

Course Number	CSE 230	Course Title	Computer Organization and Assembly Language
Semester Hours	3	Meeting	Lecture 2/week at 75 minutes

Catalog Description:

Fundamentals of computer operation, instruction set architecture, assembly language programming, computer organization, pipelining, memory hierarchy, storage and I/O. Discuss trends in computer design.

Prerequisites:

CSE 120, or EEE 120: Digital Design Fundamentals
 CSE 100 or CSE 110: Principles of Programming

Textbook(s) and other materials:

"Computer Organization and Design - The Hardware Software Interface", David A. Patterson and John L. Hennessey, Morgan Kaufmann, 4th edition, 2009, ISBN: 978-0-12-374493-7

Course learning outcomes:

Students who complete this course will be able to

1. Understand assembly language, and write assembly language programs for simple problems, including function calls.
2. Understand the data representation (2's complement, floating point) inside the processor, and perform arithmetic operations on them.
3. Understand the working of a single-cycle, and pipelined processor, including basic schemes of hazard detection and avoidance.
4. Understand the rationale behind the memory organization, and know how caches operate.
5. Basic understanding of storage and I/O
6. Trends in computer organization and design.

Course assessment plan:

Quizzes and/or Assignments: 30%
 Programming Projects: 30%
 Midterms and Finals: 40%

Major topics and time covered:

- Assembly Language & Programming – 4 weeks
- Computer Arithmetic – 1-2 week
- Single Cycle Implementation – 2-3 week
- Pipelined Implementation – 3 week
- Memory Hierarchy – 3 week
- Storage and I/O – 1 week
- Discuss the trends in computer organization -- throughout the semester

Relationship to program outcomes: (x indicates course content supports program outcome)

Program	Required?	a	b	c	d	e	f	g	h	i	j	k
Computer Science	Yes	x	x	x							x	
Computer Systems Engineering	Yes	x		x		x						x

Contribution of course to program:

This course supports both the Computer Science and Computer Systems Engineering program by providing the fundamental concepts and trade-offs in a computer design (CS j; CSE e, k). In addition students learn assembly language programming and start relating software to the hardware inside the computer (CS a, b, c; CSE a, c, e).

How course data is used to assess program outcomes

Course data not used in program assessment

Estimated curriculum content (credit hours)

	core	advanced		core	advanced
Algorithms			Data structures		
Software design			Programming languages		
Computer arch	3				

Course contribution to ABET Criterion (credit hours):

Math and basic sciences	Engineering topics	General education	Other
	100%		

Document History:

Course coordinator	Creation date	TAC approval date	UPC/GPC approval date
Aviral Shrivastava	04/08/2009		