COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE PROGRAM		
COURSE CODE		**SEMESTER**	**B**
COURSE TITLE	INTRODUCTION TO COMPUTER SCIENCE		
INSTRUCTORS	Andreas Papasalouros (lecture), Nikolaos Papaloukas & Christos Tsagaris (Lab sessions)		
INDEPENDENT TEACHING ACTIVITIES		**WEEKLY TEACHING HOURS**	**CREDITS**
		6	9
COURSE TYPE	General knowledge		
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://www.math.aegean.gr/index.php/en/academics/undergraduate-programs		

(2) LEARNING OUTCOMES

Learning outcomes
The aim of this course is the acquaintance of students with basic concepts of Computer Science and programming. After the successful completion of the course the students are expected to: Know the historical evolution of computational machines. Know the structure and understand the function of the digital computer. Understand the function of basic computational units (e.g. adder, comparator circuits, etc.). Understand the difference among high level and low level programming languages. Understand the concept of algorithm. Understand algorithms expressed in pseudocode and flowchart diagrams. Design algorithms for solving simple computational problems. Edit, compile and run computer programs in the Fortran 90 programming language. Implement basic algorithms in Fortran 90. Create and use subprograms (functions and subroutines). Evaluate the performance of basic algorithms.
General Competences
Working independently. Team working. Working in an interdisciplinary environment.

(3) SYLLABUS

Historical review of Computing. Computation and foundations of Computer Science. Numerical systems, representations of numbers and characters in computers. Boolean algebra and logical circuits. Modern computer organization. Machine and assembly languages. High level programming languages. Compilers and interpreters. Introduction to Fortran 90. Variables, expressions and commands. Simple input and output. Control and iteration structures. Functions and subroutines.

Program structure. Variable scope. Arrays. Formatted input/output. Sequential and random access files. Introduction to algorithms. Description of algorithms with flowcharts and pseudocode. Simple algorithms implementation. Algorithm correctness and performance. Algorithm comparison. Data management and storage. Introduction to the entity-relationship model.	
TEACHING MATERIAL DISTRIBUTION	The teaching material of the course is uniformly distributed during the semester.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face-to-face lectures
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Use of ICT in teaching • Communication with students via e-mail • Uploading course material on moodle system.
TEACHING METHODS	

Activity	*Semester workload*
Lectures	52
Laboratory practice	26
Independent study	147
Course total (25 per ECTS)	***225***

COURSE COMMITMENTS	Attending course and lab sessions is not obligatory.
STUDENT PERFORMANCE EVALUATION	Student's evaluation is done in Greek through a written examination which includes problem solving and laboratory work. For students with disabilities, evaluation takes place via oral exams.

(5) ATTACHED BIBLIOGRAPHY

1. Nikolaos Karambetakis, Introduction to Fortran 90/95/2003, Ziti, 2011 (in Greek).
2. Behrouz A. Forouzan και Firouz Mosharraf, Introduction to Computer Science, Kleidarithmos 2010 (in Greek).