UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Umanistiche
ACADEMIC YEAR	2023/2024
BACHELOR'S DEGREE (BSC)	DISCIPLINE DELLE ARTI, DELLA MUSICA E DELLO SPETTACOLO
SUBJECT	COMPUTER SCIENCE
TYPE OF EDUCATIONAL ACTIVITY	C
AMBIT	10645-Attività formative affini o integrative
CODE	90401
SCIENTIFIC SECTOR(S)	ING-INF/05
HEAD PROFESSOR(S)	PIPITONE ARIANNA Ricercatore a tempo determinato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	12
INDIVIDUAL STUDY (Hrs)	240
COURSE ACTIVITY (Hrs)	60
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	2° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**PIPITONE ARIANNA** Wednesday 10:00 12:00 Studio della docente, Ed. 12, piano 5

PREREQUISITES	Mathematics
LEARNING OUTCOMES	Learning outcomes according to the Dublin descriptors: - Objective 1: knowledge and understanding abilities Students will acquire a good knowledge of computer science fundamentals. He will be able to evaluate and analyze possible software solutions to simple problems and will also have knowledge of the architecture of the computer. To achieve this objective, the course includes lectures, analysis and pattern discussion of problems solved in algorithmic form. - Objective 2: abilities in applying knowledge and understanding The student will be able to use development tools and environments for programming and implement simple programs. He will be able to design simple software. To achieve this objective, the course includes classroom exercises both for individuals and groups on the topics of the course. - Objective 3: autonomy in judgment The student will be able both to carry out the analysis of a problem and to design, starting from a verbal description, a suitable software solution. He will be able to assess the quality of software in terms of simplicity, clarity, efficiency and reusability. He will be able to understand the principles of computer operation. To achieve this objective, the course includes analysis and class discussion of case studies related to the solution with special algorithms for solving common problems; lectures and group exercises on the implementation of algorithms. - Objective 4: communication abilities Students will acquire the ability to communicate and express issues concerning the object of the course. It will be able to hold conversations on the topics related to programming. He will be able to use a simple and clear language to describe the process of analysis and synthesis software solutions to elementary problems. To achieve this objective, the course will provide exercises, practices and discussions on the design and implementation of algorithms. - Objective 5: learning abilities Students will develop the ability to learn the analysis and synthesis process related to encoding low to medium complexity programs. To achieve this objective, the course consists of group exercises and discussions on the design and implementation of algorithms.
ASSESSMENT METHODS	Assessment methods will focus on the evaluation of learning outcomes of the course (see below) according to the Dublin descriptors. The final grade will be from 18/30 to 30/30 cum laude. - Assessment of Objective 1: knowledge and understanding abilities This objective will be assessed by a written and an oral discussion on the topics of the course outline. - Assessment of Objective 2 : abilities in applying knowledge and understanding This objective will be assessed by a written exam where a significant part will be composed of questions about information processes software. - Assessment of Objective 3: autonomy in judgment This objective will be assessed by a written and an oral discussion on the topics of the course outline and the case studies discussed during the course. - Assessment of Objective 4: communication abilities This objective will be assessed by a written and an oral discussion on the topics of the course outline. During this part of the exam student must prove their ability in clearly communicating and explaining their knowledge. - Assessment of Objective 5: learning abilities This objective will be assessed by a written extamination on the topics of the course outline,, composed of open questions about theoretical topics of the course and exercises. The minimum grade (18/30) will be assigned if the student will correctly answer the question and will be able to set up the algorithms for solving the given exercises. The maximum grade (30/30 cum laude) will be assigned if the student will prove deep knowledge on the course topics and high competence in syntax and control structures of studied software. For non-attending students, the same examination and assessment procedures will apply.
EDUCATIONAL OBJECTIVES	The student will acquire the basic concepts necessary for understanding the structure of computers. He will acquire the main notions of programming languages and learns the computational ability for solving by automation simple problems. The student will be able to evaluate, analyze, communicate and implement possible software solutions to problems of average complexity.
TEACHING METHODS	Frontal lessons with contextual practices
SUGGESTED BIBLIOGRAPHY	Slides del corso e risorse online. Testo: J. Glenn Brookshear. Informatica. Una panoramica generale. Pearson

SYLLABUS

Hrs	Frontal teaching
1	Introduction to the course and its explanation

SYLLABUS

Hrs	Frontal teaching
2	Digital information, coding, deconding and information support
5	Computer architecture. Von Neumann's Model: Memory, Input / Output Devices
3	The operating system
6	Bits, bytes and numbering systems. Numeric conversions (hexadecimal, decimal, binary)
3	Sound, physical parameters and digitization
3	Digital images and formats
3	Digital video and compression techniques
3	Boolean algebra and condition evaluations
3	Introduction to programming and computational thinking
10	Programming in Python language (variables and types, input and output of variables, strings, conditional and iterative structures, lists, functions, libraries, use of the Turtle library)

Hrs	Practice
7	Numerical conversions and digital representation of information
11	Python programming (contextual tutorials)