

## CSCE 212: Introduction to Computer Architecture

1. Course number and name: CSCE 212: Introduction to Computer Architecture
2. Credit: 3-hrs; Contact: 3 lectures of 50 minutes each per week
3. Instructor: Fall 2010: Larry M. Stephens  
Spring 2011: Manton Matthews, Amber McKenzie (GS), and Krishna Nagar (GS)
4. Text book: John Hennessy and David Patterson, *Computer Organization and Design: The Hardware/Software Interface, 4/e*, Morgan Kaufmann (Elsevier) Publishers 2009.
5. Specific course information
  - a. Catalog description: Computer architecture, components. and organization; memory addressing; Input/Output; instruction sets; interrupts; assembly-language programming.
  - b. Prerequisites: CSCE 211 and either CSCE 145 or 206
  - c. Required for Computer Engineering and Computer Science programs
6. Specific goals for the course
  - a. Specific outcomes of instruction:
    - Describe the major components of a computer system and state their function and purpose
    - Describe the microstructure of a processor
    - Describe how conventional machine instructions operate in conjunction with the components of a computer.
    - Demonstrate the ability to program a microprocessor in assembly language.
    - Classify and describe the operation of parallel computer architectures.
  - b. Relation of course outcomes to Student Outcomes: CE: see page 2; CS & CIS: see page 3
7. Topics covered and approximate weight (14 weeks, 3 hours/week, 42 hours total)
  1. Computer system organization and architectures: processors, memory hierarchies, I/O, interfaces, buses.
  2. Instruction sets and architectures
  3. Floating point arithmetic
  4. CPU design, fetch-decode-execute cycle, pipeline
  5. Associative, cache, and virtual memories
  6. Input/Output organization
  7. Microprocessor and parallel-computer architecture.



c.

## Computer Engineering

### Relation of Course Outcomes to EAC Student Outcomes\*

Course Outcomes (CE)	Student Outcomes											
	(a) apply knowledge of mathematics, science, and engineering	(b) design and conduct experiments, ... interpret data	(c) design a system, component, or process to meet desired needs ...	(d) function on multidisciplinary teams	(e) identify, formulate, and solve engineering problems	(f) an understanding of professional and ethical responsibility	(g) communicate effectively	(h) the broad education and the impact of engineering solutions ...	(i) a recognition of the need for, and an ability to engage in lifelong learning	(j) a knowledge of contemporary issues	(k) use the techniques, skills, and modern engineering tools ...	(CE) demonstrate knowledge of discrete mathematics [CE]
Criteria	a	b	c	d	e	f	g	h	i	j	k	CE
1. Describe the major components of a computer system and state their function and purpose.												
2. Describe the microstructure of a processor.												
3. Describe how conventional machine instructions operate in conjunction with the components of a computer.												
4. Demonstrate the ability to program a microprocessor in assembly language.												
5. Classify and describe the operation of parallel computer architectures.												

\* 3 = major contributor, 2 = moderate contributor, 1 = minor contributor; blank if not related

d.

## Computer Science & Computer Information Systems

### Relation of Course Outcomes to CAC Student Outcomes\*

<b>Course Outcomes (CS &amp; CIS)</b>	<b>Student Outcomes</b>											
	<b>All</b>									<b>CS</b>		<b>CIS</b>
	(a) apply knowl edge of comput ing and mathe matics approp riate to the discipl ine	(b) analyz e a proble m, and identif y and define the comput ing requir ement s ...	(c) design , imple ment, and evalua te a comput er- based syste m, ...	(d) functi on effecti vely on teams to accom plish a comm on goal	(e) An unders tandin g of profes sional, ethical , legal, ... respon sibiliti es	(f) comm unicat e effecti vely with a range of audien ces	(g) analyz e the local and global impact of comput ing on ... societ y	(h) Recogn ition of the need for ... contin uing profes sional develop ment	(i) curren t techni ques, skills, and tools necess ary for comput ing practi ce	(j) apply mathe matical found ations, algorit hmics princi ples, and CS theory ...	(k) apply design and develop ment princi ples	(j) An unders tand proces ses that suppo rt the infor matio n syste ms enviro nment
Criteria	a	b	c	d	e	f	g	h	i	j	k	j
1. Describe the major components of a computer system and state their function and purpose.												
2. Describe the microstructure of a processor.												
3. Describe how conventional machine instructions operate in conjunction with the components of a computer.												
4. Demonstrate the ability to program a microprocessor in assembly language.												
5. Classify and describe the operation of parallel computer architectures.												

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