COURSE SYLLABUS

University	**Alexandru Ioan Cuza University of Iaşi**	**Course title**	
Faculty	**Physics**	**COMPUTER ARCHITECTURE**	
Department	**Physics**		
Domain	**Modelling and simulation**	**Course category** (FC/SC/CC[1]): SC	**Term** (1-4): **1**
Level	**Postgraduate (MA)**	**Course type** (Co/El/F[2]):CO	

I. Course structure

Number of hours/week				Credits	Total class hours/ semester	Total hours of individual activity	Examination type (C/Ex/CE[3])	Teaching language
Course	Seminar	Lab.	Project	**6**	**56**	**124**	**Ex**	**English**
2	**-**	**2**	**-**					

II. Instructors

	Academic degree[4]	Scientific degree	Name and surname	Faculty position (tenure/ associate - organization)
Course	Lecturer	PhD	Paul GASNER	tenure
Seminar				
Laboratory	Lecturer	PhD	Paul GASNER	tenure

III. Prerequisites

none

IV. Course objectives

1. Basic knowledge of the computing systems design: Boolean algebra, logical gates, combinational circuits, sequential circuits, number and instruction representations, processors design;
2. Ability to apply knowledge of computer architecture in practical situations
3. Ability to search and analyze information from different bibliographic sources
4. Ability to work in a team to solve different technological and experimental challenges
5. Ability to initiate and manage personal and team projects

V. Course content

Course	**CHAPTER 1: *Introduction, History***
	CHAPTER 2 *Logical circuits*
	§1. Boolean algebra;
	§2. Combinational circuits;
	§3. Fundamental and additional logical gates;
	§4. Karnaugh maps;
	§5. Decoders;
	§6. Multiplexors;
	§7. Adders;
	§8. Number representation;
	§9. ALU;
	§10. Latches;
	§11. Sequential analysis;
	§12. Registers;
	CHAPTER 3: Processors
	§1. Registers sets;
	§2. ISA;
	§3. Control unit;

	§4. Modern architectures.
Seminar	
Laboratory	Functions and their representations. Optimization of combinational circuits. K-map. Decoders. Multiplexors. Adders, ALU. Counters. Registers. CPU

VI. Minimal required references

[1] Aurel Gontean, Mircea Babaita Structuri logice programabile. Aplicatii Editura de Vest, Timisoara 1997

[2] Gheorghe Toacse Introducere in microprocesoare Ed. St. si Encicl., Bucuresti, 1985

[3] John Woram The PC Configuration Handbook Random House, New York, 1990

[4] http://home.uaic.ro/~gasner/

VII. Didactic methods

Lectures, problems solving, discussions, didactic films

VIII. Assessment

Pre-conditions	Attendance (30% from the final grade), active participation to class activities	
Exam dates	**1st Assessment**	**November**
	2nd Assessment	**January - February**

	Assessment means and methods	**Percentage of the final grade**
Exam/Colloquium	Written paper	50%
Seminar		
Laboratory	Problems solving, presentation of a research topic and work reports	50%