

# Frequently-Asked Questions about Computer Science at Olin College

## Does Olin offer a Computer Science degree?

No. Olin students who are interested in computer science often major in either Electrical and Computer Engineering (ECE) or Engineering with a Concentration in Computing (E:Computing). There is a lot of overlap between these majors and a standard CS degree, but Olin students have some different skills and strengths.

## How do I map Olin classes onto a standard CS curriculum?

Here is a list of our CS-related classes, with explanations of how they relate to conventional CS classes.

**ENGR1510: Introductory Programming:** basic programming skills for students with no prior experience.

**ENGR1510: Introduction to Interactive Programming:** previous name for Software Design

**ENGR2510: Software Design:** comparable to the second programming course at other schools; covers data structures, basic algorithms and user interface development, with unusual and early emphasis on concurrent and distributed programming, and software design.

**ENGR3520: Foundations of Computer Science:** a six-credit class that includes core elements from Algorithms, Theory of Computation, and Programming Languages, with a substantial project.

**ENGR3220: Human Factors in Interface Design:** similar to Human-Computer Interfaces, this is a user-centered design class with team-based semester-long projects designing and building an interface to a software or embedded system.

**ENGR3525: Software Systems:** similar to Operating Systems, with emphasis on Networks and Distributed Systems, and with elements of Database Implementation and Run-Time Systems.

**ENGR3530: Synchronization:** a two-credit class focusing on problems in concurrent programming; students achieve a command of this challenging material that we think is unique.

**ENGR3410: Computer Architecture:** design and analysis of MIPS-style microprocessors, with basic digital logic design. Students build and simulate single-cycle and pipelined processors in structural Verilog.

**ENGR3540: Computational Modeling:** simulation as a tool for scientific exploration, with emphasis on discrete and stochastic models of physical systems; this class is complementary to Numerical Methods and Scientific Computing, which emphasizes continuous models.

Many of our students also take one or more traditional computing classes at our partner institutions or during a semester of study away. Classes students have taken recently include Computer Graphics, Programming Languages and Databases with Web Interfaces at Wellesley; and Artificial Intelligence at Brandeis.

### What faculty does Olin have in Computer Science?

Olin has three faculty members who teach and do research in computer science.

- Mark Chang (Ph.D., Electrical Engineering, University of Washington) does research in FPGA design and teaches Computer Architecture.
- Allen Downey (Ph.D., Computer Science, U.C. Berkeley) does research in Operating Systems and Networks, and teaches Software Systems and Computational Modeling.
- Lynn Stein (Ph.D., Computer Science, Brown University) does research in Artificial Intelligence and Programming Languages and teaches Foundations of Computer Science and Human Factors in Interface Design.

### What are the strengths and weaknesses of Olin students, compared to students with a standard CS degree?

The E:Computing degree is an engineering degree. Students who choose this degree are likely to have these characteristics:

**Engineering preparation:** More engineering foundation (Math, Physics and Design) and more EE than most computer science majors.

**Engineering approach:** The inclination and ability to use technology to solve problems in the real world

**System focus:** The ability to select and integrate solutions that include software, electronics and mechanical systems; not limited to a software view of the world.

**Design focus:** The ability to identify and formulate the right problem, not just solve the given problem.

**Self-designed education:** the E degree is deliberately flexible, so students can create their own specialties. They are not cookie-cutter CS majors; some have considerable depth in interdisciplinary areas (Cognitive Science, for example).

The E:Computing degree requires fewer courses than a typical Computer Science degree, but many students go beyond the minimum requirements.

## What programming languages do Olin students know?

The following are the languages students are likely to see in class:

- Java (Software Design)
- Python (Software Design)
- C (Software Systems and Computer Architecture)
- MATLAB (several classes)
- Prolog (Foundations of Computer Science)
- Scheme (Foundations of Computer Science)
- PIC assembly (Principles of Engineering)
- MIPS assembly (Computer Architecture)
- Verilog (Computer Architecture)

Many students have picked up additional languages from internships, research projects, etc.

## Does Olin College teach software engineering?

We don't offer a class by that name, but students see elements of software engineering throughout the curriculum. Software Design covers interface design, the software lifecycle, UML and related tools. Several classes require students to work in small teams on long-term software projects where they have to deal with many of the issues software engineering addresses. In the senior year, students work on team-based, year-long SCOPE projects, many of which involve a significant software component.

## More questions?

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