Welcome to CS 286!

Instructor: Dr. Hiroshi Fujinoki
Office: EB 2034
Email: hfujino@siue.edu
URL: www.siue.edu/~hfujino
Office Hours: Monday: 10:00 - 11:59 A.M.
            Tuesday: 10:00 - 11:59 A.M.
            Wednesday: 10:00 - 11:59 A.M.
            Thursday: by appointment (should be made 24 hours in advance or the
                      office hour will be made available based on best-effort)
            Friday: no office hour

Note: All the office hour slots are by zoom meetings.

Class Meeting Room: EB-1033
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:
<table>
<thead>
<tr>
<th>Course</th>
<th>Weight</th>
<th>Final Letter Grade</th>
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</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>16%</td>
<td>100-92: A</td>
</tr>
<tr>
<td>Programming projects (5+5+5%)</td>
<td>15%</td>
<td>91-82: B</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>29%</td>
<td>81-72: C</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40%</td>
<td>71-62: D</td>
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<td>Below 62: F</td>
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</table>
Exams:

- Exams will be closed textbook and closed notes.
- Makeup exam will be offered only for medical emergency (with a signed doctor's letter).
- Absence from an exam or failing to submit your work by the end of an exam will result in zero point for the exam (except medical emergencies).
- Exams will cover reading assignments and the exercise questions posted to the course home (the course website).
- 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.
- 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. For the first time a person violates this rule, that person will receive a warning (and it will be considered as an absence). The second time the same person violates this rule, the person will receive a failing grade for this course.

- 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 within two weeks (14 calendar days) after your attendance status is posted to the course web site.

* 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)).
   (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)) 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
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 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.

Potential for Changes in Course Schedule or Modality:

As the COVID-19 pandemic continues, there remains a possibility that planned classroom activities will need to be adjusted. Depending on circumstances and following state-issued recommendations, potential changes include changes in course modality (e.g., transition from face-to-face to online), in course scheduled meetings, and/or in the course policy for wearing masks (currently no requirement). These changes would be implemented to ensure the successful completion of the course as well as for the safety of everyone in the course. In these cases, students will be provided with an addendum to the class syllabus that will supersede the original version.

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 may not be responded.

(5) 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).

(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.

This schedule is tentative and subject to change.

<table>
<thead>
<tr>
<th>Week #</th>
<th>Day</th>
<th>Topics</th>
<th>Reading Assignments</th>
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<tbody>
<tr>
<td><strong>Week 1:</strong></td>
<td>August 22 (M): Introduction to CS286, Computer Abstractions</td>
<td>Chapter 1 (1.1 through 1.5)</td>
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<td>August 24 (W): The Role of Performance</td>
<td>Chapter 1 (1.6)</td>
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<td><strong>Week 2:</strong></td>
<td>August 29 (M): Introduction to Assembly Languages</td>
<td>Chapter 2 (2.1 and 2.2)</td>
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<td></td>
<td>• Quiz #1 submission due</td>
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<td></td>
<td>• Quiz #2 (in class)</td>
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<td></td>
<td>Programming project (Project #1) description</td>
<td>Handout #1</td>
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<td></td>
<td>August 31 (W): Assembly Language using MIPS CPU</td>
<td>Chapter 2 (2.3)</td>
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<td></td>
<td>• Project Phase #1 assigned</td>
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<td><strong>Week 3:</strong></td>
<td>September 5 (M): Program Control Structure</td>
<td>Chapter 2 (2.7)</td>
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<td>• Quiz #3 (in class)</td>
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<td></td>
<td>September 7 (W): Arithmetic for Computers (1)</td>
<td>Chapter 2 (2.4 and 2.6)</td>
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<td><strong>Week 4:</strong></td>
<td>September 12 (M): Arithmetic for Computers (2)</td>
<td>Chapter 3 (3.1, 3.2, 3.5)</td>
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<td></td>
<td>Data Path and Control (1)</td>
<td>Chapter 4 (4.1 and 4.2)</td>
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<td>• Quiz #4 (in class)</td>
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<td>September 14 (W): Data Path and Control (2)</td>
<td>Chapter 4 (4.5)</td>
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<td><strong>Week 5:</strong></td>
<td>September 19 (M): Programming Project #2 discussions</td>
<td>Handout #2</td>
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<td>• Quiz #5 (in class)</td>
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<td>September 21 (W): Pipeline Data Path (1)</td>
<td>Chapter 2 (2.8 and 2.9)</td>
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<td>• Project Phase #1 Due</td>
<td>Chapter 4 (4.5)</td>
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<td><strong>Week 6:</strong></td>
<td>September 26 (M): Pipeline Data Path (2)</td>
<td>Chapter 4 (4.5)</td>
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<td>• Quiz #6 (in class)</td>
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<td>• Project #2 assigned</td>
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<td>September 28 (W): Pipeline Hazards and code optimization (1)</td>
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<td><strong>Week 7:</strong></td>
<td>October 3 (M): Pipeline Hazards and code optimization (2)</td>
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<td>• Quiz #7 (in class)</td>
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<td>October 5 (W): Pipeline Hazards and code optimization (3)</td>
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<td><strong>Week 8:</strong></td>
<td>October 10 (M): Memory sub-system and Virtual Memory (1)</td>
<td>Chapter 5 (5.1)</td>
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<td>October 12 (M): Midterm Exam</td>
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Week 9: October 17 (M): Virtual Memory (2)  Chapter 5 (5.2), (5.7)
October 19 (W): Memory Segmentation  PPT slides

Week 10: October 24 (M): Programming Project #3 discussions  Handout #3
• Quiz #8 (in class)
• Project #2 Due
October 26 (W): Programming Project #3 discussions
• Project #3 Assigned

Week 11: October 31 (M): I/O Subsystems (1)  PPT slides
• Quiz #9 (in class)
November 2 (W): I/O Subsystems (2)  PPT slides

Week 12: November 7 (M): I/O Subsystems (3)  PPT slides
• Quiz #10 (in class)
November 9 (W): I/O Subsystems (4)  PPT slides

Week 13: November 14 (M): Multi-processor System (1)  PPT slides
• Quiz #11 (in class)
November 16 (W): Multi-processor System (2)  PPT slides

TG Holiday Week:  November 21 and 23 (M and W): Thanksgiving Week

Week 14: November 28 (M): Topics TBA (Exercises)
• Quiz #12 (in class)
• Project #3 Due
December 1 (W): Topics TBA (Exercises)

Week 15: December 5 (M): Topics TBA (Final Exam Review)
December 7 (M): Topics TBA (Final Exam Review)

Final Exam Week: December 15 (Thursday): 12:00-1:40 p.m.

- 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 Dr. Fujinoki as soon as possible.

Course syllabus last modified at 2:14 P.M., August 21, 2022