understanding and those related to the student ability to learn.</p> |
| <b>Assessment language</b>                                 | English  |
| <b>Assessment Typology</b>                                 | Monocratic   |
| <b>Evaluation criteria and criteria for awarding marks</b> | <p>Project counts for 40 % of mark (12 points), and the final exam (written) for 60 % of the mark (18 points). In case of a positive mark the project will count for all the three yearly regular exam sessions.</p> <p>Completing the home assignments will count as additional bonus points (max of 3 points) that are summed to the project points.</p>   |

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|                                      | <p>Project is evaluated in term of quality of the solution: easy to use, meaningfulness of the implemented functions, quality of the code (according to the principles that will be illustrated during the lectures).</p> <p>Written exam questions will be evaluated in term of correctness and clarity.</p> |
| <p><b>Required readings</b></p>      | <p>John Lewis and William Loftus, Java Software Solutions, Pearson, 2018.<br/>         Subject Librarian: David Gebhardi, <a href="mailto:David.Gebhardi@unibz.it">David.Gebhardi@unibz.it</a></p>  |
| <p><b>Supplementary readings</b></p> | <p>The Java Tutorials: <a href="https://docs.oracle.com/javase/tutorial/">https://docs.oracle.com/javase/tutorial/</a></p>  |
| <p><b>Software used</b></p>          | <p>Java JDK, Eclipse IDE and/or NetBeans IDE</p>  |