

Computer Science

Student Learning Outcomes

Goal #1: Students will secure an understanding of computer science foundational principles

Outcomes	How Measured
1A. Students demonstrate the basics of logic, circuit design, and the elements of computer architecture.	Homework assignments and lab exercises in CAIS 102, CAIS 236, and PHYS 265
1B. Students can apply the following mathematical principles: Boolean algebra, mathematical models of automata, discrete mathematical structures, and recurrence.	Homework assignments in CAIS 230, CAIS 351, and MATH 220
1C. Students can write programs that use searching, sorting, counting, including the concepts of step-wise refinement, appropriate control constructs, modern design techniques, object-oriented principles and standard data structures.	Student programs CAIS 120, CAIS 220, and CAIS 230
1D. Students demonstrate an understanding of concurrency.	Student multithreaded programs and exam questions in CAIS 339
1E. Students demonstrate how to integrate what they have learned into larger-scale projects.	Student semester-long project in CAIS 240 and senior capstone project in CAIS 363
1F. Students demonstrate an understanding of basic data storage representations.	Student programs that simulate data storage representations in CAIS 102, CAIS 236, and CAIS 339
1G. Students describe ways in which an operating system functions, particularly with respect to its task of man/machine interface.	Homework assignments and programming assignments in CAIS 339
1H. Students demonstrate their understanding of the ethical conflicts which face a computer scientist.	Student paper employing ethical discussions in CAIS 102
1I. Students demonstrate an ability to debug programs.	Student lab exercises in CAIS 120, CAIS 220, and CAIS 230

Goal #2: Students will gain specified skills in at least 4 areas of modern computer science.

Outcomes	How Measured
2A. Students demonstrate the ability to analyze, design, implement, verify, and maintain software systems, using quality assurance techniques of software engineering	A semester-long project in CAIS 240 and senior capstone project in CAIS 363
2B. Students demonstrate tools and techniques of systems programming to produce code that is reliable, portable, and secure.	Student programs in CAIS 305
2C. Students design database management systems using conceptual models and schemas of data.	Student database project in CAIS 310
2D. Students demonstrate the basics of at least one of the following: graphics, compilers, programming languages, artificial intelligence, or networking	Student homework assignments and/or programs in at least one of CAIS 301, CAIS 307, CAIS 337, CAIS 341, CAIS 347, or CAIS 350

Goal #3: Students will be prepared for a career as a computing professional or for graduate study.

Outcomes	How measured
3A. Graduates confirm that they are prepared for professional positions	Data obtained from a survey aligned with program outcomes.
3B. Employers confirm that our graduates are prepared for positions they hold.	Data obtained from survey of sample of employers.

