

Natural Sciences 121

Introduction to Digital Computing

<http://faculty1.coloradocollege.edu/~visprof/ns121/>

1 Overview

An introduction to computer science providing a broad survey of the discipline while emphasizing the computer's role as a tool for describing, organizing and manipulating information. Topics to include machine architecture, software, data organization, and the potential and limitation of machines. Serves as a terminal course for students who want a one-course introduction to the field, as well as a preliminary course to upper-level computer science offerings.

1.1 The People

instructor: **Prof. Michael Goldwasser**
e-mail: visprof@coloradocollege.edu
web: <http://faculty1.coloradocollege.edu/~visprof/>

Outside of the formal meetings, you may find me hanging around Palmer 14 or possibly in Palmer 129 (extension x6541). When away from campus, I will rely heavily on email. Please feel free to email me any questions that you have. I will make an effort to respond to my email at least once each afternoon/evening.

1.2 The Lectures

Though the published room for the course is Palmer 142, we will plan on meeting regularly in room Palmer 14 (the Math Computer Lab) instead. One advantage is that there are computers there for everyone which we will use at times for some hands-on experiences. More importantly, the room is bigger and air conditioned.

Let's plan on having formal lectures each day from 9:30am–12:30pm, though we will certainly take some breaks during that time. If we need to adjust the meeting time for any given day, we will discuss it as a group.

1.3 Textbooks

The required textbook for this course is:

Title: *Computer Science Illuminated*
Authors: Nell Dale and John Lewis
Publisher: Jones and Bartlett, 2002
ISBN: 0-763-71760-6
Website: csilluminated.jbpub.com

Additionally, there are some other books which try to give an overview of computer science in the same spirit as the books we have chosen. Though we have chosen not to use the following books, we list them for your interest:

- *Computer Science, An Overview*, 6th edition
Author: J. Glenn Brookshear
Publisher: Addison Wesley, 2000
ISBN: 0-201-35747-X
Website: www.awlonline.com/product/0,2627,020135747X,00.html
- *The Analytical Engine: An Introduction to Computer Science Using the Internet*
Authors: Rick Decker and Stuart Hirschfield
Publisher: Brooks/Cole Pub, 1998
ISBN: 0-534-95365-4
Website: see www.brookscole.com
- *An Invitation to Computer Science, Java Version*
Authors: G. Michael Schneider and Judith L. Gersting
Publisher: Brooks/Cole Pub, 2000
ISBN: 0-534-37488-3
Website: see www.brookscole.com
- *The Essential Guide to Computing: The Story of Information Technology*
Author: E. Garrison Walters
Publisher: Prentice Hall PTR, 2001
ISBN: 0-13-019469-7
Website: www.phptr.com/ptrbooks/ptr_0130194697.html

1.4 Prerequisites

Although we do not expect students to have any formal training in computing, we will expect that the great majority of students enter the class with at least some experience as a user of computers. Specifically, we will assume that students are comfortable with creating text files, sending and reading email, and using a web browser to explore content on the Internet. Students who do not have

this experience are certainly welcome in the class however they should be aware that these topics are not going to be covered during lecture. The instructor can provide advice for gaining such experience.

Furthermore, though no specific mathematics course has been declared as a formal prerequisite, we expect that most students come into the class with a reasonable background in high-school level Algebra. The study of computer science will inherently involve a level of analytical and mathematical sophistication. This will arise in understanding how information is represented digitally and how computations proceed on such data.

2 Graded Work

2.1 Assignments (50%)

We expect there to be a total of 12 assignments during the course, one due every morning before classtime except on Mondays (weekends should be enjoyed outdoors). No late assignments will be accepted. We will, however, ignore your lowest two of the twelve grades, and the remaining ten assignments will contribute to this portion of the grade.

Each assignment will contain one or more practice problems which are not to be turned in and which can be discussed freely between classmates. The problems which are to be submitted for a grade, however, must be done entirely individually. A more complete explanation of our policy towards Academic Honesty is given in Section 2.4. Most assignments will also offer a small extra credit challenge to those interested.

2.2 Exams (50%)

- **First Exam (15%)**, Friday, 26 July 2002
- **Second Exam (15%)**, Friday, 2 August 2002
- **Third Exam (20%)**, Friday, 9 August 2002

2.3 Course Grades

Letter grades will be based on each students overall percentage of awarded points according to the following formula.

Student percentage above 90% will result in a grade of A or better.

Student percentage above 87% will result in a grade of A– or better.

Student percentage above 83% will result in a grade of B+ or better.

Student percentage above 80% will result in a grade of B or better.

Student percentage above 77% will result in a grade of B– or better.
Student percentage above 73% will result in a grade of C+ or better.
Student percentage above 70% will result in a grade of C or better.
Student percentage above 65% will result in a grade of C– or better.
Student percentage below 65% will result in a grade of No Credit.

Any modification to this scale at the end of the year will be *in favor of the students*. That is we may later decide to award an A to a student who is slightly below the above cutoff, but we certainly will not take away an A from someone who is just above the cutoff.

2.4 Academic Honesty

When it comes to learning and understanding the general material covered in class or the practice problems, you may certainly use other references and you may have discussions with other students in this class or other people from outside of this class.

However, work which is submitted for this course must be entirely your own. You are in no way to discuss such assignments, nor are you to use or search for direct or indirect assistance from any outside references. Any violations will be treated severely and penalties will apply as well to a student who is aiding another student.

3 Online Resources

3.1 NS121 Web Page:

<http://faculty1.coloradocollege.edu/~visprof/ns121>

With the exception of the first day's printed handout, most of the information for this course will be distributed only by means of the course web page. This web site will contain all assignments, a schedule of lectures, detailed lecture notes and links to many other sources of information.

3.2 Assignment Submissions

Assignments will generally be submitted electronically using the college network. Details will be forthcoming.