

CSE341: COMPUTER ORGANIZATION (4 Credits, Required)

Catalog Description

Basic hardware and software issues of computer organization. Topics include computer abstractions and technology, performance evaluation, instruction set architecture, arithmetic logic unit design, advanced computer arithmetic, datapath and control unit design, pipelining, memory hierarchy, input-output.

Prerequisites

Prerequisites: CSE241 or EE378

Corequisites: None

Textbooks(s) and/or other required material

David A. Patterson and John L. Hennessy. (2005). Computer Organization and Design: The Hardware/Software Interface, 3rd edition, Morgan Kaufmann.

Course Objectives:

The objective of this course is to master the basic hardware and software issues of computer organization.

At the end of the course, the students are expected to know the inner workings of a computer and have the ability to analyze the hardware and software issues related to computers and the interface between the two. This allows the students to work out the tradeoffs involved in designing a modern computer.

Topics Covered:

computer abstractions and technology
performance evaluation
instruction set architecture
arithmetic logic unit design
advanced computer arithmetic
datapath and control unit design
pipelining
memory hierarchy
input-output

Class / Lab Schedule

Three 50-minute lectures per week

One 50-minute recitation per week

Contribution of course to professional component/criterion 5

Engineering Topics: 4 credits

Engineering Design

Relationship of course to program outcomes

This course is required of all computer engineering students and has a significant relationship with the following program objectives for computer engineering:

- (a) an ability to apply knowledge of mathematics, probability & statistics, computer science, and electrical engineering as it applies to the fields of computer software and hardware
- (b) an ability to design and conduct experiments, as well as to organize, analyze, and interpret data
- (f) an understanding of professional, legal, and ethical issues and responsibilities as it pertains to computer engineering
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- (i) a recognition of the need for an ability to engage in lifelong learning
- (j) a knowledge of contemporary issues

This course has a strong relationship with the following program objectives for computer engineering:

- (e) An ability to identify, formulate, and solve hardware and software computer engineering problems using sound computer engineering principles
- (k) An ability to use the techniques, skills, and modern hardware and software engineering tools necessary for computer engineering practice

Persons who prepared this description and date of preparation

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