CIS 170: The Science of Computing

Syllabus
Spring 2006

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Lectures: Wed/Fri 14:00 – 15:20, 208 Deady

Web Page: http://www.cs.uoregon.edu/classes/06S/cis170/

Textbook: The New Turing Omnibus: 66 Excursions in Computer Science

Overview: This course is an introduction to the field of computer science. It will be oriented to students who are considering a CIS major, but should be of interest to anyone who is curious about what computers are and how they are used in a wide variety of areas that impact our lives today.

Our plan is to choose a set of topics related to a common theme that will change from year to year. For Spring 2006 the theme will be bioinformatics:

- what is an algorithm?
- how do computer scientists evaluate the correctness and efficiency of algorithms?
- how is genetic information (DNA and protein sequences) stored in a computer?
- what sorts of algorithms do scientists use to compare DNA sequences?
- how are large databases organized?
- how do scientists access this information over the internet?

Although the topics are fairly technical, the lectures and projects in this course will be accessible to anyone with a basic background in math (the equivalent of MTH 112). The course satisfies the UO Group requirements for Group III (Science).
**Labs:**  Most lab projects will use a programming language named Ruby. Ruby is open source software that can be downloaded and installed on any system. Ruby is included with Mac OS/X 10.4. Instructions for installing it on Windows systems can be found on the class web page. Instructions for installing it on a Linux system can be found at the Ruby project home page (http://www.ruby-lang.org).

Ruby will be available on computers in the UO Computer Center microcomputer labs in Klamath B13 and McKenzie 101.

**Requirements:**  There will be weekly problem sets (requiring about 1–2 hours) and labs (2–4 hours).

A midterm exam covering the first half of the material will be given in class around the 5th or 6th week of the term. A second exam covering the last half of the material will be given during finals week.

**Grading:**  Problem Sets: 20%
Labs: 30%
Exams: 50%

**Extras:**  Most problem sets and lab will have extra credit opportunities. Other ways to earn extra points include contributions to discussions in class and adding information to the “wiki web” (see the link from the class home page).