Syllabus

Descrizione corso

Titolo insegnamento	Elementi di Programmazione
Codice insegnamento	42611
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	INFO-01/A
Lingua	Inglese
Corso di Studio	Corso di laurea professionalizzante in Tecnologie del Legno
Altri Corsi di Studio (mutuati)	
Docenti	prof. Chiara Ghidini, Chiara.Ghidini@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/49601
Assistente	
Semestre	Secondo semestre
Anno/i di corso	1
CFU	3
Ore didattica frontale	30
Ore di laboratorio	0
Ore di studio individuale	45
Ore di ricevimento previste	9
Sintesi contenuti	1. Introduction to: different computing devices, their hardware and software; computer organisation; data hierarchy; machine languages, assembly languages, high-level programming languages. Introduction to programming conventions and paradigms, with a focus on the structured programming paradigm. Basic syntax and structure in Python: data types, variables, constants, operators, Boolean and arithmetic expressions; standard input/output handling. 2. Basic control flow structures, e.g., conditional control structures; error handling.

	3. Basic data structures and subroutines, e.g., functions. The above is tackled for covering the basics of computing to critically understand a computational problem and develop a resolution in a Python-based programming language.
Argomenti dell'insegnamento	- statements - conditionals - boolean expressions - loops - functions - lists - dictionaries - search - tuples
Parole chiave	Intropduction to programming, Python
Prerequisiti	Basics of mathematics.
Insegnamenti propedeutici	
Modalità di insegnamento	In-presence, lecture and workshop-based.
Obbligo di frequenza	Attendance is not compulsory for lectures, albeit highly recommended. Attendance is compulsory for labs to profit from the course material (e.g., programmable boards) which cannot be borrowed outside class hours.
Obiettivi formativi specifici e risultati di apprendimento attesi	The course belongs to the type "caratterizzanti – discipline informatiche". By following the latest European Commission and national recommendations and guidelines on computational thinking and computing education, the course gives a general overview of scientific contents and computing technologies, which are relevant for tomorrow's citizens. The overall goal of the course is to empower different students to tackle a simple computational problem and develop a solution for it, critically and collaboratively. The specific objectives to achieve the goal are as follows. 1) First, the course aims to provide participants with basic knowledge of computing to understand a basic computational problem, that is, to analyse it and abstract away what needed for developing a basic computing solution for it. 2) Second, the course aims to enable students to develop basic computing solutions for different problems, which requires them to specify and program them.

	Third the course aims to enable students to collaborate in the analysis of problems and development of solutions, and to critically reflect on what they are doing. Intended Learning Outcomes (ILO): Knowledge and understanding: 1. Know fundamental principles of computing. 2. Know different models of computation and computing devices. 3. Have a basic knowledge of programming for different computing devices. 4. Understand how to efficiently interact with basic programming environments. Applying knowledge and understanding 5. Be able to analyse basic computational problems. 6. Be able to specify one among many computational solutions. 7. Be able to program computational solutions. 8. Be able to understand computational solutions. Making judgements 9. Be able to collect and interpret useful data and to judge computational solutions and their applicability. 10. Be able to identify critical aspects in the development process and take a critical stance towards what is developed. Communication skills 11. Be able to describe and motivate choices. 12. Be able to properly document a computing solution.
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	
Modalità di esame	Formative assessment Not foreseen Summative assessment Assessment format: paper-based written exam, with questions related to all the listed topics (1–3). The exam is organised and weighted as follows: 1. C. 30% multiple-choice questions 2. C. 70% open-ended questions Its duration is expected to be c. 2 hours.

	The total number of hours the student devotes to the course is #CFU * 25 (e.g., 150 hours for a 6 CFU course), including: o the time spent in class; o the preparation of the project; o the time for independent study.
Criteri di valutazione	The outcome is based on the answers to the written exam. The following ILOs will be taken in consideration for evaluating answers and awarding marks: - Via multiple choice questions (30%): knowledge and understanding - Via open-ended questions (70%): o Applying knowledge and understanding o Making judgements o Communication skills
Bibliografia obbligatoria	Material provided by the lecturer.
Bibliografia facoltativa	Online resources suggested by the lecturer, and available through the unibz library to all enrolled students
Altre informazioni	Software used: Python, basic IDEs.
Obiettivi di Sviluppo Sostenibile (SDGs)	Istruzione di qualità