Syllabus
Course description

Course title	Fundamentals of Programming I
Course code	42405A
Scientific sector	INF/01
Degree	CORSO DI LAUREA IN INGEGNERIA ELETTRONICA E DEI SISTEMI CIBERFISICI BACHELOR IN ELEKTROTECHNIK UND CYBERPHYSISCHEN SYSTEMEN
Semester	1st
Year	I
Academic year	2022/23
Credits	6
Modular	Yes

Total lecturing hours	40
Total exercise hours	20
Attendance	
Prerequisites	There are no specific prerequisites. Basic notions of mathematics and set theory will be used.
Course page	

Specific educational objectives	Type: "attività formativa di base" Scientific area: "Matematica, informatica e statistica" The course is designed for acquiring professional skills and knowledge. The objective of the course is to teach the fundamental principles of programming and the use of tools to support the development of software. Students will learn how to solve computational problems with well-designed programs that implement effective and secure solutions. The learning will be based on examples, from very simple ones to more complex, and practical exercises. The final objective for the student is to acquire the ability to translate a set of functional requirements into a software solution that can be deployed on different hardware or virtual infrastructures.

Learning outcomes	Knowledge and understanding • Know the fundamental principles of programming. • Have a solid knowledge of the most important data structures and programming techniques. Applying knowledge and understanding

- Be able to solve problems using programming.
- Be able to develop small and medium size programs using different programming languages and paradigms.

Making judgements
- Be able to collect and interpret useful data and to judge information systems and their applicability.
- Be able to identify an appropriate programming paradigm and data structures to solve a given problem.

Communication skills
- Be able to describe and motivate the software design choices.
- Be able to properly document a software artifact to ensure its usability and integration in more complex systems.

Learning skills
- Be able to learn how to use different procedural programming languages in autonomy, by identifying and understanding the relevant literature.

Assessment	Programming Project and a final written exam. In the project 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. The project part must be positively evaluated to be allowed to attend the written exam. In the written exam, there will be verification questions, transfer of knowledge questions and exercises. The written examination will assess the learning outcomes 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 50% of mark, and the final exam (written) for 50% of the mark. In case of a positive mark the project will count for three exam sessions. 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). Written exam questions will be evaluated in term of correctness and clarity.

Required readings	*C: How to Program*, Paul J. Deitel, Harvey Deitel, 9th edition, Pearson Education
Supplementary readings	Additional material will be provided during the course