PROGRAMMA DEL CORSO DI IT AND TELEMATIC SKILLS

SETTORE SCIENTIFICO

INF/01 (NN)

CFU

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OBIETTIVI

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The course aims to provide students with a solid theoretical and practical foundation in the use of computing and telematic tools. Students will acquire skills in the digital representation of information, learning how to use binary, octal and hexadecimal encodings for numbers, text, sound, images and video. The fundamentals of algorithms and automation will be explored, with particular attention to representation through flowcharts and finite state automata. The course also addresses the principles of computer security, analyzing threats to systems and protection techniques such as cryptography. Students will develop practical skills in the use of productivity software such as OpenOffice Writer and Calc, using advanced features for text editing and spreadsheet management. By the end of the course, students will be able to solve practical problems using digital tools effectively and securely.

Obiettivi formativi:

1. Acquire knowledge of the principles of digital representation, including binary, octal and hexadecimal encodings and the ways of representing text, sound, images and video;
2. Develop an understanding of automation and algorithm concepts, including their description through flowcharts and finite state automata;
3. Identify the main risks related to computer security and understand protection techniques such as cryptography;
4. Learn the features of OpenOffice Writer for drafting and formatting documents, including posters and complex texts;
5. Understand the use of OpenOffice Calc for managing data, calculating costs and revenues, and using logical formulas;

Integrate theoretical and practical knowledge to address computing problems with a methodological approach.

RISORSE

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Below is the list of video lessons: 1. Representation and encoding of information; 2. Binary digital representation; 3. Positional numeral systems; 4. Binary encoding of decimal numbers; 5. Arithmetic operations between binary numbers; 6. Review exercises; 7. Octal encoding; 8. Hexadecimal encoding; 9. Text encoding; 10. Sound encoding; 11. Encoding of images and video; 12. Review exercises; 13. Problems, algorithms and executors; 14. Finite state automata; 15. The

description of algorithms; 16. Flowcharts: symbols, sequence and selection; 17. Flowcharts: iteration blocks; 18. Exercises on algorithms and flowcharts; 19. Network security: foundations and cryptographic principles; 20. Threats to programs, systems and networks; 21. Cryptography for security: integrity, authenticity, authentication; 22. Protection of information systems: secure protocols and network defences; 23. Introduction to the LibreOffice suite; 24. LibreOffice Writer: the word processor; 25. Working with LibreOffice Writer: main actions; 26. Working with LibreOffice Writer: designing a flyer; 27. Calc: main components; 28. Using Calc; 29. Calc exercise: grades of a class; cost and revenue calculation; 30. LibreOffice Calc exercises: if function.

Interactive Teaching Activities (TEL-DI) consist, for each ECTS credit, of 2 hours delivered synchronously via the Class platform. These sessions are conducted by the instructor, often with the support of a subject-specific tutor, and are dedicated to one or more of the following types of activities:

- Live sessions, during which the instructor guides applied activities, encouraging critical thinking and direct engagement with students through real-time questions and collaborative discussions;
- Interactive webinars, enriched with polls and live questions, aimed at fostering active participation and co-construction of knowledge;
- Group work and real-time discussions, organized through collaborative tools such as breakout rooms, to develop problem-solving strategies and teamwork skills;
- Collective virtual labs, in which the instructor leads experiments, hands-on activities, or case study analysis, turning learning into a concrete and participatory experience.

These activities may also be supported by asynchronous interaction tools, such as:

- forums;
- wikis;
- quizzes;
- glossaries.

At least two editions of synchronous interactive teaching are planned during the academic year. Please note that student office hours, including thesis supervision, are not included in the calculation of interactive teaching hours.

VERIFICA

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The final exam can be taken either in written or oral form. The oral exam consists of an interview with the examination board focusing on the course content. The written exam consists of a test composed of 31 multiple-choice questions. For each question, students must select one correct answer from four options. Only one answer is correct, and no penalties are applied for incorrect or unanswered questions. A perfect score (31/31 correct answers) will result in the award of cum laude (honors).

In addition to the final exam, the course includes synchronous interactive teaching activities and intermediate assessments, which allow students to monitor their learning through ongoing evaluation and reinforcement of knowledge.

Participation in synchronous interactive activities may result in a bonus of up to 2 points on the final exam grade. This bonus is awarded based on the quality of participation and the results of the intermediate assessments.

To be eligible for the intermediate assessments, students must attend at least 50% of each hour of synchronous interactive teaching.

The intermediate assessments may consist of end-of-lesson quizzes or the submission of a written assignment. A quiz is considered passed if the student answers at least 80% of the questions correctly. In the case of written assignments, the decision on whether the work qualifies for a bonus is made by the course instructor.

The bonus points awarded for the intermediate assessments are added to the final exam grade only if the exam is passed with a minimum score of 18/30, and they may contribute to the award of cum laude.

The described assessment methods are designed to evaluate the level of understanding of theoretical concepts and the ability to apply them, as well as to assess students' competence and independent judgment. Communication skills and learning ability will also be assessed through direct interaction during the course.