San José State University

Department of Computer Science

CS 47, Section 02

Introduction to Computer Systems

Spring 2021

Course and Contact Information

Instructor:	Kaushik Patra
Office Location:	Online
Telephone:	(408) 9245161
Email:	kaushik.patra@sjsedu
Office Hours:	TTh 4:30 pm – 5:45 pm
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Classroom:	Online
Prerequisites:	CSMATH 42/42X and CS 46BCS49J or equivalent (with a grade of "G" or better)

Course Format

This course uses online flipped method with designed meeting time as above mentioned general students are expected to have computer systems with internet connection webcam. A tool 'MARS' will be used to study assembly programing concept. The materials and lecture video boarded in Canvas prior to class. Students are required review the lecture video and note before coming to class. During class hour it is expected that students have access their laptop with internet connection to download some program material to work on during class hour if needed. All the homework and assignments are to be uploaded in Canvas.

Course Description

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.

Course Topics:

Computer organization, Number representation, programming a computer, assemblers, linker, loader, MIPS assembly language programming, run time memory stack, interrupt & exceptions, Boolean algebra, integer mathematics, logic gates & logic design.

Course Objectives:

- To get introduced to the organization of a computer system

- To get familiarized with instruction sets and assembly programming

- To experience extensive programming practice that reinforces binary data representation, assembly instructions, addressing modes, and run time stack organization

- To get extensive lab practice using computer simulation.

- To appreciate how the computer hardware supports systems programming in high level languages

Learning Outcomes and Course Goals

Course Goal:

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 (CLO):

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

- To be familiar with the architectural components of a computer system: CPU (registers, ALU), memory, buses

- To be able to convert between decimal, binary, and hexadecimal notations.

- To work with two's complement integers, floating point numbers, and character encodings

- To be able to write assembly programs that use load/store, arithmetic, logic, branches, call/return and push/pop instructions.

- To understand the gate level operations of basic ALU

BS in Computer Science Program Outcomes Supported:

These are the BSCS Program Outcomes supported by this sec

a) An ability to apply knowledge of computing and mathematics to solve problems.

b) An ability to analyze a problem, to identify and define the computing requirements appropriate to its solutic

c) An ability to design, implement, and evaluate a comter-based system, process, component, or program to meet desired needs

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i) An ability to use current techniques, skills, and tools necessary for computing practice

j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

Required Texts/Readings

Textbook

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- Design and Implementation.
- Testing
- Conclusion
- Make sure to
    1. Include clear diagrams for requirement and design.
    2. Include code snippet to explain implementation.
    3. Include screen shots of testing results.
    4. Upload source code and test program as zip archive.

Project reports are encouraged to be submitted in IEEE format
[http://www.ieee.org/conferences_events/conferences/publishing/templates.html]

<u>10% of the obtained marks in project will be awarded as extra points in project evaluation if report submitted in proper IEEE format.</u>

LockDown Browser + Webcam Requirement

This course requires the use of LockDown Browser and a webcam for online quizzes

A+ = 100-97%	A = 96-93%	A- = 92-90%
B+ = 89-87%	B = 86-83%	B- = 82-80%
C+ = 79-77%	C = 76-73%	C- = 72-70%
D+ = 69-67%	D = 66-63%	D- = 62-60%
F = 59-0% Failure		

Classroom Protocol

1. You must join online video meeting on time! There will be a waiting room online – join 5 minutes early. Students are encouraged to keep the video on – however, if bandwidth, other technical and/or any other type of reservation is a concern, make sure to have your real photo clearly showing your fac

11. Note that all federal, state, CSU system, and campus regulations on conduct including harassment and discrimination against other students or faculty apply to the online environment, just as in face-to-face instruction.

12. All e-mail communication to the instructor must have the subject line start with [CS47,02]

13. Email to be sent to the instructor's SJSU email (kaushik.patra@sjsu.edu) only.

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Course Schedule

Date	Lecture	Notes
01/28/21		Green Sheet Review
02/02/21	Introduction to Computer	Submit Prerequisite Survey & Syllabus Agreement(Jan 30)
02/04/21	Computer Organization	
02/09/21	Number Representation	
02/11/21	Programming a comion	