Computer Organization

Course Code:

CSE 323

Course Period:

Autumn

Course Type:

Core

Credits:

3

Theoric:

3

Practice:

0

Laboratory Hour:

0

ECTS:

6

Prerequisite Courses:

Principles of Logic Design [1]
Systems Programming [2]
Course Language:

English

Course Objectives:

The aim of this course is to study general design principles of computer hardware using modern methodologies.

Course Content:

Bus system, registers, instruction execution cycle, control unit design methods, computer arithmetic, RAM, ROM, associative memory, cache memory, virtual memory, Input/Output, pipelining, RISC archıtecture, multi-processor architectures.

Course Methodology:

1: Lecture, 2: Question-Answer, 3: Lab, 4: Case-study

Course Evaluation Methods:

A: Testing, B: Experiment, C: Homework, D: Project

Course Learning Outcomes	Program Learning Outcomes	Teaching Methods	Assessment Methods
1) Adequate knowledge in computer organization (control unit design, computer arithmetic, memory organization, input/output).	1	1	A
2) Ability to use theoretical and applied information in these areas to design basic computer hardware under realistic constraints.	2,4	1,2,4	A,C
4) Ability to devise, select, and use modern techniques and tools needed for the design and implementation of computers.	4	1,2,4	A,C

COURSE CONTENT

Week	Topics	Study Materials
1	Introduction	Textbook
2	Bus system, registers, instruction execution cycle	Textbook
3	Hardwired control	Textbook
4	Microprogrammed control	Textbook
5	Computer Arithmetic	Textbook
6	Computer Arithmetic	Textbook
7	Midterm I	Textbook
8	RAM, ROM, associative memory	Textbook
9	Cache memory	Textbook

10	Cache memory	Textbook
11	Virtual memory	Textbook
12	Midterm II	Textbook
13	Input/Output	Textbook
14	Pipelining, RISC, multi-processors	Textbook

RECOMMENDED SOURCES

Textbook	William Stallings, “Computer Organization and Architecture”, Pearson
Additional Resources	Morris Mano, “Computer System Architecture”, Prentice-Hall A. Tanenbaum, “Structured Computer Organization”, Prentice-Hall D.A. Patterson, J.L. Hennessy, “Computer Organization and Design”, Morgan Kaufmann

MATERIAL SHARING

Documents	http://coadsys.yeditepe.edu.tr/ [3]
Assignments	http://coadsys.yeditepe.edu.tr/ [3]
Exams	

ASSESSMENT

IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-terms	2	70
Assignment	5	30
Lab Work		
Term Project		
Total		**100**
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		35
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		65
Total		**100**

COURSE'S CONTRIBUTION TO PROGRAM

No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied information in these areas to model and solve engineering problems.					**X**
2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.					**X**
3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.			x		
4	Ability to devise, select, and use modern techniques and tools needed for engineering practice; ability to employ information technologies effectively.					**X**
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating engineering problems.	x				
6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.			x		
7	Ability to communicate effectively both orally and in writing; knowledge of a minimum of one foreign language.		x			
8	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.		x			
9	Awareness of professional and ethical responsibility.			x		
10	Information about business life practices such as project management, risk management, and change management; awareness of entrepreneurship, innovation, and sustainable development.	x				
11	Knowledge about contemporary issues and the global and societal effects of engineering practices on health, environment, and safety; awareness of the legal consequences of engineering solutions.	x				

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION

Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 12x Total course hours)	12	4	48
Hours for off-the-classroom study (Pre-study, practice)	10	6	60
Midterm examination	2	2	4
Homework	5	7	35
Project			
Final examination	1	3	3
Total Work Load			150
Total Work Load / 25 (h)			6.0
ECTS Credit of the Course			6