

CMPS 112.02: SURVEY OF COMPUTER SCIENCE Fall, 2009

FACULTY INFORMATION

Instructor: J. R. Aman, Ph.D.

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Office Hours:

Tues/Thurs 1:30-2:30 p.m.

Wed 4:00-5:30 p.m.

Other by appointment

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vRoom: Link in Blackboard

COURSE INFORMATION

Day/Time: Wednesday, 6:30-9:20 p.m.

Location: S104, Chicago Campus

Credit: 3 hours

Prerequisites: None

NOTE: This course is required for all computer science majors and minors

COURSE MATERIALS

- Texts: DO NOT BUY A USED LAB MANUAL!
 - Schneider, G., and Gersting, J. (2010). *Invitation to Computer Science (5th Edition)*. Course Technology.
 - Lambert, K., and Whaley, T. (2010). *Invitation to Computer Science Laboratory Manual*. Course Technology.
 - Python Chapter (supplement to textbook).
- One plugged-in and functional left-brain coupled closely with a burning desire to understand how computers really function.

CAPSULE DESCRIPTION

This is a three-semester-hour course. The target audience is computer science majors, although students from any discipline would benefit from the course content. The course takes a breadth-first view of the discipline of computer science, focusing on what computers are, how they work, and what they can -- and cannot -- do. Major ideas in the discipline are used as signposts for study: the concepts of algorithms and data structures, features of common programming languages, computer architecture, numerical computation and number systems, software engineering, circuits, parallel computation, language translation, and artificial intelligence.

PHILOSOPHY

Survey of Computer Science takes a very “liberal arts” approach to the field. Anyone with a curiosity about computing can benefit from this broad overview. As computers of all types continue their extensive incursions into our daily lives, an understanding of them becomes increasingly important. Students entering the computer science field come to this university with little real comprehension of either the scope of the discipline or the concepts upon which it is based. Similarly, the general student population has little understanding or appreciation for the simplicity and potential of computers. This course proposes to fill the needs of both groups.

OBJECTIVES

Students will:

- Demonstrate understanding of the importance of algorithms in all facets of computer science
- Describe, identify, and use sequential, iterative, and conditional operations.
- Be able to explain the concept of order of magnitude and explain the difference between various magnitudes.
- Be able to construct AND, OR, and NOT gates using transistor diagrams after building truth tables, and vice versa.
- Be able to carefully describe the model of each of the four subsystems of the Von Neumann architecture plus networking.
- Demonstrate understanding of random access memory, the memory decoder unit, the instruction decoder unit, machine language instructions.
- Demonstrate understanding of the difference between RISC and CISC machines
- Understand the different roles of the operating system.
- Be able to write simple programs in the java programming language.
- Translate a simple program from high-level code into assembly language and machine code.
- Be able to construct Turing machines to solve specified problems and how the Church-Turing thesis relates to these solutions.
- Be aware of the variety of computer-related issues facing modern society and the impact computers have on our lives.
- Demonstrate understanding of privacy issues involving computing.

POLICIES

- This class should be treated the same way you would a job in the Selectric downworkplace (with minor concessions to the academic setting). Timely attendance at, preparation for, and participation in each class session is expected. Assigned work must be submitted no later than its assigned due date. Although a student cannot be “fired” in the traditional sense, the course grade will be a reflection of the level of professionalism noted by the instructor.
- Academic Dishonesty: Plagiarism and cheating are serious offenses and may be punished by failure on exam, paper, or project; failure in course; and/or

expulsion from the University. For more information, refer to the Undergraduate Catalog. Work you submit must be your own creation. A grade of zero will automatically be given to any plagiarized or duplicated submission. The instructor will be the sole judge in such cases. If a student cannot demonstrate conclusively that a work was not plagiarized or, in the case of the original author, was copied without consent, the zero grade will stand. Otherwise, a lesser penalty may be assigned. In any case, the incident will be referred to the appropriate authorities for disciplinary review. The sharing of information and ideas is generally healthy and is certainly encouraged. However, even when the input and participation of others – be they tutors or other students – in final products is acknowledged, it may be neither ethically nor morally acceptable.



- Attendance Policy Statements
 - a. Attendance is a factor in your course grade. As the statements above suggest, what you gain from the course is directly related to class attendance. Experience shows that lower test grades and class absence go hand-in-hand.
 - b. If you know you will miss a class, be prepared to obtain and submit assignments ahead of time.
- Except in exceptional circumstances, makeup tests will not be administered. In no case will unannounced quizzes be readministered.
- All assignments must be submitted by announced due dates.
- All examinations will be comprehensive and closed-book.
- The final examination will be given **only** at the date and time established by the University.
- The latest date for submitting any work in this course is the last class meeting day. A grade of "Incomplete" will be issued **only** in exceptional circumstances.
- The use of a student assistant or special testing conditions will be permitted in accordance with procedures established through the Learning Center.

GRADING

There will be five two-hour exams.

Exercises are worked in class and are due at the end of the class session.

Problems are homework and will be submitted through the Blackboard Digital Drop Box by the beginning of the next class or in hardcopy to the instructor.

Exams (5)	60%
Assignments, Exercises, Quizzes	30%
Attendance & Participation	10%

SCHEDULE

Week	Topic	Read
1	Course Overview Introduction to Computer Science	Chap 1
2	Algorithm Discovery & Design	Chap 2
3	Efficiency of Algorithms EXAM #1*	Chap 3
4	Building Blocks	Chap 4
5	Computer Systems Organization	Chap 5
6	EXAM #2* System Software & Virtual Machines	Chap 6
7	Network, Internet, & WWW	Chap 7
8	Information Security EXAM #3*	Chap 8
9	Introduction to High-Level Languages	Chap 9
10	The Tower of Babel	Chap 10
11	Compilers and Language Translation	Chap 11
12	Models of Computation	Chap 12
13	EXAM #4* Simulation and Modeling	Chap 13
14	Artificial Intelligence NO CLASS – THANKSGIVING	Chap 15
15	Computer Graphics and Entertainment Social Issues: Making Decisions	Chap 16 Chap 17
16	EXAM #5*	

*** All exams will be conducted through Blackboard outside of class time**