

EE 4720: Computer Architecture

Syllabus

Where/When/Web

Room 1206 P. F. Taylor Hall
Monday Wednesday Friday 9:30–10:20 **Spring 2021**
<https://www.ece.lsu.edu/ee4720/>

Who

David M. Koppelman
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Tentative Office Hours: Monday–Friday: 15:00–16:00.

🦠 CoViD-19

Changes in the format of the course may be made during the semester to adapt to the CoViD-19 pandemic. Advance notice will be given. See the next page for additional information.

Topics

Instruction-Set Architecture and Microarchitecture

- Architecture and microarchitecture.
- ISA Families: RISC, CISC, VLIW.
- Instruction set design and examples.

Implementation

- Review of datapath components and basic pipelining techniques.
- Basic scheduling techniques and optimization.
- Get the most out of your datapath: dynamic scheduling (out-of-order execution).
- Branch and target prediction, and of course misprediction recovery.
- Provide more datapath: Superscalar, vector instructions, VLIW, and deeper pipelines.
- Parallel organizations: cluster, multi-core, many-core.

Memory system implementation.

- Caches.
- Virtual memory.

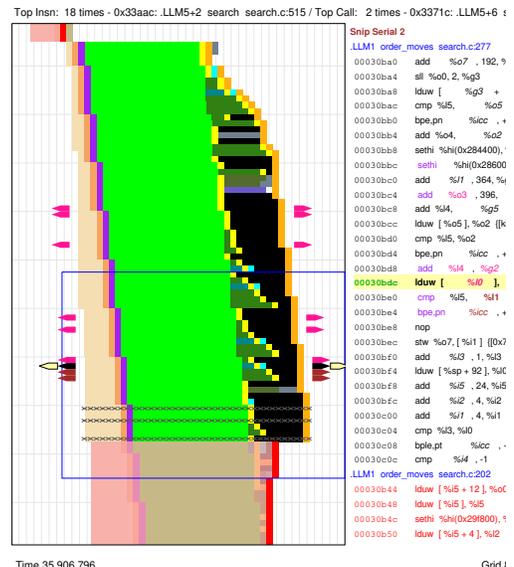
Text

Optional: “Computer architecture, a quantitative approach,” John L. Hennessy & David A. Patterson, or “Computer organization & design,” David A. Patterson & John L. Hennessy.

Grading

40% Midterm Exam* • 40% Final Exam • 20% Homework

* When computing the course average the midterm exam grade may be replaced with the final exam grade if it is higher. *Late-homework penalty*: 10% earned grade per day late. *Disorganized-homework penalty*: 10% maximum grade. (For example, will be applied to multiple E-mailed image files. Avoid penalty by combining images into a single PDF file.) *Missed-midterm-exam policy*: at instructor’s discretion either a makeup exam, use final exam grade for midterm grade (*i.e.*, 80% final exam weight), or use zero for midterm grade. *Daily attendance*: optional, however students are responsible for all material, instructions, and notices presented in class.



A.D.A.

Louisiana State University is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Any student with a documented disability needing academic adjustments is requested to speak with Disability Services and the instructor, as early in the semester as possible. All discussions will remain confidential. Please contact Disability Services in 115 Johnston Hall, 225-578-5919 or at <http://www.lsu.edu/disability>.

🚫 Computer Assignments

Some assignments for this course will have to be completed on computers in the ECE Workstation Lab, which are in room 2241 Patrick F. Taylor Hall. These machines can be used directly (within room 2241) or remotely, see the class procedures page for instructions. It is preferred that students use these computers directly since that facilitates inter-student discussion and provides the best experience when using graphical tools.

When in the ECE Workstation Lab students are expected to comply with LSU social distancing guidelines. Be sure to use hand sanitizer both before arriving at and after finishing with a workstation. Take care that a cry of computer-stoked frustration does not launch a virus-laden plume toward some other person. Remember that CoViD-19 has spread widely because many of the infectious are infectious without being aware of any symptoms at all.

🚫 CoViD-19 Statement

We remain under pandemic conditions and expect to be in this state for the entire semester. In order to consistently provide the highest quality LSU education, all students should follow current LSU guidelines. These include the following:

- 1 If you have any signs of illness, do not come to class.
- 2 In order to protect all campus community members, the University requires everyone to wear face-masks/cloths on campus. Failure to do so is a violation of the code of student conduct.
- 3 Wash hands with soap and water or clean with sanitizer frequently, and refrain from touching your face.
- 4 If you have to cough or sneeze, please be mindful of others nearby and cough or sneeze into your elbow or shield yourself the best you can.
- 5 If you have been exposed to others who have tested positive for CoViD-19, self-quarantine consistent with current CDC guidelines.

🚫 Daily Symptom Checker

You are required to respond to a daily symptom check request sent via email or text message each morning. Completing the symptom checker will take approximately one to two minutes. Once you have provided information about your symptoms, you will be given feedback on whether or not you are certified to return to campus and attend your classes. Additionally, if you test positive for CoViD-19, you are required to report it in your daily symptom checker application.

🚫 Resources for Students

Your health and safety are LSU's top priority. If you are feeling ill or overwhelmed with anxiety, please contact the LSU Student Health Center for medical advice and mental health support. General health care and mental health support are available for all enrolled students through telehealth appointments.