WENTWORTH INSTITUTE OF TECHNOLOGY

Computer Architecture

Course Number: COMP2270
Course ID: 10396/10398
Class times: TR 3:35-4:50 in Rubenstein 105
Lab time: W 10:00-11:50 in Apartments@525 115

Instructor name: Frank Kreimendahl
Email: kreimendahlf@wit.edu
Office location/hours: TBA

Course Description:

This course covers binary number and codes, logic elements, combinational and sequential logic, and architectural design of a computer using these elements.
Prerequisites: COMP201 (Computer Science II).

Required Textbook:

Patterson, David A. and Hennessy, John L. **Computer Organization and Design**, 4th Edition, Morgan Kauffman, 2011. (This is not the most recent edition. It should be available at the bookstore and online.)

Add/Drop:

Students should check the academic calendar to confirm the add/drop deadline. Dropping and/or adding courses is done online. Courses dropped in this period are removed from the student's record.

Non-attendance does not constitute dropping a course. If a student has registered for a course and subsequently withdraws or receives a failing grade in its prerequisite, then the student must drop that course. In some cases, the student will be dropped from that course by the Registrar. However, it is the student's responsibility to make sure that they meet the course prerequisites and to drop a course if the student has not successfully completed the prerequisite. The student must see their academic advisor or academic department chair for schedule revision and to discuss the impact of the failed or withdrawn course on the student's degree status.

Grading Policy:

Two midterms are each worth 20% of the final grade. The remaining 60% is based on evenly weighted weekly lab/assignments and the final project. Assignments will be accepted up to two days after the due date, at a penalty of **20 points** per day.

Academic Support:

The Learning Center assists all Wentworth students with academic challenges in the areas of math, science, technical courses specific to majors, and writing. The Learning Center is a supportive and safe learning environment for students looking to improve or maintain their academic standing. In this student-based learning environment, students can receive individual help with their studies, meet and work in study groups, or find resources to assist them in meeting their goals for academic success. It includes tutors in many subjects, writing assistance and workshops. Make appointments at www.wit.edu/tlc

Academic Honesty:

Any attempt to pass off another's work as one's own is plagiarism.

In this course the penalty for plagiarism is a failing grade in the course for both parties concerned. It is permissible for students to discuss the nature of a lab assignment or how to use a particular feature of the software. However,

not a single keystroke of the work you submit should be done by anyone but you, nor should your work be based on commands supplied by someone else or developed in collaboration with someone else. In other words, you should not sit down and work together with anyone else on the assignments. Nor should you give, receive, or solicit specific information (such as files, commands) from other students in this course. (This, of course, does not apply to any assignments that are explicitly assigned to a group.) Exchange of detailed information about an assignment is cheating and will not be tolerated. If you are unsure or unclear about the rules, please contact me.

Disability Services:

Any student who thinks s/he may require a disability related accommodation for this course should contact Disability Services to discuss your specific needs. Disability Services coordinates reasonable accommodations for students with documented disabilities. They are located in Watson Hall 003 (the Counseling Center) and can be contacted at 617-989-4390 or counseling@wit.edu. For more information on acceptable documentation and the Disability Services process, visit the Disability Services website at www.wit.edu/disabilityservices.

College of the Fenway Students:

If you are enrolled in this course through COF Cross Registration, notify me. Please provide me with your email address to be sure that you receive course information in a timely way. You should also discuss how to access online applications that might be used in the course. Please note that cross registered students who wish to drop or withdraw from this course must complete the necessary paperwork according to the Wentworth calendar.

Course Topics/Goals:

Count, perform arithmetic, and convert among binary, hexadecimal and octal integers and reals.
Convert among truth tables, function tables, Venn diagrams, K-maps, logic expressions, logic gates, and MUX and ROM configurations.
Simplify and manipulate logic expressions using Boolean algebra and De Morgan's laws.
Design combination and sequential logic circuits.
Compare and contrast microarchitecture and instruction set architecture.
Compare and contrast RISC and CISC.
Organize memory into a hierarchy.
Distinguish among various forms of input and output organization.
Use Flynn's taxonomy to classify parallel architectures, and predict gains using Amdahl's law.
Develop a CPU.