EEL 5764 Computer Architecture

Fall 2014
Course Syllabus

Instructor: Dr. Tao Li

Class Meeting Time: Tue. 8:30 am - 9:20 am, 9:30 am - 10:20 am; Thur. 9:35 am- 10:25 am

Location: NEB 201

Instructor’s contact information

Email: taoli@ece.ufl.edu
Office: 339 D Larsen Hall
Office Hours: Wed. 2:00pm- 4:00pm
Phone: 392-9510

Teaching Assistant Assignment

<table>
<thead>
<tr>
<th>Teaching Assistant</th>
<th>E-mail Address</th>
<th>Office Hours</th>
<th>Location</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mingcong Song</td>
<td><a href="mailto:songmingcong@ufl.edu">songmingcong@ufl.edu</a></td>
<td>Monday 2:00pm-4:00pm</td>
<td>Benton 328</td>
<td>352-215-4866</td>
</tr>
<tr>
<td>Huixiang Chen</td>
<td><a href="mailto:stanley.chen@ufl.edu">stanley.chen@ufl.edu</a></td>
<td>Friday 2:00pm-4:00pm</td>
<td>Benton 328</td>
<td>352-281-2164</td>
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Required Textbook


Prerequisites

You are expected to know introductory computer architecture concepts, such as those covered in EEL 4713C Digital Computer Architecture or equivalent (Computer Organization and Design, see Recommended Reading section).
Basic Linux programming skill using C, C++ and shell scripts.

Class Website and Mailing List

Class material and information will be available via UFL e-learning system: https://lss.at.ufl.edu/

Class mailing list: FALL-7382-L@lists.ufl.edu FALL-7390-L@lists.ufl.edu FALL-08AH-L@lists.ufl.edu
(Please note that all messages posted to the mailing list are subject to the approval of the instructor)
Recommended Reading


Course Objectives

This course teaches students fundamental knowledge in Computer and System Architecture. It is an entry-level graduate course and best suitable for the first year Ph.D. or Master students who are interested in computer architecture, compilers, operating systems, programming languages, VLSI designs, application specific architectures. Many exciting topics will be covered:

- Fundamentals of Computer Design
  - Performance, Power, Reliability etc.
- Instruction Level Parallelism (ILP) and Its Exploitation
  - Pipelining
  - Compiler Techniques for Exposing ILP
  - Hardware-Based Speculation
  - Out-of-order execution, Multiple issue
  - Dynamic branch prediction
- Memory Hierarchy Design
  - Advanced Optimizations of Cache Performance
  - Virtual Memory
- Data-Level Parallelism in Vector, SIMD, and GPU Architectures
- Multiprocessors and Thread-Level Parallelism
  - Symmetric Shared-Memory Architectures (SMP)
  - Distributed Shared Memory and Directory-Based Coherence (DSM)
  - Synchronization
- The Warehouse-Scale Computer and Data Center
- Storage and Interconnect

Course Grade Determination

<table>
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework (5~7)</td>
<td>30%</td>
</tr>
<tr>
<td>Midterm Exam #1 &amp; #2</td>
<td>35%</td>
</tr>
<tr>
<td>(date, time and location: TBA)</td>
<td></td>
</tr>
<tr>
<td>Course Project</td>
<td>35%</td>
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Grading Policy:

No makeup exams will be given except for a medically documented incapability or family emergency.

All homework (except homework 0) will be submitted electronically via e-learning system. Note that the homework submission deadline is automatically controlled by the system. Late homework will not be accepted. Arrange your homework submission ahead of deadline will prevent such situation.
Re-grading requests must be submitted within 3 days after the graded materials are handled back. Attach a separate sheet to explain reasons for the request.

**Academic Honesty**

All students admitted to the University of Florida have signed a statement of academic honesty committing them to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

**Cheating**

Cheating will not be tolerated. If you are caught, you will fail the course and get reported to the honor court. There are no excuses and no exceptions. You may talk to other students about homework and project, but the final work must be your own. If you are caught cheating on any assignment, exam and project, the smallest penalty possible is failure of the course. For more information about cheating, see the URLs: http://www.dso.ufl.edu/judicial/. For the copy of the UF Honor Code and consequences of academic dishonesty, please refer to http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php.

**Students with Disabilities**

Students requesting classroom, laboratory or exam accommodations must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

**University of Florida Counseling Services**

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
- SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.