

# COMPUTER SCIENCE SECOND MAJOR FOR ISP STUDENTS

Students must also complete the Undergraduate Registration Requirement (<https://catalogs.northwestern.edu/undergraduate/requirements-policies/undergraduate-registration-requirement/>) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

The Integrated Science Program is a highly selective program in Weinberg College. Weinberg College students, but not McCormick students, majoring in Integrated Science may complete an abbreviated, adjunct major in computer science through a curriculum tailored specifically to their needs:

Course	Title
<b>Core courses</b>	
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 150-0	Fundamentals of Computer Programming 1.5
COMP_SCI 211-0	Fundamentals of Computer Programming II
COMP_SCI 212-0	Math Foundations of CS Part 1: Discrete Math for CS
COMP_SCI 213-0	Introduction to Computer Systems
COMP_SCI 214-0	Data Structures & Algorithms
<b>Breadth courses (same as for stand-alone major. 5 courses, one from each area, see below)</b>	
<b>Project courses (2 units; projects must be approved by both ISP and CS advisers)</b>	
COMP_SCI 399-0 or INTG_SCI 398-0	Projects Undergraduate Research

## Breadth Courses

Majors must take one course from each area. Minors must take one course from each of any three areas.

## Theory

Course	Title
COMP_SCI 335-0	Introduction to the Theory of Computation
COMP_SCI 336-0	Design & Analysis of Algorithms

## Systems

Course	Title
COMP_SCI 322-0	Compiler Construction
COMP_SCI 339-0	Introduction to Database Systems
COMP_SCI 340-0	Introduction to Networking
COMP_SCI 343-0	Operating Systems
COMP_SCI 345-0	Distributed Systems
COMP_SCI 346-0	Microcontroller System Design
COMP_SCI 350-0	Introduction to Computer Security
COMP_SCI 354-0	Computer System Security
COMP_SCI 358-0	Introduction to Parallel Computing
COMP_SCI 368-0	Programming Massively Parallel Processors with CUDA
COMP_SCI 440-0	Advanced Networking
COMP_SCI 441-0	Resource Virtualization

COMP_SCI 443-0	Advanced Operating Systems
COMP_SCI 446-0	Kernel and Other Low-level Software Development
COMP_SCI 450-0	Internet Security
COMP_SCI 468-0	Programming Massively Parallel Processors with CUDA
COMP_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microcontroller System Design
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I
COMP_ENG 368-0	Programming Massively Parallel Processors with CUDA
COMP_ENG 468-0	Programming Massively Parallel Processors with CUDA

## Artificial Intelligence

Course	Title
COMP_SCI 325-0	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing: Classical Approaches
COMP_SCI 344-0	Design of Computer Problem Solvers
COMP_SCI 348-0	Introduction to Artificial Intelligence
COMP_SCI 349-0	Machine Learning
COMP_SCI 371-0	Knowledge Representation and Reasoning
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages

## Interfaces

Course	Title
COMP_SCI 313-0	Tangible Interaction Design and Learning
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 329-0	HCI Studio
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 333-0	Interactive Information Visualization
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 353-0	Natural & Artificial Vision
COMP_SCI 370-0	Computer Game Design
COMP_SCI 372-0	Designing and Constructing Models with Multi-Agent Languages
COMP_SCI 376-0	Computer Game Design and Development
COMP_SCI 377-0	Game Design Studio
ELEC_ENG 332-0	Introduction to Computer Vision

## Software Development and Programming Languages

Course	Title
COMP_SCI 310-0	Scalable Software Architectures
COMP_SCI 321-0	Programming Languages
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 377-0	Game Design Studio
COMP_SCI 380-0	Software Quality Engineering
COMP_SCI 392-0	Rapid Prototyping for Software Innovation
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development