SJSU SAN JOSÉ STATE UNIVERSITY

College of Science · Computer Science

Introduction to Computer Systems Section 02

CS 47

Fall 2024 3 Unit(s) 08/21/2024 to 12/09/2024 Modified 08/26/2024

Contact Information

Instructor(s):	Dr. Chung-Wen (Albert) Tsao
Office Location:	MacQuarrie Hall 411
Telephone:	N/A
Email:	chung-wen.tsao@sjsu.edu (Once the class starts, use Canvas Inbox)
Class Days/Time:	T/R 03:00PM - 04:15PM, SCI311
Classroom:	Science building 311,
Office Hours:	T/R 12:00–01:00 pm F 11:00–12:00 noon at MH411 or on ZOOM https://sjsu.zoom.us/j/85666204287

Course Information

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.ï¿½

Prerequisite(s):ï¿½ CS/MATH 42 or 42X, andï¿½CS 46B (with a grade of "C-" or better); Allowed Majors: Computer Science, Data Science or Forensic Science: Digital Evidence

Letter Graded

Classroom Protocols

Classroom Protocol and Other Notes

- **Missing the first two lectures and quizzes may be dropped out from the class by the instructor.**
- Do not ask for special treatment. The rules for this course apply to everyone equally.
- Cheating will not be tolerable; a ZERO will be given to any cheated assignment/exams, and it will be reported to the Department and the University.
- Do NOT share/post online any course materials, PPT slides, or homework solutions.
- Use of electronic devices during exams is NOT allowed unless stated otherwise.
- You are required to check Canvas for reading/assignments.
- The information on this syllabus is subject to change; changes, if any, will be clearly explained in class, and it is your responsibility to become aware of them.
- Once the class starts, use Canvas Inbox to email me for a faster response. I check the Canvas Inbox emails much more often than my school emails.

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 Goals

The course consists of an introduction to computer hardware organization and the hardware/software interface.

Programming assignments are used to reinforce concepts of data representation, addressing modes, memory organization, run time stacks, and interfacing with high-level languages.

Course Learning Outcomes (CLOs)

Upon successful completion of this course, students will be able to:

1. Explain the architectural components of a computer system: CPU (registers, ALU), memory, buses

2. Convert between decimal, binary, and hexadecimal notations.
3. Use with two's complement integers, IEEE 754 floating-point numbers, and character encodings
4. Write assembly programs that use load/store, arithmetic, logic, branches, call/return and push/pop instructions.
5. Simulate the gate-level operations of basic ALU functions
6. Describe how variable access, arithmetic, function calls, and pointers are translated from a High Level Language to assembly.
7. Write programs that interface between a High-Level Language and assembly.
8. Write programs that contain system calls in a High-Level Language and assembly.

Course Materials

Required Textbooks

Introduction to Computer Systems and Assembly Programming with zyLabs

- This book is created based on the following textbook
- Click any zyBooks assignment link in CANVAS
  - **(Do NOT go to the zyBooks website and create a new account)**
- Subscribe (Wait until the book is available)

Computer Organization and Design – The Hardware/Software Interface, 5th

- **Author:** David A. Patterson, John L. Hennessy
- **Publisher:** Elsevier
- **Edition:** 5th
- **ISBN:** 9780124077263

Optional**Textbooks**

Logic & Computer Design Fundamentals

- **Author:** Mano & Kime
- **Publisher:** PEARSON
- **Edition:** 5th
- **ISBN:** 9780131989269

Course Requirements and Assignments

Assignments:

- No late assignments will be accepted without advanced arrangement with the instructor.
- However, everyone has two passes in the last week of semester to waive the penalty for
  - any two submissions that are each turned in within 24 hours after the due date, or
  - any one submission that are turned in within 48 hours after the due date.
- All homework must clearly indicate each student's name, course, and assignment number.
- Students are allowed (and actively encouraged) to form study groups.
- You may discuss solutions, but you MUST write up the answers independently.
- If you use a website or reference book, you must cite it.
- If there are multiple similar submissions not exhibiting independent thought, or with words obviously lifted from a book or website, ALL such submissions will receive scores of 0.

LockDown Browser + Webcam Requirement:

This course requires the use of LockDown Browser and a webcam for online quizzes. The webcam can be the type that's built into your computer or one that plugs in with a USB cable. Watch this brief video to get a basic understanding of LockDown browser and the webcam feature. Download and install LockDown browser from here.

Move Course Requirement or Assignment Item Up Move Course Requirement or Assignment Item Down Edit Course Requirement or Assignment item Delete Course Requirement or Assignment item

Pop Quizzes:

- Pop quizzes locked with passcode may be given anytime during class.
- They are usually explained in class and due on the end of the lecture day.
- The purpose of pop quizzes is to encourage you to study and review the concepts and materials we discussed in the lecture.

Move Course Requirement or Assignment Item Up Edit Course Requirement or Assignment item Delete Course Requirement or Assignment item

Midterm and Final Examinations:

There will be two midterm examinations, and a cumulative final exam.

- Exams may NOT be taken before or after the scheduled time for any reason.
- All the students need to attend synchronously.
- No make-up exams for anyone except for the medical emergency with the official medical proof.
- Use of electronic devices during exams is NOT allowed unless stated otherwise.
- All exams include quizzes (closed book) and written test (open book)
- All exams will remain with the instructor.

✔ Grading Information

- Final grades will not be adjusted in any way - so an 89.99% is still a B+.
- No incomplete grades will be given.
- The grading scale is as follows:
- Note that "All students have the right, within a reasonable time, to know their academic scores, to review their grade- dependent work, and to be provided with explanations for the determination of their course grades."
    - ee University Policy F13-1 at http://www.sjsu.edu/senate/docs/F13-1.pdf for more details.

Criteria

Criteria

The grading scale is as follows:

Grading Scale					
A+	97%	A	93%	A-	90%
B+	87%	B	83%	B-	80%
C+	77%	C	73%	C-	70%
D+	67%	D	63%	D-	60%
F	below 60.0%				

Breakdown

- Participation 5%
- Pop quizzes 10%
- zyBooks Homework 15%
- HW+Lab 15%
- Midterm 1 15%
- Midterm 2 15%
- Final Exam 25%

University Policies

Per University Policy 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) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

Course Schedule (This schedule is subject to change. Any change will be communicated via Canvas with fair notice.)

Week	Date	Topics
1	8/22	Introduction to Computer
2	8/27	Computer Organization
	8/29	Number Representation
3	9/3	Programming a Computer
	9/5	Assembler,Linker,Loader
4	9/10	SPIM IDE & MIPS Simulator
	9/12	Instruction format
5	9/17	Instruction format (I-Type)
	9/19	Instruction format (R-, J-type)
6	9/24	Memory Usage
	9/26	Addressing Modes
7	10/1 & 10/3	Comparison, Branch & Jump

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8	10/8	Review
	10/10	Midterm Exam I
9	10/15	Procedure Implementation
	10/17	Procedure Implementation
10	10/22	Memory Usage
	10/24	Memory Usage
11	10/29	Floating Point Number Representation ,
	10/31	Floating Point Number Representation ,
12	11/5	Floating Point Number Representation ,
	11/7	Floating Point Number Representation ,
13	11/12	Boolean Algebra,
	11/14	Boolean Algebra, Logic Gates
14	11/19	Logic Gates
	11/21	Review
15	11/26	Midterm Exam II

	11/28	Thanksgiving
16	12/3	Logic Circuit Design
	12/15	Logic Circuit Design
	Final Exam	Wed, 12/11 2:45- 5:00pm

Other important dates.

Sun, Aug. 18 Last day to drop for 100% refund

Tue, Sep 17: Last Day to Drop Classes without a "W" Grade

Fall 2024 calendar: (https://www.sjsu.edu/registrar/calendar/fall-2024.php)

https://www.sjsu.edu/registrar/calendar/fall-2024.php

https://www.sjsu.edu/provost/docs/Academic-Calendar-2024-25.pdf