INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS						
SCHOOL	SCHOOL OF SCIENCE						
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS						
COURSE LEVEL	UNDERGRADUATE						
COURSE TITLE	**Computer Architecture I**						
COURSE CODE	**K14**		**Semester**	**2**	**ECTS**	**7**	
TEACHING HOURS per week	**THEORY**	**3**	**SEMINAR.**	**1**	**LABORATORY**	**1**	
COURSE TYPE	**Select one of the following and delete the rest** Compulsory (YM) **K** | **E1** | **E2** | **E3** | **E4** | **E5** | **E6** *Fill the table as in the curriculum:* Track (A-Computer Science, B- Computer Engineering) / Specialization Compulsory (Y) / Core Specialization (B)/ Elective Specialization (E)						
URL	https://eclass.uoa.gr/courses/D19/						
EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:	K02 Logic Design						
TEACHING AND EXAMINATIONS LANGUAGE:	GREEK						
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO						

COURSE CONTENT
Computer organization and design. Hardware/software interface. Instruction set architecture. RISC vs. CISC. Assembly language for MIPS microprocessor. Assemblers, compilers, loaders basics. Performance evaluation and benchmarking. Power/energy/yield/cost calculations and models. Computer arithmetic for integers and reals. CPU simple design. Pipeline and caches basics. Architectural simulators.

STUDENT LEARNING OBJECTIVES
Teaching-Learning Goals-Expected Learning Outcomes Introduction to computer organization and design of modern computer architectures and the details of the hardware and software interface. Upon successful completion of the course the student will be able to: • Describe the organization of a computing system • Evaluate performance, power, energy and cost • Write programs in assembly language • Use architectural simulators • Design a simple central processing unit • Explain the basics of pipelining and caches

TEACHING AND LEARNING METHODS - ASSESSMENT	
TEACHING METHOD	In Class with slides and whiteboard for examples and exercises of the course. In the PCs Lab using educational architectural simulators.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Electronic platform e-class (all tools employed: announcements, documents, assignments, groups of users, etc.) Email communication Live broadcasting of lectures Recording of lectures for offline study
TEACHING ORGANIZATION *Describe in detail the way and methods of teaching:* *Enhanced Lectures,* *Online Lectures,* *Seminars,* *Tutorial,* *Laboratory,* *Laboratory Exercise,* *Study & analysis of literature,* *Practice (Positioning),* *Interactive teaching,* *Developing a project,* *Individual / group work* *Telework (reference to tools) etc.* *Details of the student's study hours for each learning activity and hours of non-guided study are shown to ensure that the total workload at the semester corresponds to the ECTS*	

Activity	***Student Workload*** *(hours)*
Lectures	39
Tutorial	13
Laboratory	13
Lab preparation	39
Small individual exercises	15
Independent Study	69
Total Course (25 hours of workload per unit of credit)	***175***

ASSESSMENT OF STUDENTS *Description of the assessment process* *Assessment Methods, Formative or Concluding, Multiple Choice Test, Quick Response Questions, Test Development Questions, Problem Solving, Written Work, Report / Report, Oral Examination, Public Presentation, Laboratory Work, Other / Other* *Fully defined evaluation criteria are mentioned and if and where they are accessible to students.*	Describe explicitly methods, evaluation tools and provided feedback. The table below is supplemented accordingly.

Assessment methods	***Number***	***Percentage***
Written examination	1	70%
Laboratory	1	30%

LITERATURE AND STUDY MATERIALS / READING LIST
"Computer Organization and Design: the Hardware/Software Interface", 4th Edition, D.A.Patterson, J.L.Hennessy, Elsevier/Morgan Kaufmann, 2010.