COMPUTER SCIENCE MINOR (MCCORMICK SCHOOL OF ENGINEERING)

The department offers a minor in computer science for students who wish to develop stronger competence in computer science while pursuing a degree in another field. The minor will provide essential knowledge for all computer scientists as well as exposure to every critical subfield of the discipline.

Students should begin the minor before the end of their first quarter of their junior year. To declare the McCormick Computer Science minor, students should submit the minor declaration form in **MAS (McCormick Advising System)** by the end of their junior year.

At least 4 units of coursework must be unique to this minor program. These units cannot be applied to any other minor or certificate program, or the major requirements of any degree program. Such coursework may fulfill McCormick Social Sciences/Humanities (Theme), WCAS distribution requirements, or other unrestricted electives.

Course	Title
Prerequisites (6 units)	
MATH 220-1	Single-Variable Differential Calculus
MATH 220-2	Single-Variable Integral Calculus
MATH 228-1	Multivariable Differential Calculus for Engineering
Engineering Analysis (3 units):	
GEN_ENG 205-1 & GEN_ENG 205-2 & GEN_ENG 205-3	Engineering Analysis I and Engineering Analysis II and Engineering Analysis III
or GEN_ENG 206-1 & GEN_ENG 206-2 & GEN_ENG 206-3	Honor Engineering Analysis and Honors Engineering Analysis and Honors Engineering Analysis
Minor Requirements (9 units)	
Core Courses (6 units of computer science)	
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
Breath Courses (3 units from three different areas, see below)	

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