ECE/CS 472/572
Computer Architecture
Monday, Wednesday & Friday, 1100-1150, KEC 1003

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Office Location: KEC 1115
Office Hours: Listed on my OSU Website
Office Phone: (541) 737-1072

This statement is the original plan of the course. Plans can change through the course of the term, and changes will be sent out to the class email list. Check your ENGR email account daily.

Course Description: ECE/CS 472/572, Computer Architecture, explores using processors, memories, and I/O devices as building blocks. Issues involved in the design of instruction set architecture, processor, pipelining, and memory organization are analyzed. Conceptual trade-offs are weighed involving in Reduced Instruction Set Computer (RISC) architectures, multi-core processors, GPUs, and FPGAs.

Prerequisite(s): ECE 375

Course Objectives:
At the completion of this course, students will be able to:

1. Use various metrics to calculate the performance of a computer system (Level 3; ABET Outcomes: A, j)
2. Identify the addressing mode of instructions (Level 2; ABET Outcomes: A)
3. Determine which hardware blocks and control lines are used for specific instructions (Level 4; ABET Outcomes: A, j)
4. Demonstrate how to add and multiply integers and floating-point numbers using twos complement and IEEE floating point representation (Level 3; ABET Outcomes: A, j)
5. Analyze clock periods, performance, and instruction throughput of single-cycle, multi-cycle, and pipelined implementations of a simple instruction set (Level 4; ABET Outcomes: A)
6. Detect pipeline hazards and identify possible solutions to those hazards (Level 4; ABET Outcomes: A, j)
7. Show how cache design parameters affect cache hit rate (Level 3; ABET Outcomes: A, j)
8. Map a virtual address into a physical address (Level 3; ABET Outcomes: A)
9. For ECE 572 (or aggressive undergraduate): Extra project of: Parallel programming assignment.

Grade Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Lab</td>
<td>20%</td>
</tr>
<tr>
<td>Midterms</td>
<td>30%</td>
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<tr>
<td>Final Project</td>
<td>30%</td>
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</tbody>
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Letter Grade Distribution:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Grade Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&gt;= 92.50</td>
<td>72.50 - 76.50</td>
</tr>
<tr>
<td>A-</td>
<td>89.50 - 92.50</td>
<td>69.50 - 72.50</td>
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<tr>
<td>B+</td>
<td>86.00 - 89.50</td>
<td>66.50 - 69.50</td>
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<tr>
<td>B</td>
<td>82.50 - 86.50</td>
<td>62.50 - 66.50</td>
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<tr>
<td>B-</td>
<td>79.50 - 82.50</td>
<td>59.50 - 62.50</td>
</tr>
<tr>
<td>C+</td>
<td>76.50 - 79.50</td>
<td>&lt;= 59.50</td>
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Course grades can be curved up based on class attendance, participation in lecture or office hours, or helping others with posts on the lab forum. Grades will not be curved down, everyone can earn an A.

Course Policies:

- General
  - Computers, phones, tablets, campus newspapers or other distractions are not to be used during lecture, for reasons stated in this article. Participate in class, take notes, engage in your learning and the lecture minutes will go by quickly. Exceptions will be made for in class activities that use laptops.
  - You are responsible for preparing for each lecture and reviewing your notes after each lecture. It’s your responsibility to contact a classmate to get notes if you miss a lecture.
  - Use the lecture time efficiently.

- Grades
  - Grades in the C range represent performance that meets expectations; Grades in the B range represent performance that is substantially better than the expectations; Grades in the A range represent work that is excellent. You are not entitled to an A, but preparation, hard work, and maturity can help you earn a good grade in this course.
  - Grades will be maintained in the Blackboard. Students are responsible for tracking their progress by referring to the online gradebook. Grading concerns should be brought to the instructors attention within a week of the grade being posted onto Blackboard.

- Labs and Assignments
  - Students are expected to work independently, unless specified to submit work in groups. Cheating, fabrication, assisting, tampering, and plagiarism are all forms of academic dishonesty and will be penalized according to the Student Conduct and Community Standards. Here is the process for dealing with academic dishonesty, and here are the forms. Discussion amongst students is encouraged, but when in doubt, direct your questions to the professor, tutor, or lab assistant.
- **No late assignments will be accepted under any circumstances.** Homework assignments can be submitted several days before the due date, but assignments submitted through TEACH will not be accepted even one second late. Assignments can be submitted multiple times, and old assignments will automatically be renamed with a .old extension within TEACH. Only the most recent submission will be graded. All assignments must be turned in by 11:00 PM on the specified due date.

- **Attendance and Absences**

  - Attendance is required. Attendance will not be taken, but you are responsible for all content discussed in lecture. Extra credit opportunities and in class assignments might be held during lecture without prior announcement.

  - Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee’s responsibility to get all missing notes or materials.