CPS 1: Principles of Computer Science

Mon. - Fri. (2:00-3:15pm), Social Sciences 229

Instructor:
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http://www.cs.duke.edu/courses/cps001/summer07
Introduction

• What is this course?
• Course topics
• Course specifics
• What is Computer Science?
• Intro. to the Internet
This course

“A survey of the great ideas of computer science along with experience with programming, the theoretical foundations of computer science, how computer systems are organized and work, and the applications of computers including their effect on society.”

- Broad intro. to the field of CS
- Intended for students not majoring in CS
- Little or no background required, coming into this class
- Emphasis on applying learned concepts to tangible problems
Course Topics

- Introduction to CS
- Internet (HTML, CSS)
- Basic algorithms and graph theory
- Algorithm complexity
- Computer arithmetic and architecture
- Java programming
Course Specifics

- Lectures Monday through Friday, labs twice a week (not today though!)
- Assignments typically due in next lab session
- Textbook – none required
  Recommended – *Great Ideas in Computer Science with Java*, by Alan Biermann and Dietolf Ramm
- Office hours – after class, or by appointment
Course Organization

• Check this regularly:
  http://www.cs.duke.edu/courses/cps001/summer07
  - 'Announcements' section
  - Syllabus: Course outline and important dates
  - Resources: Reference material

• Grades on Blackboard (http://courses.duke.edu)
Grading Scheme and Goals

- 30% homework/lab assignments
- 20% final project
- 20% midterm
- 25% final exam
- 5% class participation

Grades based on usual cutoffs (may move down, but not up).

- This is not a very hard course, but being regular will help a lot!
- Larger goals
  - understanding several aspects of CS and why it matters
  - applying concepts to actual problems
  - collaboration encouraged, except on exams
Important Dates

- Monday, May 21 (drop/add ends for Summer Term I)
- Class on Memorial Day (May 28)
- Midterm – June 8 (class time)
- Projects due – June 25
- Final exam - Thursday, June 28 (2-5pm)

Let me know of any concerns ASAP.
What is Computer Science?

Wikipedia - “study of the theoretical foundations of information and computation and their implementation and application in computer systems”

- Very young discipline (about 60 years old)
- First graduate program at CMU (1965)

Essentially algorithms!

- Limitations
- Execution
- Running time analysis
- Discovery
Motivating Example

- Computational biology
- Explosion in biological data
- Human Genome Project
- Vaccine design

Computational power has made life a lot easier!
Sub-disciplines

- Artificial Intelligence
- Vision, graphics
- Parallel programming
- Programming Languages (C++, Java, C, Perl, etc.)
- Systems
- Computational Biology
- Scientific Computing
- Theory
Internet

• Very new – started by DARPA (early 70's)
• Essentially, a world-wide network of computers
• Web-pages – placed on World Wide Web
• First assignment – designing your own web page and building a web presence, using HTML and CSS
Finally,
on a sheet of paper, please write the following things:
1) Your name
2) Your major
3) Experience with CS or programming?
4) Types of computers used
5) What would you like to learn from this course?
6) Anything else you may like to add