**Principles of Computer Science**

**Course Overview**

- Course website: [http://www.cs.duke.edu/courses/summer04/cps001](http://www.cs.duke.edu/courses/summer04/cps001)
- syllabus
- lecture notes
- prelab and lab assignments
- problem sets and written assignments
- links to supplementary material
- Blackboard
  - grade lookup
  - discussion board
  - web assignments

**Information**

- Policies
- Assignments
  - *web assignments*
  - *problem sets*
  - essays
  - *prelabs and labs*
- Textbook
- Grading
- Important dates
  - *Exam I*  Friday, May 28
  - *Exam II*  Friday, June 11
  - *Final Exam*  Thursday, June 24

**Questions?**

**Web assignment (in-class)**

- Go to the course page on Blackboard
- From the Announcements page, follow the link for Web Assignment 1
- Complete and submit the assignment

**What is a computer?**

- In general, a device designed to input and process data, produce output and store results based on a sequence of instructions.
- Typically refers to *digital computers*
  - process data as numbers
  - mainframes, minicomputers, microcomputers (PCs)
- Can also refer to *embedded computers*
  - special-purpose devices that can compute only one or a limited range of functions
- and also to *analog computers*
  - represent data by measurable quantities such as voltage, resistance, or position
Computers in everyday life

• At the store …
  • bar codes and scanners
• At the ATM …
  • transfer funds electronically
• In your car …
  • regulate fuel, airbag deployment, cruise control, A/C
• On your person …
  • cell phones, PDAs, calculator
• In your home …
  • A/C, security systems, microwaves, VCRs, game consoles
  • checking email and browsing the web on your PC

Life without computers?

“He used to love running on the beach, chasing squirrels, catching a ball. That was before I got a computer.”

What is computer science?

Computer science is the study of algorithms with a goal towards their efficient execution. This includes the design, analysis, hardware realizations, and software realizations of algorithms.

• One may also say computer science is the study of …
  • algorithms
  • computation
  • computing systems
  • information processing
  • computer software and hardware resources

Computer science is not …

• The study of computers
• Programming
  • what is important is discovering the steps needed to solve a particular problem, not the act of translating them to a programming language
• Designing cool web pages
• Using software for spreadsheets, word processing, etc.

“Computer science is no more about computers than astronomy is about telescopes”
- E. W. Dijkstra

What do computer scientists do?

• Study what computers can and cannot do
• Design and analyze algorithms to efficiently perform specific tasks
• Design data structures and databases to store and retrieve specific kinds of information
• Discover applications of computer technology
• Apply theory to real world problems

“Although it is true that programmers do (mostly) programming, computer scientists deal with computing, using programming as a tool with which to explore and develop ideas.”
- John Impagliazzo & Paul Nagin

Before you leave …

• Make sure you are able to log into the computers in the classroom and access your acpub account