

Introduction to Computer Systems CS 47

Fall 2026 Section 03 In Person 3 Unit(s) 08/19/2026 to 12/07/2026 Modified 09/01/2026

Contact Information

bhawandeepsingh.harsh@sjsu.edu

Office hours -

Monday 6 pm to 7 pm

at <https://sjsu.zoom.us/j/81362836527?pwd=Y01Yc3FPY1YxV0dKOHpJSnFoV29jUT09>

Course Description and Requisites

Instruction sets, assembly language and assemblers, linkers and loaders, data representation and manipulation, interrupts, pointers, function calls, argument passing, and basic gate-level digital logic design.

Prerequisite(s): CS 42 / MATH 42, and CS 46B (with a grade of "C-" or better); Allowed Majors: Computer Science, Data Science, Forensic Science: Digital Evidence.

Grading: Letter Graded.

* Classroom Protocols

You are welcome to ask questions while the lecture is in progress, just raise your hand.

Discussions, in general, are allowed and encouraged, but not while the lecture is in progress.

You are expected to participate in the recaps/ ungraded quiz in the beginning of each lecture.

The course design requires only a laptop, as a result it's use during the lecture is allowed., The course design does not require use of tablets or cellphones during the lecture, so they are disallowed.

Disturbing/ distracting the lecture or other students in any way while the lecture is in progress is disallowed. You may quietly leave the class for a break and quietly re-enter without asking permission and/ or disturbing the lecture/ class.

By default, project will subsume written exams. Project will subsume both midterm and final exam with progressive deliverables for each exam stage. If a written exam is conducted, one A4 size cheatsheet will be allowed for each midterm and final exam.

Project will be graded similar to CS 197/198 rules, i.e. the nominal grade is 90%. Put another way, if you do all as told, i.e. pretty much what the entire class does, that warrants 90% grade. For >90%, you must do stuff that positively distinguishes you from the rest of the class.

Sharing solutions, answers or code is strictly forbidden and will be handled as per the university policy without exceptions.

Program Information

Diversity Statement - At SJSU, it is important to create a safe learning environment where we can explore, learn, and grow together. We strive to build a diverse, equitable, inclusive culture that values, encourages, and supports students from all backgrounds and experiences.

Course Materials

Text book -

[Programming with 64-Bit ARM Assembly Language : Single Board Computer Development for Raspberry Pi and Mobile Devices](#)

Free ebook available from SJSU library :

https://learning.oreilly.com/library/view/programming-with-64-bit/9781484258811/?sso_link=yes&sso_link_from=san-jose-state-university

Reference book -

[Modern arm assembly language programming : covers Armv8-A 32-bit, 64-bit, and SIMD](#)

Free ebook available from SJSU library :

https://learning.oreilly.com/library/view/modern-arm-assembly/9781484262672/?sso_link=yes&sso_link_from=san-jose-state-university

You only need a laptop or a PC/ Mac. The software used are available for free.

The course is designed to not "require" any paid hardware or software.

You are allowed to use any other hardware or software of your choice "that does the job" and makes your life easier.

Course Requirements and Assignments

Course will usually have one H/W assignment for each chapter. You may write and scan or type in a Word document as long as all answers are legible. You will be graded for what is legible.

All submissions must be in CANVAS. Additionally, programming assignments may require you to meet the ISA and demo the assignment for credit. The demo does not replace CANVAS submission nor vice versa.

Late submissions without proof of an exception circumstance are not allowed.

✓ Grading Information

Breakdown

Grade breakdown

H/W Assignments	75%
Midterm	10%
Final exam	15%

Criteria

Grading criterion (including the lower limit)

>= 96	A+
93 - 96	A
90 - 93	A-
86 - 90	B+
83 - 86	B
80 - 83	B-
76 - 80	C+
73 - 76	C
70 - 73	C-
66 - 70	D+
63 - 66	D

60 - 63	D-
< 60	F

University Policies

Per [University Policy S16-9 \(PDF\)](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the [Syllabus Information](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Tentative topics and sequence are given below.

Topic #	Topic	1
1	Binary and Hexadecimal number systems	
2	Tools	
3	Introduction to ARM architecture and Assembly language	
4	Register MOV and Arithmetic instructions	
5	Control Flow Instructions	
6	Memory Access Instructions	
7	Functions and Stack	
8	Linux OS services	
9	Interacting with C and Python	
10	Basic digital design, combinational and sequential logic using gates	
11	Multiply Divide and Accumulate Instructions	
12	Floating Point Operations	
13	Vector Instructions	

14	Optimizing Assembly Code
15	Reading and Understanding Assembly Code
Midterm	Thursday, October 29
Final Exam	Tue, December 15