

# Syllabus

## *Course Description*

Course Title	Fundamentals of programming
Course Code	42611
Course Title Additional	
Scientific-Disciplinary Sector	INFO-01/A
Language	English
Degree Course	Professional Bachelor in Wood Technology
Other Degree Courses (Loaned)	
Lecturers	Prof. Chiara Ghidini, Chiara.Ghidini@unibz.it <a href="https://www.unibz.it/en/faculties/engineering/academic-staff/person/49601">https://www.unibz.it/en/faculties/engineering/academic-staff/person/49601</a>
Teaching Assistant	
Semester	Second semester
Course Year/s	1
CP	3
Teaching Hours	30
Lab Hours	0
Individual Study Hours	45
Planned Office Hours	9
Contents Summary	<ol style="list-style-type: none"> <li>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.</li> <li>2. Basic control flow structures, e.g., conditional control structures; error handling.</li> <li>3. Basic data structures and subroutines, e.g., functions.</li> </ol>

	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.
<b>Course Topics</b>	<ul style="list-style-type: none"> <li>- statements</li> <li>- conditionals</li> <li>- boolean expressions</li> <li>- loops</li> <li>- functions</li> <li>- lists</li> <li>- dictionaries</li> <li>- search</li> <li>- tuples</li> </ul>
<b>Keywords</b>	Intropduction to programming, Python
<b>Recommended Prerequisites</b>	Basics of mathematics.
<b>Propaedeutic Courses</b>	
<b>Teaching Format</b>	In-presence, lecture and workshop-based.
<b>Mandatory Attendance</b>	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.
<b>Specific Educational Objectives and Learning Outcomes</b>	<p>The course belongs to the type "caratterizzanti – discipline informatiche".</p> <p>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.</p> <ol style="list-style-type: none"> <li>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.</li> <li>2) Second, the course aims to enable students to develop basic computing solutions for different problems, which requires them to specify and program them.</li> </ol> <p>Third the course aims to enable students to collaborate in the</p>

	<p>analysis of problems and development of solutions, and to critically reflect on what they are doing.</p> <p>Intended Learning Outcomes (ILO):</p> <p>Knowledge and understanding:</p> <ol style="list-style-type: none"> <li>1. Know fundamental principles of computing.</li> <li>2. Know different models of computation and computing devices.</li> <li>3. Have a basic knowledge of programming for different computing devices.</li> <li>4. Understand how to efficiently interact with basic programming environments.</li> </ol> <p>Applying knowledge and understanding</p> <ol style="list-style-type: none"> <li>5. Be able to analyse basic computational problems.</li> <li>6. Be able to specify one among many computational solutions.</li> <li>7. Be able to program computational solutions.</li> <li>8. Be able to understand computational solutions.</li> </ol> <p>Making judgements</p> <ol style="list-style-type: none"> <li>9. Be able to collect and interpret useful data and to judge computational solutions and their applicability.</li> <li>10. Be able to identify critical aspects in the development process and take a critical stance towards what is developed.</li> </ol> <p>Communication skills</p> <ol style="list-style-type: none"> <li>11. Be able to describe and motivate choices.</li> <li>12. Be able to properly document a computing solution.</li> </ol>
<b>Specific Educational Objectives and Learning Outcomes (additional info.)</b>	
<b>Assessment</b>	<p>Formative assessment</p> <p>Not foreseen</p> <p>Summative assessment</p> <p>Assessment format: paper-based written exam, with questions related to all the listed topics (1–3).</p> <p>The exam is organised and weighted as follows:</p> <ol style="list-style-type: none"> <li>1. C. 30% multiple-choice questions</li> <li>2. C. 70% open-ended questions</li> </ol> <p>Its duration is expected to be c. 2 hours.</p>

	<p>The total number of hours the student devotes to the course is #CFU</p> <p>* 25 (e.g., 150 hours for a 6 CFU course), including:</p> <ul style="list-style-type: none"> <li>o the time spent in class;</li> <li>o the preparation of the project;</li> <li>o the time for independent study.</li> </ul>
<b>Evaluation Criteria</b>	<p>The outcome is based on the answers to the written exam.</p> <p>The following ILOs will be taken in consideration for evaluating answers and awarding marks:</p> <ul style="list-style-type: none"> <li>- Via multiple choice questions (30%): knowledge and understanding</li> <li>- Via open-ended questions (70%): <ul style="list-style-type: none"> <li>o Applying knowledge and understanding</li> <li>o Making judgements</li> <li>o Communication skills</li> </ul> </li> </ul>
<b>Required Readings</b>	Material provided by the lecturer.
<b>Supplementary Readings</b>	Online resources suggested by the lecturer, and available through the unibz library to all enrolled students
<b>Further Information</b>	Software used: Python, basic IDEs.
<b>Sustainable Development Goals (SDGs)</b>	Quality education