



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2023/2024
BACHELOR'S DEGREE (BSC)	MANAGEMENT ENGINEERING
SUBJECT	PRINCIPLES OF COMPUTER SCIENCE
TYPE OF EDUCATIONAL ACTIVITY	A
AMBIT	50292-Matematica, informatica e statistica
CODE	13821
SCIENTIFIC SECTOR(S)	ING-INF/05
HEAD PROFESSOR(S)	AGATE VINCENZO Ricercatore a tempo determinato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	144
COURSE ACTIVITY (Hrs)	81
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	AGATE VINCENZO Tuesday 15:00 17:00 Ricevimento in modalita telematica

DOCENTE: Prof. VINCENZO AGATE

PREREQUISITES	Basic knowledge of any operating system and basic computer skills.
LEARNING OUTCOMES	Knowledge and understanding The student, at the end of the course, will have acquired the basic concepts of programming and a programming language, which is specifically identified in Python. Python allows an easy introduction of basic programming concepts and is a powerful tool for the rapid prototyping of programs, which allows problems to be solved using a wide range of libraries. The student will have acquired the algorithm concept, as a useful tool for solving a well formulated problem. The student will be able to use the most popular spreadsheets. The student will be able to understand the problems related to the design and programming of computer applications. The student will have acquired the basic concepts of the application level of computer networks. Applying knowledge and understanding Ability to use the tools to solve problems related to the design and programming of computer applications and the most popular spreadsheets. Making judgments Ability to analyze and formalize the constraints of a problem, to find the algorithm required to solve the problem, proposing the most efficient solution for its implementation in the specific context of information systems of small and medium enterprises. Communication skills Ability to communicate and express issues related to the subject of the course and to support conversations on issues of design and programming of computer applications. Learning Ability Learning a set of basic concepts that have determined the development of the discipline and ability to continue and deepen studies independently.
ASSESSMENT METHODS	Written test. It consists of 16 multiple-choice questions. Each correct answer is worth 2 points, while a wrong answer is worth -1 point. Any empty answer is worth 0. The student has 60 minutes to complete the test. Oral test. Oral test at the candidate's request.
EDUCATIONAL OBJECTIVES	The course aims to provide the basis for knowledge and understanding of the fundamental concepts for the design and programming of computer applications using the Python language. The course also aims to provide fundamental knowledge for the conduct of integrated computerization and business process planning initiatives with particular reference to information systems, the main technologies and the applications that characterize them.
TEACHING METHODS	The course is mainly based on frontal knowledge transfer lessons, using appropriate practical examples where necessary.
SUGGESTED BIBLIOGRAPHY	Il materiale didattico verrà fornito dal docente, o indicato lezione per lezione, sulla base degli argomenti affrontati, preferenzialmente di pubblico dominio. Il software utilizzato sarà scelto tra le proposte open source. [The teaching material will be provided by the teacher, or specified lecture by lecture, based on the covered topics. The used software will be chosen among the open source materials.] Libro di testo [Textbook]: - Concetti di informatica e fondamenti di Python, Cay Horstmann - Rance D. Necai, Maggioli Editore, Seconda Edizione, 2019. - Dispense fornite dal docente sull'utilizzo dei fogli di calcolo.

SYLLABUS

Hrs	Frontal teaching
2	Introduction to the structure of computer systems.
4	Numerical systems and information representation.
4	Business information systems. Definition, design and security.
4	Algorithms: definition and attributes. Classification of algorithms according to their order of complexity.
2	Representation of the algorithms: pseudocode and flow chart.
6	Spreadsheet applications: spreadsheet logic, mathematical functions, statistical functions, text and logic functions, graphs, pivot tables.
4	Introduction to the Python language and development environment configuration.
4	Variables and data types: comments, strings, tuples, lists, dictionaries and sets.
4	Python programming: conditional instructions, cycles, list comprehension.
2	Python functions and exception handling.

SYLLABUS

Hrs	Frontal teaching
8	Elements of object-oriented programming.
4	Principles of the network application layer: architectures and protocols.
3	Principles of the network application layer: Web and HTTP
3	Principles of the network application layer: Simple Mail Transfer Protocol.

Hrs	Practice
4	Representation of the algorithms: pseudocode and flow chart.
6	Spreadsheet applications: spreadsheet logic, mathematical functions, statistical functions, text and logic functions, graphs, pivot tables.
4	Variables and data types: comments, strings, tuples, lists, dictionaries and sets.
4	Python programming: conditional instructions, cycles, list comprehension.
4	Python functions and exception handling.
5	Object-oriented programming in Python.