

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.

Course	Title
Requirements (15 units)	
<i>Prerequisites (6 units)</i>	
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 of engineering analysis:	
GEN_ENG 205-1 & GEN_ENG 205-2 & GEN_ENG 205-3 or GEN_ENG 206-1 & GEN_ENG 206-2 & GEN_ENG 206-3	Engineering Analysis I and Engineering Analysis II and Engineering Analysis III Honor Engineering Analysis and Honors Engineering Analysis and Honors Engineering Analysis
<i>Minor Requirements (9 units)</i>	
Core Courses (6 units)¹	
6 units of computer science:	
COMP_SCI 101-0	Computer Science: Concepts, Philosophy, and Connections
COMP_SCI 111-0	Fundamentals of Computer Programming
COMP_SCI 211-0	Fundamentals of Computer Programming II
COMP_SCI 212-0	Mathematical Foundations of Comp Science
COMP_SCI 213-0	Introduction to Computer Systems
COMP_SCI 214-0	Data Structures & Algorithms
Breadth Courses (3 units from three different areas, see below)	

¹ Students without prior programming experience may wish to take COMP_SCI 110-0 Introduction to Computer Programming before COMP_SCI 111-0 Fundamentals of Computer Programming

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 350-0	Introduction to Computer Security

COMP_SCI 354-0	Network Penetration & Security
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_ENG 303-0	Advanced Digital Design
COMP_ENG 346-0	Microprocessor System Design
COMP_ENG 358-0	Introduction to Parallel Computing
COMP_ENG 361-0	Computer Architecture I

Artificial Intelligence

Course	Title
COMP_SCI 325-1	Artificial Intelligence Programming
COMP_SCI 337-0	Natural Language Processing
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 & Constructing Models with Multi-Agent Language

Interfaces

Course	Title
COMP_SCI 313-0	Tangible Interaction Design and Learning
COMP_SCI 315-0	Design, Technology, and Research
COMP_SCI 330-0	Human Computer Interaction
COMP_SCI 331-0	Introduction to Computational Photography
COMP_SCI 351-1	Introduction to Computer Graphics
COMP_SCI 352-0	Machine Perception of Music & Audio
COMP_SCI 370-0	Computer Game Design
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 321-0	Programming Languages
COMP_SCI 338-0	Practicum in Intelligent Information Systems
COMP_SCI 377-0	Game Design Studio
COMP_SCI 393-0	Software Construction
COMP_SCI 394-0	Agile Software Development
COMP_SCI 473-1	NUvention: Web - Part 1
COMP_SCI 473-2	NUvention: Web - Part 2

Students should begin the minor before the end of their first quarter of their junior year. Students must submit a completed petition form for the minor to the Undergraduate Engineering Office before their last quarter as an undergraduate. At least 5 courses used for the minor may not be used (double-counted) to fulfill requirements in the student's 16-unit major program.