Libera Università Internazionale
degli Studi Sociali Guido Carli

LUISS

Syllabus

Academic Year	2021/2022
Program	Politics: Philosophy and Economics
Course	Lab of computer skills
Term	I semester
Year	1
SSD	INF/01 - Abilità informatiche e telematiche
Credits	2

INSTRUCTIONAL GOALS	The course provides the basis for understanding the working principles of modern digital technologies and their implications on our daily life at the individual and organizational level. The objectives of the course can be divided into two main categories related to theoretical and practical aspects, as described below. - Theoretical aspects: Understanding the notion of “Computational Thinking" and its applications in social and economic sciences; understanding algorithm principles and fundamentals of programming languages as well as basic notions of data structures, information and coding; understanding the combination of hardware and software components that make up modern digital devices and computing architectures. Understanding the main features of modern communication networks, the architecture of the web, and cloud computing. Understanding the concept of mobile computing, mobile applications and IoT; understanding social networks; understanding the basic concept of database and the potential of BigData analytics as a tool for decision support; Understanding key notions in computer and network security key concepts; being aware of the risks arising from malicious software and from the exposure of corporate and/or personal sensitive information; understanding the concept of machine learning and digital currencies. - Practical aspects: introduction to computer programming, useful for developing an alternative problem solving approach and for understanding fundamental programming principles to be adopted in finance and statistics applications.
INTENDED LEARNING OUTCOMES They describe what a learner is expected to know, understand and be able to demonstrate after completion of a learning path.	At the end of the course the students will understand the basic operating principles of modern digital technologies. Furthermore, they will develop logical skills and problem solving skills through basic level coding activities. **Knowledge and understanding**: The course will deal with both theoretical and practical concepts to understand digital technologies, such as computer networks, programming languages, algorithms and databases. This course provides knowledge and analytical resources that will enable students to understand technologies, processes and software. **Applying knowledge and understanding**:

	The practical part will investigate the use and the key role of problem solving abilities with particular focus on how to write programs using Python. The students will be able to: - analyze components of information systems. - identify threats in computer and network security. - design and create a simple software program. - write programs that use loop statements to repeat the execution of blocks of code. **Making judgements**: We expect students to be able to analyze digital systems and how they are used inside an organization. They are expected to be able to discuss and evaluate essentials in computer and network security, in order to understand the threats in computer usage and Internet surfing. **Communications Skills**: The course will give the students the possibility to understand terms and concepts related to digital systems. The students will be able to communicate their ideas, proposals, analysis and critical reasoning in the digital world in the most effective and appropriate way. **Learning skills**: This course will allow students to understand how information systems work and the basic concepts related to programming. The students will improve their problem solving skills by writing simple programs using the Python programming language.
Pre-requisites	Working knowledge of the most popular office-automation applications, with the focus on: word processing, spreadsheets, presentations.
Course content	The syllabus consists of a theoretical part (classroom-based lessons) and a practical part (lectures in a lab). The contents of each part are described below. Theoretical part: - Course introduction; what is computational thinking; binary notation; definition of algorithm - Algorithms, data structures and programming languages - HW/SW components and architectures - Networks fundamentals and application protocols - Network resources, cloud computing and Web search - Mobile computing, mobile devices, mobile applications and IoT - Social network and graph concepts - Data Base, BigData - Information Security and Privacy - Machine learning - Digital Currencies. Practical part: - Introduction to Python - Data type and data structure - Variables and constants - Conditional (if) statements and Loops - Functions - Recursive functions - Search algorithms - Numerical Algorithms.
Reference Books	All the class material is available on the e-learning platform (slides, lecture notes, and reference to the textbook).
Teaching Methods	The following teaching methods will be used during the course: - Traditional Lectures - Online lectures - Lab.

Assessment	The competences are assessed via an oral or a written test (based on the number of students). There will be a midterm (python coding test).