# 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. 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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>MATH 220-1</td>
<td>Single-Variable Differential Calculus</td>
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<tr>
<td>MATH 220-2</td>
<td>Single-Variable Integral Calculus</td>
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<tr>
<td>MATH 228-1</td>
<td>Multivariable Differential Calculus for Engineering</td>
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<tr>
<td>GEN_ENG 205-1 &amp; GEN_ENG 205-2 &amp; GEN_ENG 205-3</td>
<td>Engineering Analysis I and Engineering Analysis II and Engineering Analysis III</td>
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<tr>
<td>GEN_ENG 206-1 &amp; GEN_ENG 206-2 &amp; GEN_ENG 206-3</td>
<td>Honor Engineering Analysis and Honors Engineering Analysis and Honors Engineering Analysis</td>
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**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: Mathematical Foundations of Comp Science
- 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)**

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**

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

**Systems**

- COMP_SCI 322-0: Compiler Construction
- COMP_SCI 339-0: Introduction to Database Systems

**Artificial Intelligence**

- 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**

- 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**

- 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 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