The program offers a minor in computer science for students who wish to develop a strong competence in computer science while majoring in another area.

**Course** | **Title**  
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MATH 220-1 & MATH 220-2 | Single-Variable Differential Calculus and Single-Variable Integral Calculus  
MATH 218-1 & MATH 218-2 & MATH 218-3 | Single-Variable Calculus with Precalculus  
MATH 230-1 | Multivariable Differential Calculus  
MATH 240-0 | Linear Algebra  
**Minor Requirements (9 units)**  
**6 core courses**  
COMP_SCI 101-0 | Computer Science: Concepts, Philosophy, and Connections  
**Or an additional course from the breadth course lists.**  
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  
**3 breadth courses in 3 separate breadth areas (see below)**  
1 Students without programming experience may want to first take COMP_SCI 110-0 Introduction to Computer Programming, ideally in the Python programming language.  
**Breadth Courses**  
Majors must take one course from each area. Minors must take one course from each of any three areas.  
**Theory**  
**Course** | **Title**  
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COMP_SCI 335-0 | Introduction to the Theory of Computation  
COMP_SCI 336-0 | Design & Analysis of Algorithms  
**Systems**  
**Course** | **Title**  
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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_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  
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  
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 the first quarter of their junior year.