UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Informatics and Programming for Tourism

2627-1-F7602M007

Learning objectives

The Computer Science and Programming for Tourism course (42 hours) aims to provide the fundamental theoretical and practical knowledge of information technology and the basics of programming, contextualizing them within the tourism sector.

By the end of the course, students will achieve the following learning outcomes:

Knowledge and understanding:

Understand the fundamental principles of computer science, information representation, and Boolean algebra.

Understand the basic structure of a computing system (hardware, software, and operating systems) and the concept of an algorithm.

Know the basic syntax and control structures of the Python programming language.

Applying knowledge and understanding:

Translate logical-computational problems into flowcharts using dedicated software (e.g., AlgoBuild).

Write, test, and execute simple Python programs to solve application or data processing problems.

Use development environments/editors for writing and debugging code.

Making judgements:

Evaluate and identify the most suitable algorithmic structure to solve a given information problem.

Independently select and use software tools and development environments best suited to one's study or work requirements.

Communication skills:

Properly use the technical and scientific terminology of computer science and programming.

Clearly and comprehensively describe the logic and operation of an algorithm or code script.

Learning skills:

Develop the ability to independently explore new languages, libraries, or software tools not explicitly covered in class.

Independently utilize technical documentation, online resources, and multimedia materials for self-directed learning and problem-solving.

Contents

The course is structured into two main integrated parts:

Fundamentals of Computer Science and Computer Architecture: An introduction to data representation, Boolean algebra, hardware, software, and operating systems.

Algorithms and Python Programming: An introduction to computational thinking and logical development through flowcharts (AlgoBuild), followed by learning the core structures of the Python language for data processing and the automation of business and tourism-related tasks.

Detailed program

Module 1: Fundamentals of Computer Science and Computing Systems (approx. 14 hours)

Introduction to computer science and automated information processing.

Information representation: binary encoding (text, numbers, multimedia).

Elements of Boolean algebra and propositional logic.

Computer architecture: hardware (CPU, memory, peripherals) and software.

Operating systems and file system management.

Module 2: Algorithms and Logic Design (approx. 6 hours)

Concept of algorithm and fundamental properties.

Algorithm modeling via flowcharts.

Practical exercises in algorithmic design using AlgoBuild.

Module 3: Python Programming (approx. 22 hours)

Introduction to the Python language and development environments (editors/IDLE).

Basic syntax: variables, data types (integers, floats, strings, booleans), and operators.

Conditional control structures (if, elif, else).

Iterative structures/loops (while, for).

Essential sequential data structures (lists and strings).

Introduction to file input/output (read/write) and simple data manipulation (applied to real-world examples from the tourism sector, e.g., booking management or visitor flow data analysis).

Prerequisites

No one in particular.
A basic knowledge of computer use, especially for home use, may be helpful.

Teaching methods

Classes will be held in person at the university's computer laboratories, according to the scheduled timetable.
Any discrepancies will be communicated via the e-learning platform.
The student may choose, if they wish, to use a personal device different from what is available in the classroom, which allows them to carry out the activities required by the course.

Assessment methods

The exam consists of a practical and written test held in the computer laboratory and includes:

Multiple-choice / Short open-ended questions: aimed at assessing knowledge and understanding regarding the general principles of computer science, hardware/software archi

tecture, Boolean algebra, and operating systems.

Algorithmic design exercise: aimed at evaluating the ability to apply knowledge and u nderstanding as well as making judgements through the graphical representation of an algorithm (e.g., using AlgoBuild).

Python programming exercise: aimed at assessing application skills, syntactic/semanti c correctness, and the ability to learn and debug code directly on the computer.

The overall assessment will consider conceptual correctness, the effectiveness of the proposed algorithmic solution, and the appropriate use of technical terminology.

The total duration of the exam is 60 minutes.

Textbooks and Reading Materials

No mandatory or recommended text.
Teacher provides handouts and other useful material for preparation directly on the e-learning platform.
Nothing prevents the student from freely evaluating other study aids.
The teacher, by free choice, makes available to all students the video recordings already made during other formative academic activities, which he has, on a part of the proposed topics. There is no programming part. The files are on the cloud, along with other videos that are not of interest for the course (to be ignored).

Semester

First semester of the academic year 26-27, according to the calendar set by the university.
Any changes will still be communicated by the teacher via the e-learning platform.

Teaching language

Italian.

Sustainable Development Goals

QUALITY EDUCATION