

Academic subject: Computer Science			
Degree Class: L-35 – Scienze Matematiche		Degree Course: Mathematics	
		Academic Year: 2017/2018	
		Kind of class: Mandatory	Year: 2
			Period: 1
			ECTS: 6 divided into ECTS lessons: 4 ECTS exe/lab/tutor: 2
Time management, hours, in–class study hours, out–of–class study hours lesson: 32 exe/lab/tutor: 16 in–class study: 48 out–of–class study: 102			
Language: Italian		Compulsory Attendance: no	
Subject Teacher: Alessandro Bianchi		Tel: +390805442283 e–mail: alessandro.bianchi@uniba.it	Office: Department of Informatics Room 565, Floor V
		Office days and hours: Wednesday 15.30 – 17.30 By appointment	
Prerequisites: Basic mathematics notions provided by Italian high schools			
Educational objectives: Learning basic concepts concerning programming methods and techniques; ability to apply them for solving problems by means of C language; basic notions and concepts about computability theory			
Expected learning outcomes (according to Dublin Descriptors)	Knowledge and understanding: Learning fundamentals concepts for programming and computation		
	Applying knowledge and understanding: Capability to apply learned concepts to simple algorithms programming and analysis		
	Making judgements: Capability to judge the consistency of the logical structure used in building algorithms. Capability to identify the proper conceptual tools for solving programming problems.		
	Communication: Learning the specific computer science language and methods for understanding textbooks, for explaining the learned knowledge, for describing, analyzing, and solving algorithmic problems.		
	Lifelong learning skills: Acquiring suitable learning methods, supported by text consultation and by solving the exercises and questions periodically suggested during the course.		
Course program Introduction to the course: context, motivation and goal Introduction to: algorithms; computers architecture; programming languages. Introduction to programming: Decomposition techniques Representing algorithms and Structured programming Programming constructs Introduction to C Introduction to computability Turing Machine Functions and computation Set enumeration and computation Recursive functions			

Church-Turing Thesis and Computability limitation
Introduction to computational complexity

Teaching methods:

Lectures and exercise sessions

Auxiliary teaching:

Didactic material available at url http://www.di.uniba.it/~bianchi/didattica/2017_18/inf_mat/index.htm

Assessment methods:

Exercises during the period, possibly exempting written exercises exam

Exam with (possible) written exercises and oral discussion

Bibliography:

M. Frixione, D. Palladino, Funzioni, Macchine, Algoritmi - Introduzione alla teoria della computabilità, Carocci, 2004;

C. Toffalori, F. Corradini, S. Leonesi, S. Mancini, Teoria della computabilità e della complessità, McGraw-Hill, 2005

S. Ceri, D. Mandrioli, L. Sbattella, Informatica: Programmazione, McGraw-Hill, 2 Edizione, 2006;

H.M. Deitel, P.J. Deitel, C: Corso completo di programmazione, Apogeo, 2004;

L. Carlucci Aiello, F. Pirri, Strutture Logica Linguaggi, Pearson, 2005

Papers and slides cited / deployed during lectures.