**CS429H - Spring 2015**

**Lectures**: TTh 5-7pm, GDC 5.302
**Discussion sessions**:
F 9-11am, BUR 224
F 1-3pm, WEL 3.260
**Piazza**: piazza.com/utexas/spring2015/cs429h

**Teaching staff**:

* Ahmed Gheith (gheith@)
    * office hours: TTh 2pm - 3:30pm, GDC 5.320

All e-mails @cs.utexas.edu

This class will introduce you to:

* Computer architecture (a computer's master plan as viewed by software)
    * The different parts (processor, memory, I/O)
    * How the parts interact
    * Representation of programs and data
    * Programming I/O devices
    * Systems programming (virtual memory, DMA, interrupts, exceptions)

* Computer micro-architecture
    * How to build a simple processor
    * Technology, circuits, logic

* Performance issues
    * Software optimizations
    * Instruction-level parallelism (pipelining, superscalar, out-of-order)
    * Thread-level parallelism and multi-processors

In the process, you'll learn a few programming languages:

* C: A reasonable balance between abstraction (hiding details) and transparency (exposing details).

* Assembly/Machine-language: exposes all the details of the underlying architecture with a thin layer of abstraction. We will focus on x86 and MIPS.
* Verilog: a hardware design language used to describe hardware using logic gates, flip-flops, wires, and transistors

**Evaluation**

* 2 in-class exams: 40% (Thursday 3/12, Thursday 5/7)
* Programming assignments (~ 12): 40%
* Quizzes (~10) (will drop the lowest two scores): 20%

Grade cutoff guidance: A-/A >= 90%, B-/B/B+ >= 80%, C-/C/C+ >= 70%, D-/D/D+ >= 60%

**Project submission**

Projects will be assigned, tracked, and submitted using a system based on the GIT revision control system. I will teach you enough git basics to get you going but you're encouraged to learn about git if you're not already familiar with it. Here are some online links:

https://www.codeschool.com/courses/try-git

https://www.atlassian.com/git/tutorial

http://git-scm.com/book/en/Getting-Started

**Late policy**

All assignments are due at 11:59pm central time on the due date. An assignment is considered submitted once it has been pushed to your git repository on the server.

Late assignments will be graded for 50% of the maximum score. You have till the last day of class to submit late assignments.

**Textbook**

David Harris and Sarah Harris, “Digital Design and Computer Architecture” (Second Edition).

**Originality of submitted work:** you are required to cite any sources you used in your work (discussions with colleagues, articles, open source projects, google search results, etc). All violations or your inability to explain your work will raise a red flag and will be viewed as suspected plagiarism.

**Ask lots of questions and have lots of conversations:** Lectures are more useful when they’re interactive. I encourage you to ask questions and ask for clarifications but please refrain from side conversations. One conversation at a time.

**University Code of Conduct:** The core values of the University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

**Students with disabilities** may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 512-471-6259, http://www.utexas.edu/diversity/ddce/ssd