## CS161: Design and Architecture of Computer Systems - Summer 2019

## Course Information

* Lecture Time and Location: MW 9:10 am to 12:00 pm @ Boyce Hall 1471
* Discussion Time and Location: Tuesday 11:40am - 12:30pm @ MSE 103
* Instructor: Kelly Downey
  + Email: kelly@cs.ucr.edu
  + Office: WCH 105
  + Office Hours: by appointment
* TA: Jason Zellmer
  + Email: jason.zellmer@email.ucr.edu
  + Office Hours: by appointment

### Course Description

This course covers the relationship between hardware and software, with a focus on computer architecture and design. Topics include instruction set architecture, processor data path design and pipelining, and memory hierarchies.

**Prerequisite: CS 120A or EE 120A**

**Co-requisite: CS161L**

### Textbook

* (Required) Computer Organization and Design, 5th Edition by Patterson and Hennessy

### Grade Breakdown

* Homework: 10% - total of 4
* Quizzes: 15% - given during lecture
* Exam #1: 35%
* Exam #2: 35%
* Discussion Participation: 5%

### Schedule

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| --- | --- | --- | --- |
| **Week** | **Topics** | **Textbook Chapter** | **Homework** |
| 1 | General topics on computer design objectives and approaches | 1 |  |
| 2 | Instructions, the language of the machine. How C programs  become executable. | 2 | 1 |
| 3 | A basic CPU design, datapath and control unit | 4 |  |
| 4 | Pipelined processors | 4 | 2 |
| 5 | Pipelined processor dependencies and CPU design | 4 |  |
| 6 | Exam 1,Cache | 5 | 3 |
| 7 | Cache | 5 |  |
| 8 | Virtual memory, error correction codes | 5 | 4 |
| 9 | Reliable computing. Instruction-level parallelism | 5 |  |
| 10 | Exam 2 |  |  |

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### Policies

* You are responsible for all materials covered in lectures.
* Homework assignments can be done either individually or in pairs (write both names).   
  The objective is to practice problem solving and design in computer architecture.
* Only a subset of the assigned problems will be graded (typically only one).
* The solutions to the homework assignments will be discussed in the discussion session.
* Cheating on assignments, quizzes, projects, and exams are absolutely prohibited.   
  The minimum penalty for a violation of the regulations will be a zero for the assignment; the maximum penalty will be a failure in the course.
* Examinations must be taken in class on the day they are given. There will be no exceptions.

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### Academic Integrity

Here at UCR we are committed to upholding and promoting the values of the Tartan Soul: Integrity, Accountability, Excellence, and Respect. As a student in this class, it is your responsibility to act in accordance with these values by completing all assignments in the manner described, and by informing the instructor of suspected acts of academic misconduct by your peers. By doing so, you will not only affirm your own integrity, but also the integrity of the intellectual work of this University, and the degree which it represents. Should you choose to commit academic misconduct in this class, you will be held accountable according to the policies set forth by the University, and will incur appropriate consequences both in this class and from Student Conduct and Academic Integrity Programs. For more information regarding University policy and its enforcement, please visit: [conduct.ucr.edu](http://conduct.ucr.edu/).

### Attendance

### You are expected to attend **all** lectures and discussion. While the slides and readings contain all the information you need to know, some of the contents won't make sense unless you attend lecture.