Welcome to CS 286!

Instructor: Dr. Hiroshi Fujinoki  
Office: EB 2034  
Email: hfujino@siue.edu  
URL: www.siue.edu/~hfujino  
Office Hours: (1) Monday: 10:00 - 11:00 A.M., and 1:30 - 2:30 P.M.  
(2) Tuesday: 2:00 - 3:00 P.M.  
(3) Wednesday: 10:00 - 11:00 A.M., and 1:30 - 2:30 P.M.  
(4) Thursday: 2:00 - 3:00 P.M.  
(4) Friday: by appointment

Note: The above office hours will not be applied to the final exam week. During the final exam, please contact Dr. Fujinoki for your appointment.

Class Meeting Room: Science East 1254  
Class Meeting Days: Tuesday and Thursday  
Class Meeting Time: 9:30-10:45 A.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:  
Weekly quizzes: 15%  
Programming assignments (5+5+5%): 15%  
Midterm Exam: 35%  
Final Exam: 35%  

<table>
<thead>
<tr>
<th>Weight</th>
<th>Final Letter Grade</th>
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<tbody>
<tr>
<td>15%</td>
<td>100-92: A</td>
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<tr>
<td>15%</td>
<td>91-82: B</td>
</tr>
<tr>
<td>35%</td>
<td>81-72: C</td>
</tr>
<tr>
<td>35%</td>
<td>71-62: D</td>
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<td>Below 62: F</td>
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Exams:

- Exams will be closed textbook and closed notes.
- Makeup exam will be offered only for the following two cases:
  (a) Your medical emergencies (with a signed doctor's letter)
  (b) You have more than two exams scheduled on the same day
  Makeup for any other reasons will not be provided (no exception).
- Absence from an exam will result in zero point for the exam (except medical emergencies).
- A calculator is allowed in the exams (however sharing a calculator during an exam is NOT allowed – everyone needs to bring your own calculator).
- Exams will cover reading assignments and the required exercise questions.
- Any grading error regarding your exams should be reported to Dr. Fujinoki within two weeks (14 calendar days) after your graded exam is returned in the classroom.

Quizzes:

- There will be 12 quizzes during this course (each quiz takes 10 to 15 minutes). The quizzes are closed textbook, notebooks and neighbors (you are allowed to use your pens, pencils, an eraser and a calculator during a quiz).
- Makeup quizzes will be provided only for medical emergencies (makeup quiz will not be provided for any other reasons).
- The lowest quiz will be dropped from your course grade at the end of the semester.
- Any grading error should be reported to Dr. Fujinoki within two weeks (14 calendar days) after your graded quiz is returned in the classroom.

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.
Attendance Policy:

- Attendance will be taken at the beginning of lectures (being late more than 5 minutes may be considered absence).
- 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 coming exam.
- The above penalty will not apply to your medical emergencies (however, you need to provide a written proof of medical service to waive the penalty).
- Any error regarding your class attendance status should be reported to Dr. Fujinoki within two weeks (14 calendar days) after your attendance status is posted to the course web site.

学术不端:

学术不端行为的活动（但不限于）将被看作学术不端。

I. Exams:
   (a) Watching and copying your neighbors’ solutions 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)).
   (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) Exchanging, sending, or receiving program source code files (in any forms, such as e-mails, hard-copies, and hand-writing codes on paper) to anyone is not allowed.
   (d) Anyone committing academic misconduct above (II-(a) or (b)) will receive a grade of zero on the assignment plus a warning for the first infraction. Anyone committing a second infraction will automatically fail the course and/or be brought up on charges of academic misconduct, which may result in expulsion from the university.
• **Required Textbook:**
  - 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 for Accessible Campus Community & Equitable Student Support (ACCESS) as soon as possible. It is the students' responsibility to alert the instructor to SIUE sanctioned accommodations. If anyone needs assistance from SIUE SCESS, please contact them (www.siue.edu/access).

• **Other Notices:**
  - This course expects each of you to work at least nine (9) hours other than attending lectures (this is also a policy of SIUE).
  - Important announcements will be made at the beginning of a lecture.
  - If you are absent from a lecture, it is your responsibility to find the announcements and the contents in the missed lecture (you are suggested to talk to your classmates).
  - Each of you is expected to check "Weekly Notices" in the web site of this course (you can reach the course web site from http://www.siue.edu/~hfujino) 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.
  - Any grading problem should be reported within two weeks (14 days) after their grades are posted or the graded materials are returned in the classroom.
• Any electric device, such as smart phone, laptop PC, and tablet computer (except a calculator), should not be used during lectures and exams.

• E-mails sent to the course instructor during weekends and the break (spring break) may not be responded.

• Any special arrangement agreed between you and the course instructor (Dr. Fujinoki) should be documented. Any promises or agreements orally made between you and the course instructor may not take effect without a documentation (it is your responsibility to document any such promises and agreements).

• 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.

<table>
<thead>
<tr>
<th>Week #: Day</th>
<th>Topics</th>
<th>Reading Assignments</th>
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<tbody>
<tr>
<td>Week 1: January 14 (T): Introduction to CS286, Computer Abstractions</td>
<td>Chapter 1 (1.1 through 1.5)</td>
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<td>January 16 (R): The Role of Performance</td>
<td>Chapter 2 (2.1 through 2.6)</td>
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<td>Week 2: January 21 (T): Quiz #1, Introduction to Assembly Languages</td>
<td>Chapter 3 (3.1 through 3.4)</td>
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<tr>
<td>January 23 (R): Assembly Language using MIPS CPU</td>
<td>Chapter 3 (3.1 through 3.4)</td>
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<td>Week 3: January 28 (T): Quiz #2, Programming project description Handout</td>
<td>Chapter 3 (3.5 and 3.6)</td>
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<td>Program Control Structure</td>
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<tr>
<td>Project Phase #1 Assigned</td>
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<tr>
<td>January 30 (R): Arithmetic for Computers</td>
<td>Chapter 4 (4.1 through 4.6)</td>
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<tr>
<td>Week 4: February 4 (T): Quiz #3, Arithmetic for Computers (cont’d)</td>
<td>Chapter 4 (4.7 and 4.8)</td>
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<tr>
<td>February 6 (R): Data Path and Control</td>
<td>Chapter 5 (5.1 and 5.2)</td>
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<tr>
<td>Week 5: February 11 (T): Quiz #4, Data Path and Control (cont’d)</td>
<td>Chapter 5 (5.3, 5.4 and 5.5)</td>
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<tr>
<td>Project Phase #1 Due</td>
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<td>February 13 (R): Programming Project #2 discussions</td>
<td>Handout</td>
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<td>Week 6: February 18 (T): Quiz #5, Pipeline Data Path</td>
<td>Chapter 6 (6.1 through 6.3)</td>
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<td>Project #2 Assigned</td>
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<td>February 20 (R): Pipeline Data Path (cont’d)</td>
<td>Chapter 6 (6.1 through 6.3)</td>
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<td>Week 7: February 25 (T): Quiz #6, Pipeline Hazards and code optimization</td>
<td>Chapter 6 (6.1 through 6.3)</td>
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<tr>
<td>February 27 (R): Pipeline Hazards and code optimization (cont’d)</td>
<td>Chapter 6 (6.4 through 6.6)</td>
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<td>Week 8: March 3 (T): Quiz #7, Pipeline Hazards and code optimization (cont’d)</td>
<td>Same as February 24</td>
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<td>March 5 (R): Midterm Exam</td>
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<td>Week 9: March 10 (T) and 12 (R): Spring Break Week (No Class)</td>
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<td>Week 10: March 17 (T): Super-Scalar and Dynamic Pipeline</td>
<td>Chapter 6 (6.8)</td>
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<td>March 19 (R): Pentium processor Pipeline</td>
<td>Chapter 6 (6.9)</td>
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<td>Week 11: March 24 (T): Quiz #8, Memory Hierarchy</td>
<td>Chapter 7 (7.1 through 7.2)</td>
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<td>March 26 (R): Cache Performance analysis</td>
<td>Chapter 7 (7.3)</td>
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<td>Project #2 Due</td>
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Week 12: March 31 (T): Virtual Memory
April 1 (R): Quiz #9, Programming Project #3 discussions Handout

Project #3 Assigned

Week 13: April 7 (T): Memory performance analysis
April 9 (R): Quiz #10, Memory performance analysis (cont’d)

Week 14: April 14 (T): I/O Subsystems
April 16 (R): Quiz #11, I/O Subsystems (cont’d)

Week 15: April 21 (T): I/O Subsystems (cont’d)
April 23 (R): Quiz #12, I/O Subsystems - Queuing Theory Handout #4

Week 16: April 28 (T): Multi-processor System
April 30 (R): Multi-processor System (cont’d)

Project #3 Due

Week 17: Final Exam Week
May 5 (Tuesday) at 8:00-9:40 A.M.: Final Exam (comprehensive)

• 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.
• Any question regarding this syllabus should be addressed to: hfujino@siue.edu

Course syllabus last modified at 12:09 P.M., January 13, 2020