COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Physics		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**10YK202**	**SEMESTER**	**7**
COURSE TITLE	**Computer Systems Organization**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures (theory and exercises)	3	
Laboratory practice	1	
		6

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialised knowledge
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in the English language for Erasmus students
COURSE WEBSITE (URL)	https://eclass.uoa.gr/courses/PHYS292/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

In this course the student acquires the necessary knowledge for the understanding of digital computer architecture, organization and operation.

With the completion of the course the student is able to
Describe the digital computer architecture and organization as well as basic data structures and algorithms.
Define computer operation and algorithmic complexity.
Design basic digital computing systems.
Produce data structures with software.
Organize data structures and algorithms that lead to the problem solving with computers.
Combine computers and algorithms for solving complex physics problems.
Evaluate the results of the computing implementations in solving physics problems.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

The course aims at the following general competences

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Working independently
Team work
Project planning and management
Production of free, creative and inductive thinking
Analytical and synthetic thinking
Critical thinking
Time management
Planning
Taking initiative/responsibility
New Technology skills
Learning C / Matlab programming language ...
Learning word/excel/ppt/ origin/spss
Creativity
Determination
Communication skills
Information management
Meeting Deadlines and Keeping Schedules
Flexibility / Adaptability
Problem solving

(3) SYLLABUS

- Introduction to Discrete Mathematics: Combinations, permutations, series, recurrent relations, Pascal triangle, graphs, binary trees.
- Arithmetic systems: Representation of binary numbers, computer arithmetic, floating point numbers.
- Digital circuit design, Register Transfer Level (RTL): Gates, combinatorial and sequential circuits, processor design, control and finite state machines.
- Computer systems organization: Machine language, addressing modes, peripherals, stack and subroutines.
- Introduction to data structures and algorithms: Linked lists, trees and implementation in C, algorithms, time complexity, proof of correctness.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Yes Electronic communication with the students using ICT (Information and Communications Technology) Computer-aided lectures, use of Overhead Projectors, eclass platform
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures/ exercises	40
Individual Study/ Study and Analysis of bibliography / Preparation	60
Laboratory practice	20
Writing reports/ essays	30
Course Total	**150**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Final written exams in Greek Mid-term written examination Writing essays Laboratory reports

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Data Structures in C, N. Misirlis, NKUA Publications, 2017, Athens, Code: 77112308
- Notes