Course	Informatica
Level and course of study	Bachelor's Degree in Sports Sciences
Scientific-disciplinary sector (SSD)	INF/01
Year of study	3
Total number of credits	4
Prerequisites	Good knowledge of the English language
Teacher	Cesare Bianchi https://ricerca.unicusano.it/author/cesare-bianchi/ Nickname: cesare.bianchi cesare.bianchi@unicusano.it Office hours: indicated in the course message area
Presentation	The Computer Science course aims to provide students with the basic knowledge of this science, enabling them to understand the functioning of computer devices (computers, servers, phones, etc.), communication systems, and, more generally, information technologies. This will also allow them to grasp the concepts and importance of Cybersecurity, which is now a crucial aspect. Another goal of the course is to make students self-sufficient in finding the best solutions to problems they will encounter in their professional and personal lives. A critical and in-depth understanding of various issues in the computing world is fundamental for acquiring this autonomy.
Educational objectives	The Computer Science course has the following educational objectives: • Explain the fundamental concepts of computer science, its history, and evolution • Illustrate the functioning of computers • Illustrate the functioning of computer networks • Explain the importance of Cybersecurity • Foster independence in problem-solving
Expected Learning Outcomes	**Knowledge and Understanding** By the end of the course, the student will have demonstrated knowledge of the basics of the history of computing, from prehistory to pioneers such as Ada Lovelace and Alan Turing. They will understand the fundamental concepts of binary logic and Boolean logic and be able to describe the von Neumann architecture. The student will acquire knowledge of numbering systems (decimal, binary, hexadecimal), and understand the importance of programming languages. They will know the basic operations on files and their management, as well as the main characteristics of computer hardware and file systems. They will have the foundations to understand the functioning of networks, various file types, compression, encryption, and cybersecurity.

	Applying Knowledge and Understanding The student will be able to apply the acquired knowledge to find and use the necessary software for tasks in their professional and personal lives. They will be able to use Boolean logic in practical applications, and configure and manage file systems and computer hardware. Additionally, they will be able to implement data backup and protection techniques and understand the differences between open-source and proprietary software in terms of security and transparency. **Ability to Draw Conclusions** The student will be able to evaluate and choose the most appropriate computing solutions for specific needs, such as the use of application software, hardware configurations, and cybersecurity techniques. They will be able to identify and solve problems related to file and hardware management and draw conclusions about data security based on their understanding of vulnerabilities and protection techniques. **Communication Skills** The student will be able to describe and engage in conversations on the main topics of computer science covered in the course, such as the history of computing, Boolean logic, numbering systems, and hardware architectures. They will acquire the skills to present and explain complex concepts clearly and comprehensively, using appropriate technical language. **Learning Skills** By the end of the course, the student will have the fundamental knowledge necessary to further delve into the topics covered, such as programming, operating system management, and cybersecurity. They will be able to independently learn new technologies and methods and stay updated on developments in the field of computer science. They will be able to critically search for and choose the software necessary to solve problems they will face in their professional lives.
Teaching organization	The course is structured through pre-recorded audio-video lectures, which, together with slides and handouts, comprise the study materials available on the platform. Asynchronous self-assessment tests are proposed to complement the pre-recorded lectures, allowing students to verify both their understanding and the level of knowledge acquired from each lesson. Interactive teaching takes place in the "virtual class" forum and includes 3 Etivities that apply the knowledge acquired in the theoretical lessons to problem-solving. Specifically, the Computer Science course provides 4 ECTS credits. The total study load for this teaching module is 100 hours, divided as follows: • Approximately 80 hours for viewing and studying the video-recorded material (12

	hours of recorded theory and exercises) • Approximately 15 hours of Interactive Teaching for the development and submission of 3 Etivities • Approximately 5 hours of Interactive Teaching for completing self-assessment tests It is recommended to distribute the study of the subject evenly over an 8-week period, dedicating about 12 hours of study per week.
Course content	The course covers the following modules/topics: 1. General Overview, History of Computing, Information Theory 2. Basic Concepts: Boolean Logic, Number Systems, Bytes, Character Encoding 3. Computer Functioning: Files, File Systems, Partitioning, Hardware, Operating System 4. Software: Introduction to Algorithms, Machine Language, Programming Languages 5. Computer Networks, History of the Internet, Network Protocols, HTML, the Web, Email 6. Compression and Multimedia 7. Cryptography, Digital Signature 8. Cybersecurity 9. Autonomous Research of Software and Problem-Solving Solutions
Teaching material	The teaching material is entirely provided by the instructor and covers the entire curriculum. It includes handouts, slides, and video lectures in which the instructor comments on the slides. This material contains all the necessary elements to tackle the study of the subject.
Learning Assessment Methods	The exam consists of a written or practical/oral test aimed at assessing the student's ability to analyze and re-elaborate the acquired concepts. In line with the educational model of the Study Course, the final evaluation of the course, expressed in thirtieths, also takes into account the student's ongoing activities, assessed through the scores assigned to the three proposed Etivities (from 0 to 4). The written test consists exclusively of 30 multiple-choice questions. The expected learning outcomes regarding the knowledge of the subject and the ability to apply it are evaluated through the written test, while communication skills, the ability to draw conclusions, and self-learning abilities are assessed through the Etivities. The oral exam, on the other hand, consists of an interview and practical tests aimed at

	verifying the student's level of preparation. The oral exam typically involves 5 questions (theoretical and/or applied) covering the entire course syllabus. Some questions will consist of practical tests to be performed in front of the teacher during the exam to demonstrate the acquired knowledge, using exclusively open-source software (e.g., Linux, LibreOffice, etc.). In both exam modalities, particular attention is given to the student's ability to re-elaborate, apply, and present the material available on the platform with proper language. The final evaluation also considers the student's active participation in forums (virtual classrooms) and the correct completion of the proposed Etivities.