Introduction to Computer Organization and Architecture
CS 286-001 - Fall 2026 (CRN: 33710)

Welcome to CS 286!

Instructor: Dr. Hiroshi Fujinoki
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Office Hours*: Monday: 10:00 a.m. - 12:00 p.m.
Tuesday: 10:00 a.m. - 12:00 p.m.
Wednesday: by appointment (should be made 24 hours in advance or the office hour will be made available based on the best-effort basis)
Thursday: 10:00 a.m. - 12:00 p.m.
Friday: no office hour

Note *: The above office hours will <u>not</u> be available during the final exam week and Thanksgiving week.

Class Meeting Room: EB-0165
Class Meeting Days: Monday and Wednesday
Class Meeting Time: 1:30-2:45 P.M.

Note: item with "♣" symbol means an important item.

♣ **Course Prerequisites:**

CS150 (Introduction to Computing II) with a minimum grade of C or the instructor's permission. If you have not completed CS150, please talk to the instructor.

♣ **Grading:**

	Weight:
Quizzes:	16%
Programming projects (5+5+5%):	15%
Midterm Exam:	29%
Final Exam:	40%

Final Letter Grade*:	
100-92:	A
91-82:	B
81-72:	C
71-60:	D
Below 60:	F

Note*: the letter-grade thresholds are "sufficient conditions" for the letter-grade categories

♣ **Exams:**

- Exams will be **closed textbook** and **closed notes**.
- Exams will cover reading assignments, the course projects, and the exercise questions posted to the course home (the course website).
- The final exam will be a cumulative exam.
- **Absence from an exam without a prior agreement or failing to submit your work by the end of an exam will result in zero point for the exam (except for medical emergencies)**.
- No electronic devices ((smart) phones, PCs, and etc.) can be used during the exams. Use (including manipulating or watching one) of such electronic devices during an exam will be considered academic dishonesty.
- **Makeup exam will be offered only for medical emergency (with a signed doctor's letter)**.
- Any error regarding your graded exams should be reported to Dr. Fujinoki within two weeks (14 calendar days) after your attendance status is posted to the course web site.

♣ **Course Projects:**

- Programming projects using assembly language for MIPS R3000 Processor (we use MIPS R3000 emulator).
- Course programming projects are all individual project (no collaboration is allowed either for designs and coding).
- The project specifications will be provided in the class.

♣ **Lecture Attendance Policies:**

- No penalty will be given up to two absences in a semester. For each absence beyond the second absence, -2 point penalty (in 100 scale) will be given to your next exam.
- The above penalty will not apply to your medical emergency (however, you need to provide a written proof of medical service to waive the penalty).
- An attendance card will be provided to each person who attends a lecture. At the end of a lecture, each of you should return your attendance card with your SIUE ID written on the card. The attendance card should be the one

provided by the course instructor or the teaching assistant for this course. Returning an attendance card that is NOT provided by either the course instructor or the teaching assistant will be considered as an act of cheating.

- No electronic devices ((smart) phones, PCs, and etc.) can be used in each lecture. Use (including manipulating or watching one) of such electronic devices in each lecture will be considered a violation of the course policy. Attendance card will not be accepted from those who violate this policy in a lecture.
- Any error regarding your lecture attendance status should be reported to Dr. Fujinoki <u>within two weeks (14 calendar days) after your attendance status is posted to the course web site</u>.

♣ **Academic Dishonesty:**

Following activities (but not limited to them) will be considered academic dishonesty:

I. Exams:

(a) Communicating (e-mails, phone calls, and texting, but not limited to them) with anyone (except the course instructor)) during exams.

(b) Using materials not allowed during exams.

(c) Anyone committing academic misconduct above (I-(a) or (b)) will receive a failing grade for this course and reported to the department chair as well as to the dean of the school of engineering.

II. Programming Projects:

(a) Submitting work totally or partially done by somebody else (this includes any human/electronic sources (such as web sites and even another course at SIUE) unless explicitly allowed by the course instructor).

(b) Submitting program source code files (for the programming projects) that are developed by collaborations with other people. This includes both program designs and implementations.

(c) Anyone committing academic misconduct above (II-(a) or (b)) can receive a failing grade for this course and reported to the department chair as well as to the dean of the school of engineering

♣ **Required Textbook:**

- J. Hennessy and D. Patterson, "Computer Organization and Design (Fifth Edition)", Morgan Kaufmann (ISBN: 978-0-12-407726-3)
- The lecture notes and the PPT slides presented in the classroom are summaries of the course textbook. The course syllabus specifies the textbook chapters/sections each student should read ideally before each lecture (at least after each lecture).

Other Requirements for this Course:

- Experience with C/C++ (UNIX environment)
- Data structure or discrete structure

♣ **Disability Support:**

- Students who believe they may need accommodations in this class are encouraged to contact the office of Disability Support Services as soon as possible. It is the students' responsibility to alert the instructor to SIUE sanctioned accommodations. If anyone needs assistance from SIUE Disability Support Services, please contact them.

♣ **Other Notices:**

(1) This course expects each of you to work nine (9) hours other than attending lectures (this is also a policy of SIUE).

(2) Each of you is expected to check "Weekly Notices" in the web site of this course at least twice in a week. The decisions regarding which course materials are posted belong to the course instructor. If any promised course material is missing in the course home, it is your responsibility to request such material to the course instructor (the course instructor will post such materials within at most one week since the request).

(3) Any grading problem should be reported within two weeks (14 days) after your grades are posted to the course home or the graded materials are returned in the classroom.

(4) E-mails sent to the course instructor during weekends, holidays, and the Thanksgiving break week may not be responded.

(5) Any special arrangement agreed between you and the course instructor (Dr. Fujinoki) should be documented. <u>Any promises or agreements orally made</u>

between you and the course instructor may not take effect without a documentation (it is your responsibility to document any such promises and agreements).

(6) Ask your questions to the course instructor whenever you have anything you do not have a clear answer for. Please do not make your own assumptions (if you do, you are responsible for any assumptions you make when they are not correct).

♣ Tentative Class Schedule (subject to change):

This schedule is tentative and subject to change. However, any change will be announced in the class or noticed in the notice page of the instructor.

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Week #:	Day	Topics	Reading Assignments
Week 1:	August 24 (M):	Introduction to CS286, Computer Abstractions	Chapter 1 (1.1 through 1.5)
	August 26 (W):	The Role of Performance	Chapter 1 (1.6)
Week 2:	August 31 (M):	Introduction to Assembly Languages	Chapter 2 (2.1 and 2.2)
		• Quiz #1 submission due	
		• Quiz #2 (in class)	
		Programming project (Project #1) description	Handout #1
	September 2 (W):	Assembly Language using MIPS CPU	Chapter 2 (2.3)
		Project Phase #1 assigned	
Week 3:	September 7 (M):	(Labor Day: No Lecture in the classroom	
	September 9 (W):	Arithmetic for Computers (1)	Chapter 2 (2.4, 2.6, 2.7)
		• Quiz #3 (in class)	
Week 4:	September 14 (M):	Arithmetic for Computers (2)	Chapter 3 (3.1, 3.2, 3.5)
		Data Path and Control (1)	Chapter 4 (4.1 and 4.2)
		• Quiz #4 (in class)	
	September 16 (W):	Data Path and Control (2)	Chapter 4 (4.5)
Week 5:	September 21 (M):	Programming Project #2 discussions	Handout #2
		• Quiz #5 (in class)	
	September 23 (W):	Pipeline Data Path (1)	Chapter 2 (2.8 and 2.9)
		• Project Phase #1 Due	Chapter 4 (4.5)

Week 6: September 28 (M): Pipeline Data Path (2) Chapter 4 (4.5)

- Quiz #6 (in class)
- Project #2 assigned

September 30 (W): Pipeline Hazards and code optimization (1)

Week 7: October 5 (M): Pipeline Hazards and code optimization (2)

- Quiz #7 (in class)

October 7 (W): Pipeline Hazards and code optimization (3)

Week 8: October 12 (M): Memory sub-system and Virtual Memory (1) Chapter 5 (5.1)

October 14 (M): Midterm Exam

Week 9: October 19 (M): Virtual Memory (2) Chapter 5 (5.2), (5.7)

October 21 (W): Memory Segmentation PPT slides

Week 10: October 26 (M): Programming Project #3 discussions Handout #3

- Quiz #8 (in class)
- Project #2 Due

October 28 (W): Programming Project #3 discussions

- Project #3 Assigned

Week 11: November 2 (M): I/O Subsystems (1) PPT slides

- Quiz #9 (in class)

November 4 (W): I/O Subsystems (2) PPT slides

Week 12: November 9 (M): I/O Subsystems (3) PPT slides

- Quiz #10 (in class)

November 11 (W): I/O Subsystems (4) PPT slides

Week 13: November 16 (M): Multi-processor System (parallel computers)(1) PPT slides

- Quiz #11 (in class)

November 18 (W): Multi-processor System (2) PPT slides

TG Holiday Week: November 23 and 25: Thanksgiving Week

Week 14: November 30 (M): Topics TBA (Exercises)

- Quiz #12 (in class)

December 2 (W): Topics TBA (Exercises)

Week 15: December 7 (M): Topics TBA (Exercises)

- Quiz #12 (in class)

December 9 (W): Topics TBA (Exercises)

Final Exam Week: 12:00 – 1:30 p.m., December 17

- The list of the reading assignment is the minimum requirement. It is expected that each student voluntarily studies not only the required sections but other related sections or materials to maximize the learning during the semester.
- Required reading should be done before the lecture.
- If you have any problem for the above schedule, please contact to Dr. Fujinoki as soon as possible.

Course syllabus last modified at 11:39 a.m., August 23, 2026