CpS 230 Computer Systems 01 Fall 2025

College of Arts and Science

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Office Hours

MWF		10:00-10:50am	Al 84
MW		1:00-1:50pm	Al 84
T		1:00-2:50pm	Al 84
TH		1:30-2:50pm	Al 84
F	(appt. only)	1:00-1:50pm	Al 84
MTWF	(appt. only)	12:00-12:50pm	Al 84

Course Information

Assembler language, interrupts, registers, memory addressing techniques, parameter passing
mechanisms and the relationship between high-level languages and the computer.

Course Goals:

This course will help students to develop:

- Understanding of computer systems architecture
- Understanding of data representation in a computer
- Skill in programming Intel 64 / AMD64 processors in assembly with OS support
- Exposure to programming vintage IBM PC processors/systems in assembly without OS support
- Appreciation for the importance of assembly language

Course Textbook

Required: *Computer Systems: A Programmers Perspective* (3rd Edition), by Bryant & O'Hallaron. Published by Pearson, 2016. ISBN-13: 978-0134092669

Grading

Qty	Item	Points	Total
1	Professional Development		
	30	30	
4	Homework	20-40	100
11*	Quizzes	10	100
10	Labs	10-25	150
2	Programs	50	100
3	Tests	100	300
1	Team Project	250	250
Total Points:		1030	

Scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	<60%

* Lowest quiz dropped

Course Policies

In this course, topics build on the previous topic. Thus, if you fall behind, you will struggle with new content. For this reason, I do not accept late work. Work is due at the deadline. **Late work receives a 0**. Extensions may be purchased with tokens.

Professionalism

Emergencies

Handbook Policies

Attendance Policy

Accommodations for Students with Disabilities

Academic Honesty and Integrity Policy

Generative AI Exceptions

Using generative AI as a search engine for error-related information or coding library information is permissible if 1) you do not feed in course or textbook content (notes, instructions, solutions, etc.), 2) you do not copy blocks of code (3+ lines of code), and 3) you document which AI tool was used, the prompts used, and the output.

Testing Environment

Course Materials Use

Curriculum Information

Context

This course fulfills the following objectives of the Computer Science department:

- CS1: Design and implement efficient solutions to problems in various domains.
- CS2: Demonstrate understanding of fundamental concepts in computer science, including:
    - Language translation
    - Limitations of computers
    - Stored program (a.k.a. von Neumann) architecture
    - Memory hierarchy
    - Quality data representation

This course further addresses the following learning outcomes of the engineering major:

- 1.3.12: Write programs
- 1.4.1: Apply additional depth of knowledge in engineering topics of interest to the student

Tentative Schedule

Day	Topic	Reading	Due
Week 1 (⅔) 8/27-8/30	Intro to Computer Systems C Basics		
Week 2 (1⅓) 9/3-9/6	*Labor Day — No class* C Arrays, Structs C Pointers	Descent to C	
	Quiz 1 Lab 1		
Week 3 (2⅓) 9/8-9/13	Make, Git Number Representation Two's Complement	bgGit Basics Ch. 2.2 Ch 2.3 Testing in C	
	Quiz 2 Lab 2		
Week 4 (3⅓) 9/15-9/20	Bits and Bytes Bytes and Words Floating Point	Ch. 2.1 Joel on Unicode	

Ch 2.4	HW 1 HW 2		
Week 5 (4) 9/22, 9/26	Review Test 1 *REACH Day — No class*		Chapter 2: Basics
	Lab 3 Quiz 3 Test 1		
Week 6 (5) 9/29-10/4	Test 1 x86 catsup		Program 1
Week 7 (6) 10/6-10/11	x86, Expressions x86 Flow x86 Functions		Quiz 4 Lab 4 Quiz 5 Quiz 6 Lab 5
Week 8 (7) 10/13-10/18	x86 Functions x86 Strings		Quiz 7
Week 9 (7⅔) 10/22-10/25	*Fall Break — No class* x86 Strings x86 Arrays		HW 3 Lab 6
Week 10 (8⅔) 10/27-11/1	Understanding Printf Implementing Printf Linking Basics		Quiz 8 Lab 7
Week 11 (9⅔) 11/03-11/08	Linking Examples Review Test 2 Test 2		HW 4 Program 2
Week 12 (10⅔) 11/10-11/15	Bare Metal Programming 8086 Basics 8086 Addressing		Quiz 9 Lab 8

Week 13 11/24-11/28	*Thanksgiving Break — No classes*		
Week 14 (11⅔) 12/01-12/6	Bootstrapping Interrupt Handling		Alpha Lab 9 Quiz 11 Beta
Week 15 (12⅔) 12/08-12/13	Reflections on x86 x86 Alternatives Review Final Exam		Lab 10 Release
Week 16 (13) 12/18	Final Exam (Thursday, 8-9:10 am)		