Introduction to Computer Organization and Architecture
CS 312-001 - Summer 2017 (CRN: 23607)

Welcome to CS 312!

Instructor: Dr. Hiroshi Fujinoki
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Office Hours: (1) Mondays: 11:00 A.M. - 12:00 P.M. and 2:50 P.M. - 3:30 P.M.
(2) Wednesdays: 11:00 A.M. - 12:00 P.M. and 2:50 P.M. - 3:30 P.M.
(3) Fridays: 11:00 A.M. - 12:00 P.M. and 2:50 P.M. - 3:30 P.M.

Class Room: EB-0140
Class Days: Monday (M), Wednesday (W), and Friday (F)
Class Time: 1:15 - 2:40 P.M. (same time for, M, W, and F)

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: Final Letter Grade:
Weekly quizzes: 20% 100-92: A
Programming assignments (7+18): 25% 91-82: B
Midterm Exam: 20% 81-72: C
Final Exam: 35% 71-62: D
Below 62: F

● Exams:
• Exams will be closed textbook and closed notes.
• Makeup exam will be given only for medical emergency (with a written proof).
• Absence without a prior consent from Dr. Fujinoki will result in zero point (except medical emergencies).
• If you need any special assistance, you should contact to Dr. Fujinoki at least one week before (since a makeup needs to be arranged).
• The same rules are applied to the weekly quizzes.
• 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 required exercise questions.

♣ Course Project:
• Programming project using assembly language for MIPS R3000 Processor (we use MIPS R3000 emulator).
• Course programming projects are all individual project. No collaboration is allowed unless the exceptions set forth by the course instructor).
• The project specification will be given in the class.

♣ Quizzes:
• There will be 8 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, blank papers, eraser(s) and a calculator during a quiz). The quiz questions will be posted to the CS312-001 home.

Attendance Policy:
• Attendance will be taken without prior notice at the beginning of lectures (being late more than 5 minutes will be considered absence).
• No penalty will be given up to two absences in a semester. For each absence beyond the second absence, -3 points to the next exam.
• The above penalty will not apply to medical emergency (however, you need to provide written proof of medical service to waive the penalty).
• To waive penalty for missing a lecture for any reason other than medical emergency, you need to have a prior agreement with the instructor (however, you must have a very good reason).

♣ Academic Dishonesty:
Following activities (but not limited to them) will be considered academic dishonesty and final letter grade of F may be given:
• Submitting work (such as homework assignments and projects) totally or partially done by somebody else (this includes any human/electronic sources (such as web sites and even another course at SIUE)).
• Watching and copying your neighbors’ solutions during quizzes and exams.
• Using materials or methods that are not allowed during quizzes, exams, or programming projects.
Required Textbook:
- The lectures 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

Other Notices:
- Every student is expected to check "Weekly Notices" in CS312-001 home (follow the link from within "http://www.siue.edu/~hfujino") at least twice in a week.
- For any grading problem, each student is expected to contact the course instructor within 10 days after the grade is posted (failing to contact within 7 days may result in being unable to fix the problem).
- If you see any missing materials in the course home, you should contact Dr. Fujinoki to post those materials (missing materials in the course home can not be an excuse for any makeup quiz or exam).
- If you are absent from course lecture(s), it is your responsibility to find what are discussed in those lectures (Fujinoki will not be responsible for any opportunities you missed due to your absences).

Tentative Class Schedule (subject to change):

This schedule is tentative and subject to change.

<table>
<thead>
<tr>
<th>Week #</th>
<th>Day</th>
<th>Topics</th>
<th>Reading Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>May 31 (W): May 31 (W): Introduction to CS312, Computer abstractions, the role of performance</td>
<td>Chapter 1 (1.1 through 1.5)</td>
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<td>Introduction to assembly language</td>
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<td>June 2 (F): June 2 (F): Introduction to assembly language</td>
<td>Chapter 2 (2.1 through 2.6)</td>
<td></td>
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<tr>
<td>Week 2</td>
<td>June 5 (M): Assembly language using MIPS CPU</td>
<td>Handout #1</td>
<td>Project Phase #1 Assigned</td>
</tr>
</tbody>
</table>
June 7 (W):  Quiz #1, Assembly language using MIPS CPU  Handout #2
June 9 (F): Assembly language using MIPS CPU  Handout #2

Week 3:  June 12 (M): Quiz #2, Program control structure in assembly language
         June 14 (W): Arithmetic for computers
         June 16 (F): Quiz #3, Arithmetic for computers

Week 4:  June 19 (M): Arithmetic for computers (cont’d)
         June 21 (W): Processor data-path and control
         June 23 (F): Quiz #4, Processor data-path and control

Week 5:  June 26 (M): Processor data-path and control (cont’d)  Project Phase #1 Due
         June 28 (W): Pipeline hazards and code optimization
         June 30 (F): Quiz #5, Pipeline hazards and code optimization

Week 6:  July 3 (M): Pipeline hazards and code optimization
         July 5 (W): Midterm Exam, Project Phase #2 Assigned
         Memory hierarchy, cache performance analysis
         July 7 (F): Memory hierarchy, cache performance analysis Chapter 7 (7.1 through 7.3)

Week 7:  July 10 (M): Virtual memory, memory performance analysis
         July 12 (W): I/O subsystem
         July 14 (F): Quiz #6, I/O subsystem

Week 8:  July 17 (M): I/O subsystems (cont’d)
         July 19 (W): I/O subsystems (cont’d)
         July 21 (F): Quiz #7, I/O subsystems (cont’d)

Week 9:  July 24 (M): Multi-processor systems
         July 26 (W): Multi-processor systems (cont’d)
         July 28 (F): Quiz #8, Multi-processor systems (cont’d)  Project Phase #1 Due

Week 10: July 31 (M): Final Exam (cumulative exam)

Course syllabus last modified at 6:00 P.M., May 30, 2017