# COURSE DESCRIPTION − ACADEMIC YEAR 2020/2021

| COURSE TITLE | **Computer Programming** |
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| COURSE CODE | 76203 |
| SCIENTIFIC SECTOR | INF/01 |
| DEGREE | Bachelor in Computer Science |
| SEMESTER | 1st |
| YEAR | 1st |
| CREDITS | 9 |

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| TOTAL LECTURING HOURS | 60 |
| TOTAL LAB HOURS | 30 |
| PREREQUISITES | There are no specific prerequisites. Basic notions of mathematics and set theory will be used. |
| COURSE PAGE | https://ole.unibz.it/ |

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| SPECIFIC EDUCATIONAL OBJECTIVES | Type of course: "di base" for L-31<br>Scientific area: "Formazione informatica di base" for L-31<br><br>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.<br><br>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. |

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| LECTURER | Francesco Ricci<br>http://www.inf.unibz.it/~ricci/CP |
| SCIENTIFIC SECTOR OF THE LECTURER | INF/01 |
| TEACHING LANGUAGE | English |

| OFFICE HOURS | Office POS 2.17, Faculty of Computer Science, Piazza Domenicani 3, fricci@unibz.it , 0471 016971 |
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| TEACHING ASSISTANT | Michele Segata<br>Davide Lanti<br>David Massimo (TA) |
| OFFICE HOURS | Michele Segata: Monday 10:00-12:00 previous appointment, Office POS 2.19, Faculty of Computer Science, Piazza Domenicani 3<br>Davide Lanti: Thursday 16:30, Office POS 2.14, Faculty of Computer Science, Piazza Domenicani 3 |
| LIST OF TOPICS COVERED | • Basic algorithms and data structures<br>• Data types and expressions<br>• Classes and objects<br>• Conditionals and loops<br>• Object-oriented design<br>• Arrays and collections<br>• Input/Output and exception handling<br>• Inheritance and polymorphism<br>• Recursion |
| TEACHING FORMAT | Frontal lectures interleaved with exercises, labs with exercises and programming assignments, individual programming projects. |

| LEARNING OUTCOMES | **Knowledge and understanding**<br>• Know the fundamental principles of programming;<br>• Have a solid knowledge of the most important data structures and programming techniques;<br><br>**Applying knowledge and understanding**<br>• Be able to solve problems using programming;<br>• Be able to develop small and medium size programs using different programming languages and paradigms;<br><br>**Making judgments**<br>• Be able to collect and interpret useful data and to judge information systems and their applicability;<br><br>**Communication skills**<br>• Be able to use modern communication systems, even at a distance;<br><br>**Learning skills**<br>• Have developed learning capabilities to pursue further studies with a high degree of autonomy; |
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| ASSESSMENT | Programming Project and a final exam (written). During the course, assignments will be given and evaluated.<br><br>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 |
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| | 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.<br><br>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. |
| **ASSESSMENT LANGUAGE** | English |
| **EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS** | Project counts for 40 % of mark (14 points), and the final exam (written) for 60 % of the mark (16 points). In case of a positive mark the project will count for all the three yearly regular exam sessions.<br><br>Completing the home assignments will count as additional points bonus that are summed to the project points (max of the sum of project points and assignments is 14).<br><br>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).<br><br>Written exam questions will be evaluated in term of correctness and clarity. |

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| **REQUIRED READINGS** | John Lewis and William Loftus, Java Software Solutions, Pearson, 2018. Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it |
| **SUPPLEMENTARY READINGS** | The Java Tutorials: https://docs.oracle.com/javase/tutorial/ |
| **SOFTWARE USED** | Java JDK, Eclipse IDE |