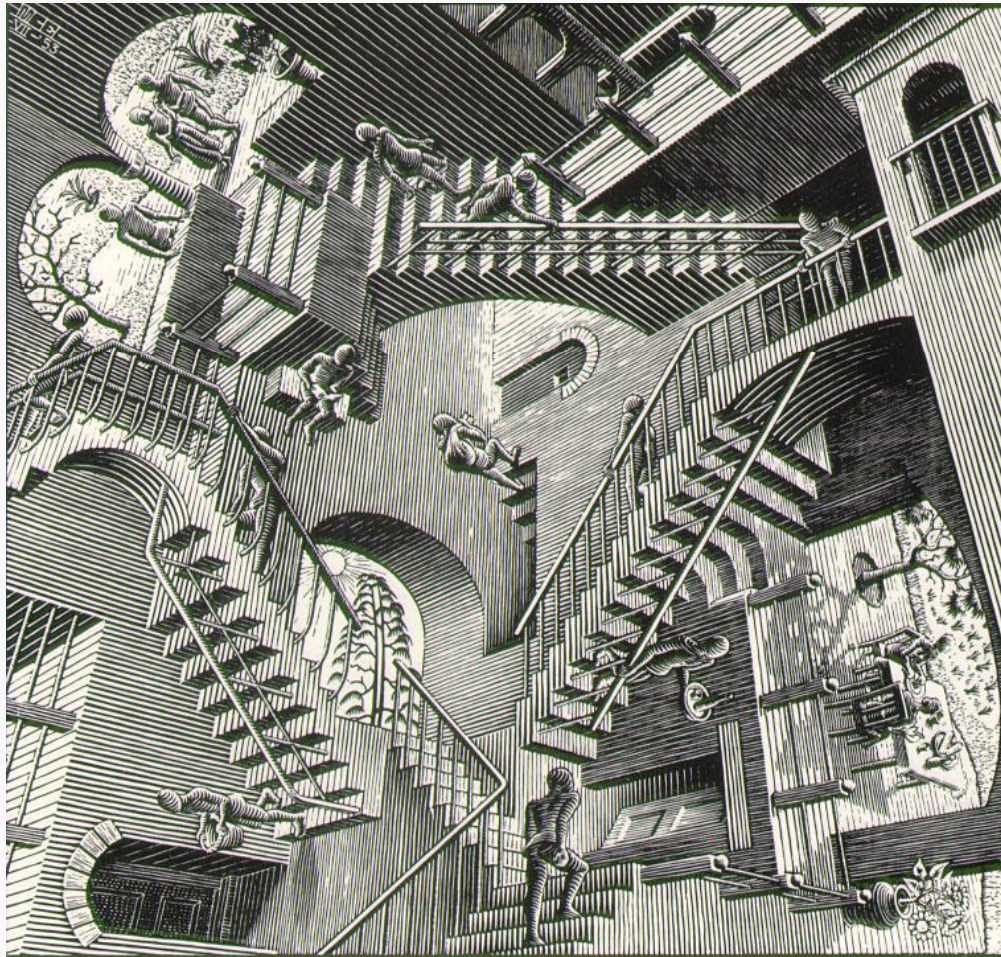


Computer Science 2506

Computer Organization II



Relativity
MC Escher

William D McQuain

Email: `wmcquain@cs.vt.edu`

Office: 634 McBryde Hall

Office Hours: 9:00 – 10:30 MW, 3:30 – 4:30 TR, and by appointment

Instruction formats and construction, addressing modes, instruction execution, memory hierarchy operation and performance, pipelining, input/output, and the relationships between high level programming languages and machine language.

Having successfully completed this course, the student will be able to:

- design and analyze instruction sets and their impact on processor design;
- identify and analyze the design and function of the basic instruction execution elements of a modern processor;
- apply finite state automata to computer design;
- describe the basic elements of computer architecture and their impact on the performance of a modern processor;
- explain the design and function of each element in a memory hierarchy;
- identify and explain the different methods of I/O in a computer system;
- explain the relationship between the computer hardware, the operating system that runs on it, and the applications that are compiled to it;
- compare computer architectures and organizations based on quantifiable performance metrics.

Alexander Cioaca

Email: `alexgc@vt.edu`

Office: McB 106/110

Hours: 10:00 – 3:00 TR

Sanya Attari

Email: TBA

Office: McB 106/110

Hours: TBA

CS 2505	Computer Organization I
CS 2114	Software Design and Data Structures
Math 2534	Discrete Mathematics

All students must have completed the CS prerequisites with a grade of C or higher (C- is not acceptable).

I will not grant any exceptions to the stated prerequisites, including the minimum grade requirements.

Notes Lying about whether you meet the prerequisites is an Honor Code offense. Students who do so may be charged at the sole discretion of the Department of Computer Science.

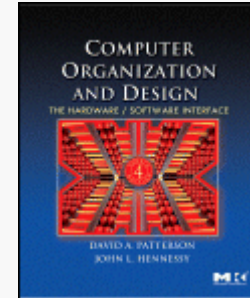
Required:

Computer Organization and Design, 4th Edition

David A Patterson & John L Hennessey

Elsevier ©2009

ISBN 978-0-12-374493-7



Recommended:

CS 2504 Course Notes, Spring 2009 Edition

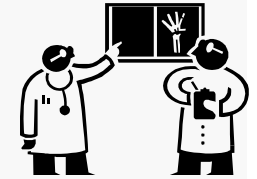
W D McQuain, ©2006-09

(available ONLY at the course website)

courses.cs.vt.edu/~cs2504



Additional resources on the CD accompanying the P&H text.
Documentation linked from the course website.

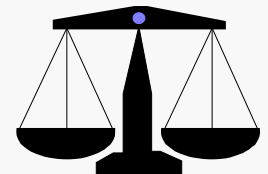


Final grades will be based on the average achieved over the following :

Item	Weight	Tentative Dates
Homework and Projects	40%	See website
Quizzes	20%	Frequent
Tests	10% each	February 25 and April 20
Final Exam*	20%	10:05 – 12:05 Wed May 13

Grade Scale

The usual 10-point scale will apply (subject to any curve). A final average of 90% will guarantee an A-, 80% will guarantee a B-, and so forth.



Curve

A grade curve may or may not be employed in this course. The application of a curve is dependent upon class performance on tests, projects and homework. The decision to utilize a curve rests entirely with the course instructors.

* Exam score will replace the midterm score, if it is higher.

Test Environments

- When relevant, a test environment, such as gcc 3.4.4, MARS, or Logisim will be specified for homework assignments.
- Solutions will only be tested under the specified environment.
- It is the **YOUR** responsibility to ensure that **YOUR** solutions execute correctly in the appropriate environment; solutions that do not will receive substantial deductions.



Due dates

Each programming project and homework assignment will have a due date and time and will include instructions for submission.

Homework

Usually, no late submissions will be allowed for homework assignments.

Projects

Except in the very rare case that an extension is granted, late submissions will incur a penalty per diem late penalty that will be included in the project specification. This is typically 10%.

Extensions

Any request for an extension must be made, preferably by email, at least 24 hours prior to the due date.

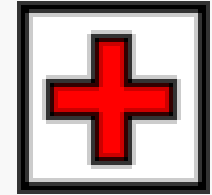
Late submissions will not be given any credit if submitted after graded assignments or solutions have been released.

Statute of Limitations

Any questions about the grading of an assignment must be raised with your instructor within two weeks after the graded assignment has been made available to you.

General Issues

- CS 2506 classmates
- CS 2506 Forum online at forum.cs.vt.edu
- CS 2506 TAs
- CS 2506 Instructor



Help with C, Assembly Language, Digital Design, etc.

- P&H text
- CS 2506 Forum

Lecture Instruction

Lectures will consist of presentations, applications, problems and solutions interspersed with classroom discussion.



Backups

Students are responsible for making backup copies of all their work in this (and all) courses.

Loss of work due to hard drive failure is **NOT** an acceptable excuse. Backup copies of files on the same hard drive are not backup copies. Backup copies of files on second hard drives are also risky. Backup copies should be maintained on two separate distinct storage mediums, (e.g., hard drives and Zip disks).



Backup copies should be maintained until after the end of the term and students have received their course grade. (The Army lives by triplicate for a reason.)

Remember: Computer systems are mechanical devices.

Systems fail. Drives die. Bad sectors appear.

Network connections break.

Plan for it. It is inevitable!



An exhaustive list of Honor Code violations would be impossible to present here, but among other things, each of the following is a flagrant violation of the Virginia Tech Honor Code, and violations will be dealt with severely (Honor Court):

- Working with another student to derive a common program or solution to a problem. There are no group projects in this course.
- Discussing the details required to solve an assignment. You may not share solutions, or collaborate in the creation of a solution.
- Copying source code (programs) in whole or in part from someone else.
- Copying files from another student's disk or lab account even though they might be unprotected.
- Editing (computer generated) output to achieve apparently correct results.

It is acceptable to discuss an assignment with classmates in a general way, i.e., to discuss the nature of the assignment. In other words, you may discuss with your classmates what your solution is required to accomplish but not how to achieve that goal using SPIM assembly, or other relevant tools. In no way should the individual statements of a program or the steps leading to the solution of the problem be discussed with or shown to anyone except those people cited in the following statement.

Feel free to discuss the homework assignments and your program source code with the teaching assistants assigned to CS 2506, the instructor, or the free tutors provided by UPE. The discussion of your program source code must be limited to these people. Note that this specifically excludes discussions of your program source code with other students (even if they are not enrolled in CS 2506), or with tutors except for those named above. Privately hired tutors are not an exception to this requirement, nor are athletic or other tutors provided by the University.

Copies of all submitted work are retained indefinitely by the Department. Submitted programs are subjected to automated analysis for detection of cheating.

If you have any question as to how the Honor Code applies to this class, remember that:

- Any work done in this class must be done on an individual basis.
- Credit will be given only for work done entirely on an individual basis.
- Do not make any assumptions as to who can provide help on a programming assignment.
- All submitted work is archived. All submitted programs will be subjected to automated cheat analysis.

Evidence indicating the violation of the policies stated above will be submitted to the Honor Court.

It is much easier to explain a poor grade to parents or a potential employer than to explain an Honor Court conviction.