Course unit title:	Computer Organization and Architecture
Course unit code:	CSC214
Type of course unit: **(Compulsory/optional)**	Compulsory
Level of course unit: **(First, second or third cycle)**	Bachelor (1st cycle)
Year of study:	2
Semester when the unit is delivered:	4
Number of ECTS credits allocated:	6
Name of lecturer(s):	TBA

Learning outcomes of the course unit:

Upon succesful completion of this course students should be able to:

- Describe the hardware units found in a typical CPU.
- Describe the overall operation of a CPU
- Illustate how different design methodologies affect the CPU performance.
- Explain the basic IO operation and memory management issues.

Mode of delivery:	Face- to- face
Prerequisites and co-requisites:	CSC213
Recommended optional program components:	None

Course Contents:

Objective:
To introduce the way that hardware components are connected together to form a computer system. The structure, behavior and interaction of various computer modules are also presented.

Description:
Transfer of data from memory and I/O to registers and transfer of data from register to register. Overview of microoperations (Arithmetic, Logic, Shift).

Basic Computer Organization and Design. Instruction Codes, Computer registers/business, Computer Instructions, Timing and Control, Instruction Cycle, Input Output and Interrupt,

Design of a basic computer.

Computer software. Assembly language and the assembler. Instruction sets. Machine instructions characteristics. Types of operand, operations.

Central Processing Unit organization. Processor bus organization. Arithmetic and Logic Unit. Stack organization. Instruction Formats, Addressing modes. Register organization. The instruction cycle. Instruction pipelining. Microprocessor organization. CISC VS RISC Architecture. Overview of typical Real Life processors (i.e INTEL, MIPS, Motorola, JVM)

Control Unit operations. Microprogram control organization. Microinstruction sequencer, execution, formats.

Computer Arithmetic. The arithmetic and logic unit. Integer arithmetic operations (comparison, subtraction, addition, multiplication algorithms). Arithmetic with signed-2's complement numbers. Floating-point arithmetic operations.

Input-Output organization. External devices. The external device interface. Programmed and interrupt driven I/O. Direct memory access. I/O channels and Processors.

View of computer's memory organization. Internal and external memory. Organization of Main Memory and Cache Memory. Virtual and associative memory. Various categories of secondary storage devices.

Recent developments and contemporary issues pertaining to the subject-matter of the course.

Recommended or required reading:	Linda Null and Julia Lobur, THE ESSENTIALS OF COMPUTER ORGANIZATION AND ARCHITECTURE Jones and Bartlett Morris Mano, M., COMPUTER SYSTEM ARCHITECTURE Prentice Hall William Stallings, COMPUTER ORGANIZATION AND ARCHITECTURE, Prentice Hall Andrew Tanenbaum, S., STRUCTURED COMPUTER ORGANIZATION, Prentice Hall D.E. Comer , ESSENTIALS OF COMPUTER ORGANIZATION, Prentice Hall V. P. Heuring and H. F. Jordan, COMPUTER SYSTEMS DESIGN AND ARCHITECTURE, Prentice Hall

	David A. Patterson & John L. Hennessy, THE HARDWARE/SOFTWARE INTERFACE, Morgan Kaufmann Greg W. Scragg, COMPUTER ORGANIZATION, A TOP DOWN APPROACH, McGraw Hill
Planned learning activities and teaching methods:	Class Instruction 42 Hours Consultation 15 Hours
Assessment methods and criteria:	Examinations 80% Assignments/ Class Participation 20% 100%
Language of instruction:	English
Work placement(s):	No
Place of Teaching:	Theoretical Part: Regular Classroom European University Cyprus, Nicosia Practical Part: Computer Laboratory European University Cyprus, Nicosia