

CIS 451 Computer Architecture – Winter 2013

Course Description

Boolean algebra, combinatorial circuits and sequential circuits. Survey of computer architecture. Organization of a RISC microprocessor: instruction set, CPU, memory hierarchy, I/O, bus and interrupts. Advanced computer architecture: pipelining, super-scalar, multiprocessors and multicomputers, software and performance issues.

Course Web Page

Students are responsible for all information posted on the course web page:

<http://www.cis.gvsu.edu/~kalafuta/cis451>

Additionally, Blackboard will be used for posting of grades and turning in some projects and lab assignments, and Piazza will be used for messageboards.

Instructor

Dr. Andrew Kalafut

Office Hours: MWF 1:00 - 2:00 PM (C-2-210 MAK)

Lab Office Hours: Th 2:00 - 3:00 PM (A-1-167 MAK)

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Email: kalafuta@gvsu.edu

Prerequisites

CIS 251 or EGR 326, and admitted to CIS major or EGR major standing

Required Text

Harris, David Money and Harris, Sarah L., Digital Design and Computer Architecture (2nd Edition) - Morgan Kaufmann, 2013

Grading

The course grade will be determined approximately as follows: exam 1 (15%), exam 2 (15%), final exam (15%), projects (20%), labs (20%), presentation (5%), quizzes and other in class work (10%). Course letter grades will be determined according to the following scale:

A	A-	B+	B	B-	C+	C	C-	D+	D
93%	90%	87%	83%	80%	77%	73%	70%	67%	60%

Topics

The course will be structured approximately as follows. This schedule is subject to change depending on topic interest and speed of coverage. Students are expected to frequently check the more detailed schedule posted on the course web page.

Week of	Topic
1/7	Introduction
1/14	Combinatorial circuits
1/21	MLK Day Break, Sequential circuits
1/28	Instruction set design
2/4	CPU implementation
2/11	Exam 1, Microcode
2/18	Pipelining
2/25	Compiler optimizations and exceptions
3/4	Spring Break, Drop Deadline: March 8
3/11	Performance enhancements
3/18	x86 architecture
3/25	Exam 2, Memory
4/1	Cache
4/8	I/O
4/15	Advanced topics
	Final Exam: Wednesday, April 24, 10:00 - 11:50 PM

Policies and Expectations

Labs:

Lab assignments are to be turned in, usually in hard copy unless otherwise as specified, by the start of class on the specified due date.

Projects:

Projects are to be turned in on blackboard by 11:59 PM on the specified due date.

Exams:

The date of exams will be provided at least a week in advance. Additionally, you will be given time in class to ask questions for review. Exams in this course will be closed book. A small amount of notes may be allowed at the discretion of the instructor. You may need to bring a blue book or green book to write your answers on. Exams must be taken on the specified date and time, they will not be rescheduled except in emergencies.

Quizzes:

There will be weekly quizzes during the lecture time. Students not present for a quiz will receive a 0 for that quiz, unless sufficient reason for the absence is provided in advance. The lowest quiz score will be dropped.

Suggested Problems:

Suggested problems may be posted for your studying benefit, but they will not have a due date and will not be graded. I encourage questions about these problems during office hours or class.

Reading:

All assigned reading is expected to be completed before class to facilitate useful discussion of the material. Lecture time will be much more productive if it is spent clarifying the reading instead of repeating it. However, this is only possible if you read.

Attendance:

Attendance is expected at lecture and lab. Often, information that will help you complete the lab assignment will be conveyed during the lab time. Lecture notes will not be posted. Points may be deducted from your course grade for excessive absences.

Participation:

Active participation will be to your benefit. I may choose to cold call on students.

Group work:

Projects, labs, and the final presentation in this class will be group work. You may choose your own groups. You will be given opportunities to evaluate your group members. Failure to contribute your fair share of the work or to allow your group members to do so will be reflected in your grade for group assignments. If you choose to work individually on a group assignment, you will automatically lose 10% of the maximum grade on that assignment.

Late work:

No points will be awarded for work turned in late, unless arrangements are made, for sufficient reason, in advance of the due date.

Grade disputes:

Grades will be posted on blackboard. Any questions regarding posted grades must be raised within 7 days of the grade posting date.

Laptop computers:

Laptop computers in the classroom serve as a distraction to other students. Therefore, during lecture they may only be used for taking notes.

Call phones:

The use of cell phones, smart phones, or other mobile communication devices is disruptive, and is therefore prohibited during class, except in the case of emergencies.

Academic honesty:

All exams are to be completed individually. Lab assignments may or may not allow group work as specified in the assignment. All outside resources used, including Internet sources, must be cited. It is never acceptable to post any part of any assignment online asking for help. No academic dishonesty will be tolerated. Consequences will include the most severe penalty allowed by GVSU policy. Please read the CIS honesty policy at <http://www.cis.gvsu.edu/Academics/Honesty>

Special needs:

If you need academic accommodations because of a learning, physical, or other disability, please contact Disability Support Resources (DSR) at 331-2490. Furthermore, if you have a physical disability and think you will need assistance evacuating this classroom and/or building in an emergency situation, please make me aware so I can develop a plan to assist you.