

# COMPUTER SCIENCE, MINOR

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Computer scientists and engineers have revolutionized society and created the computer and telecommunications industries that are so important to human life and the world's economy. As a result of this revolution, expertise in computer science is essential in many new areas, including computer and network service and consulting companies, financial institutions, health industries, natural science labs and medical research labs, and other contexts where intensive manipulation of information is important. As a result, opportunities for computer scientists and engineers have expanded greatly, both in specialized fields as well as in numerous dual-career opportunities in which computer expertise is combined with advanced degrees in business, communication, engineering, law, medicine, and science.

## SEAS Second Major or Minor Option

Students interested in a second major (College students only) or minor with SEAS are required to meet with the Undergraduate Curriculum Chair from the major/minor department you wish to declare to discuss requirements and obtain approval on the Second Major or Minor form. The approved form must be returned to the SEAS Research and Academic Services Office, 109 Towne Building.

**For more information:** <http://www.seas.upenn.edu/undergraduate/degrees/minors.php>

## Computer Science Minor (CSCI)

Code	Title	Course Units
CIS 1100	Introduction to Computer Programming <sup>1</sup>	1
CIS 1200	Programming Languages and Techniques I	1
CIS 1210	Programming Languages and Techniques II	1
CIS 1600	Mathematical Foundations of Computer Science	1
Any CIS Elective <sup>2</sup>		1
Any CIS Elective 2000 level and above <sup>2</sup>		1
<b>Total Course Units</b>		<b>6</b>

<sup>1</sup> CIS 1100 Introduction to Computer Programming may be included only if taken before CIS 1200 Programming Languages and Techniques I

<sup>2</sup> A CIS Elective is a CIS or NETS engineering course at the 1000 level or above (except CIS 1810 The Quantum and the Computer), or ESE 3500 Embedded Systems/Microcontroller Laboratory. Note: not all CIS/NETS courses are **engineering** courses; please see the SEAS Undergraduate Handbook (<https://ugrad.seas.upenn.edu/student-handbook/courses-requirements/engineering-courses/>).

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The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2023 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.

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