

## COMP 9 / EN 47: Exploring Computer Science

**Time:** TR 12:00-1:15 PM

**Location:** Halligan 111a (lectures) and 116 (labs)

**Instructor:** Noah Daniels ([ndaniels@cs.tufts.edu](mailto:ndaniels@cs.tufts.edu))

**TAs:** Sarah Nolet ([sarah.nolet@tufts.edu](mailto:sarah.nolet@tufts.edu)), Joel Greenberg ([joel.greenberg@tufts.edu](mailto:joel.greenberg@tufts.edu))

**Mailing list:** [comp9@cs.tufts.edu](mailto:comp9@cs.tufts.edu)

**Office hours:** TBA

“Computer science is no more about computers than astronomy is about telescopes.” – Edsger Dijkstra.

So what is computer science about? That’s what we are going to explore this semester.

Everyday life is becoming more and more dependent upon computers, which will create many opportunities and challenges for students during and after their college careers. This half-credit class offers you an opportunity to discover how computers work and how they can be used to solve general problems. You will be introduced to basic computer problem solving and programming techniques through lectures and labs using the Ruby programming language. You will also explore a range of topics in modern computer science research, such as computational biology, machine learning, graphics, and computational geometry. No prior computer experience is necessary, only a desire to learn. For students exploring their career options, this class is applicable not only to computer science, but to cognitive science, economics, medicine, finance, and a host of other professions that depend highly on computers.

### **The goals of this course are:**

- to have students gain an appreciation of the areas that make up modern computer science
- to understand that computers have limitations
- to have a working command of the Ruby programming language such that they could approach a repetitive task (like reformatting a file of data) programmatically rather than using something like Excel
- to develop problem-solving skills and computational thinking.

### **Why Ruby?**

Ruby is a modern programming language, designed by Yukihiro Matsumoto (“Matz”) and first released in 1995. Matz designed Ruby with the goal of increasing programmers’ happiness and productivity, and putting the needs of programmers above those of computers. Ruby is used heavily in industry (a great deal of web application development takes place in Ruby) but we are using it here because it will allow you to go further in this exploration of computer science than if we were using a language like

C++ or Java. Ruby makes programming easier and more fun, so we can focus on the really exciting parts of computer science.

**Textbooks:**

- Chris Pine, *Learn to Program*, 2nd edition, The Pragmatic Bookshelf, 2009. [required]
- David Harel, *Computers Ltd.: What they really can't do*, Oxford University Press, 2000. [recommended]

**Grading:**

Approximately 70% assignments (labs), 20% final project, 10% class participation

All lab assignments will be turned in electronically and are expected to be completed by their due dates. Late assignments will be penalized at 10% per day. Any assignment turned in more than one week after its due date will receive a zero grade. This course follows the Tufts policies on academic integrity. Unless otherwise indicated (such as partnering for the final project), your work must be your own.