



HARVARD  
School of Engineering  
and Applied Sciences

1.0

THE UNOFFICIAL GUIDE TO

# COMPUTER SCIENCE @ HARVARD

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**CREATED BY CS50**

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*Photograph by Eliza Grinnell*

## What is CS?

We like to say that CS teaches you how to think more methodically and how to solve problems more effectively. As such, its lessons are applicable well beyond the boundaries of CS itself.

But CS is also, more generally, the study of information. How do you represent it? With what methods (aka algorithms) can you process it?

Perhaps the most liberal answer, though, is that CS “has no exclusive domain of its own, and that its importance comes from the problems to which it is applied.” And therein lies the excitement. CS empowers you with tools and ideas that can be applied to practically any domain of interest to you, both in college and beyond.

## What is CS *not*?

Contrary to popular belief, CS is not really about programming, even though you do learn how to program. Programming languages are tools that Computer Scientists use or create in order to solve problems of interest to them.

## How do I minor in CS?

Take any four courses numbered 50 or higher. See page 8 for popular choices. See Chapter 4 of the Student Handbook.

## How do I concentrate in CS?

Take at least two of CS50, CS51, and CS61; take CS121 and another “theory” course; take four technical electives; and take Math 21a and 21b. See Chapter 3 of the Student Handbook.

## Can I switch from my current concentration to CS?

Yes, so long as you still have time to satisfy the requirements. Even David J. Malan ‘99, who now teaches CS50, didn’t take his first CS course until his sophomore year, when he switched from Government to CS.

## Does CS require a thesis?

No, not for non-Honors or Honors, but for High Honors and Highest Honors, it’s ordinarily expected. See Chapter 3 of the Student Handbook.





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## What courses should I take if I want to minor in CS?

It's up to you, but here are some popular choices. Graduate-level (200-level) courses are also allowed!

### Popular among “those less comfortable”

- CS 50: Introduction to Computer Science I
- CS 105: Privacy and Technology
- CS 171: Visualization
- CS 179: Design of Usable Interactive Systems

### Popular among “those more comfortable”

- CS 51: Introduction to Computer Science II
- CS 61: Systems Programming and Machine Organization
- CS 121: Introduction to Formal Systems and Computation
- CS 161: Operating Systems

### Popular among students interested in finance

- CS 50: Introduction to Computer Science I
- CS 51: Introduction to Computer Science II
- CS 181: Intelligent Machines: Perception, Learning, and Uncertainty
- CS 182: Intelligent Machines: Reasoning, Actions, and Plans

### Popular among students interested in life sciences

- CS 50: Introduction to Computer Science I
- CS 51: Introduction to Computer Science II
- CS 124: Data Structures and Algorithms
- CS 171: Visualization

### Popular among students interested in math

- CS 50: Introduction to Computer Science I
- CS 51: Introduction to Computer Science II
- CS 121: Introduction to Formal Systems and Computation
- CS 124: Data Structures and Algorithms

### Popular among students who want to manage technical projects

- CS 50: Introduction to Computer Science I
- CS 105: Privacy and Technology

- CS 124: Data Structures and Algorithms
- CS 165: Information Management

### Popular among students interested in solving problems efficiently

- CS 50: Introduction to Computer Science I
- CS 51: Introduction to Computer Science II
- CS 121: Introduction to Formal Systems and Computation
- CS 124: Data Structures and Algorithms

### Popular among students interested in hardware

- CS 50: Introduction to Computer Science I
- CS 61: Systems Programming and Machine Organization
- CS 141: Computing Hardware
- CS 148: Design of VLSI Circuits and Systems

### Popular among students interested in programming languages

- CS 51: Introduction to Computer Science II
- CS 61: Systems Programming and Machine Organization
- CS 152: Programming Languages
- CS 153: Compilers

### Popular among students interested in networks

- CS 50: Introduction to Computer Science I
- CS 51: Introduction to Computer Science II
- CS 143: Computer Networks
- CS 144r: Networks Design Projects

### Popular among students interested in graphics

- CS 50: Introduction to Computer Science I
- CS 51: Introduction to Computer Science II
- CS 171: Visualization
- CS 175: Computer Graphics

### Popular among students interested in speech recognition

- CS 50: Introduction to Computer Science I
- CS 51: Introduction to Computer Science II
- CS 182: Intelligent Machines: Reasoning, Actions, and Plans
- CS 187: Computational Linguistics