

# Computer-Related Study at the UW

University of Washington

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Many students enter the UW with an interest in computers. What you study will depend on whether you want to design and build computers, to understand and manipulate how they work, or to use them creatively as a tool in whatever major or career you pursue. There are a wide variety of ways to integrate computers into your study and prepare for a computer-related career. Listed below are some of the UW programs that integrate extensive computer use into their curriculums.

For more on related majors and careers visit: [www.washington.edu/uaa/gateway/advising/majors/scieng.php](http://www.washington.edu/uaa/gateway/advising/majors/scieng.php)

## **Applied and Computational Mathematical Sciences (ACMS)**

ACMS is an interdepartmental program that combines higher math, computer science, probability and statistics, modeling, and applied math. Mathematics is used in a fundamental way in most fields of science and engineering, and its use is rapidly expanding in the social sciences and humanities as well. Recent increases in computing power have made mathematical modeling, computer simulation, and statistical analysis more important than ever.

**Prerequisites:** Calculus, differential equations, linear algebra, computer programming.

**Admission:** Students can be admitted any time as long as prereqs are complete.

**More info:** <http://www.math.washington.edu/acms/>

## **Business (Information Systems)**

The Michael G. Foster School of Business offers a concentration in Information Systems that address the use of information technologies in business and organizational environments. The program focuses on the use and design of information systems to meet an organization's tactical and strategic needs, and includes programming and database management, information system analysis and design.

**Prereqs:** English, economics, calculus, statistics, accounting

**Admission:** Competitive.

**More info:** [bschool.washington.edu/undergrad/](http://bschool.washington.edu/undergrad/)

### **CSE courses open to all students**

In addition to Intro Programming, the following five courses are open to all UW students:

- CSE 373 Data Structures & Algorithms
- CSE 410 Computer Systems
- CSE 413 Programming Languages
- CSE 415 Intro to Artificial Intelligence
- CSE 417 Algorithms & Comp Complexity

**(These courses do not satisfy CSE degree requirements. CSE majors take courses specifically designed for the major.)**

## **Computer Science & Engineering**

The CSE department offers two undergraduate degrees: a B.S. in Computer Engineering (College of Engineering) and a B.S. in Computer Science (College of Arts & Sciences). CSE involves questions that can potentially change the world and how we view it. For example:

- What is the nature of intelligence, and can we reproduce it in machines?
- How can we ensure the reliability and security of the most complex systems ever created?
- What is the nature of human cognition? Can we use these concepts to design machines that help us make sense of enormous amounts of unstructured data?
- How can we harness devices operating at molecular scales, exploiting quantum physical effects?

Areas include graphics, computer architecture, robotics, animation, programming languages, algorithm design and analysis, networks, operating systems and databases.

**Prereqs:** English, calculus, calc-based physics or chem, and programming. CE requires physics 121&122.

**Admission:** Competitive

**More info:** <http://www.cs.washington.edu/admissions>

## **DXARTS**

The goal of undergraduate education in Digital Arts and Experimental Media is to create opportunities for artists to pursue lines of inquiry within the scientific, technical and creative realms while discovering and documenting new areas of knowledge and practice in this emerging field. This inherently interdisciplinary curriculum requires all students to diversify their artistic practice across four major content areas (sound, video, 3D, and sensing and control systems) as well as compliment their study with relevant upper-division coursework selected from related fields (computer science, music, drama, dance, art, engineering, architecture, cinema studies, etc.) Students are positioned to become leaders in the field, to pursue original creative and technical research, and to fully understand the responsibilities of their activity within the context of society and culture at large.

**Prereqs:** Pre-calc, computer programming, physics, art history, music, and digital arts and experimental media.

**Admission:** Competitive

**More info:** <http://www.washington.edu/dxarts/>

## ***Electrical Engineering***

Electrical Engineers design, produce, and operate devices and systems that use electromagnetic and electric energy. The program of study for Electrical Engineering includes major concentration areas such as power systems, wireless communication systems, analog circuits, digital signal processing, control systems, digital VLSI circuits, and embedded computing systems. The major concentration areas in digital VLSI circuits and embedded computing systems focus most specifically on computer-related applications. In addition, students can use courses from the CSE department toward elective requirements for their degree.

**Prereqs:** Calculus, calculus-based physics, chemistry,, English comp

**Admission:** Competitive

**More info:** [www.ee.washington.edu/undergrad/](http://www.ee.washington.edu/undergrad/)

## ***Informatics***

Informatics focuses on humans and technology as key components of information systems -- from simple systems that support personal information management to complex systems that involve vast databases of information manipulated by high-speed computer technologies. The program teaches a student how to invent methods of representing, classifying and retrieving information and to design new information systems that are responsive to people's needs and values.

**Prereqs:** Computer programming, English comp, statistics

**Admission:** Competitive

**More info:** [www.ischool.washington.edu/informatics](http://www.ischool.washington.edu/informatics)

## ***Human-Centered Design and Interaction***

Technical communicators use their language, visual, and analytic skills, as well as training and research in electronic and other media, to create and enhance communication in scientific and technical environments. The major prepares students to design, write, edit, and evaluate technical and scientific materials. In addition, students learn about, human-computer interaction, hypermedia and multimedia, visual media, and online support systems.

**Prereqs:** English comp, writing, tech writing, math and science courses

**Admission:** Competitive

**More info:** [www.uwtc.washington.edu/programs/bstc/](http://www.uwtc.washington.edu/programs/bstc/)

## ***Visual Communications Design***

This program in the School of Art deals with the visual presentation of information. The curriculum covers information design, typography, exhibition design, photography, packaging systems design, and design issues for new media. Computer based tools are integrated throughout the curriculum.

**Prereqs:** Drawing, 2D & 3D design, Design Foundations

**Admission:** Competitive

**More info:**

[depts.washington.edu/designuw/VCD\\_overview.htm](http://depts.washington.edu/designuw/VCD_overview.htm)

## ***Geography (Information Systems)***

Geographic Information System GIS integrates database management, spatial analysis, and geovisualization information technologies into a computer system capable of assembling, storing, analyzing, and displaying data identified according to their geographic locations. The GIS concentration develops in students an understanding of a wide range of geographic concepts, software concepts, and geospatial data (socio-economic, environmental, transportation, land use, etc.). Skills developed include how to design and produce maps that communicate effectively, design and build databases that represent the world in diverse ways, and make use of spatial analysis techniques that manipulate databases to create geovisualizations for interpreting our world.

**Admission:** Open admission, no prereqs

**More info:** [depts.washington.edu/geog/undergrad\\_overview.html](http://depts.washington.edu/geog/undergrad_overview.html)

## ***Health Informatics and Health Information Management***

Offered through the Evening Degree program, HHIM focuses on the collection, organization, use and evaluation of data in health care in support areas such as direct care and disease prevention, planning, outcome evaluation, research, and reimbursement. The program prepares students for the Registered Health Information Administrator exam.

**Prereqs:** Anatomy & Physiology, Statistics, Medical Terminology, Introductory Management, and Introduction to Computers; a minimum of 90 credits that fulfill UW Composition, Natural World, Individuals and Society, and Visual Literary & Performing Arts requirements.

**Admission:** Competitive. Applications due April 15

**More info:** <http://depts.washington.edu/hihim/>

## ***Computing & Software Systems – UW Bothell***

The CSS program offers two undergraduate degrees: a B.S. in Computing and Software Systems and a B.A. in Applied Computing. Computing and Software Systems is a software engineering-based computer science program that stresses computer programming and people-centered software development processes. Applied Computing is a multidisciplinary degree that focuses on the application of computing systems in the context of a specific knowledge domain.

**Admission:** Competitive

**More info:** <http://www.uwb.edu/CSS/>

## ***Computing & Software Systems – UW Tacoma***

This program prepares students to enter the broad field of computer software design, development, and maintenance. Concentrations are available in areas such as applications programming, internet applications development, systems analysis, and database and information engineering.

**Admission:** Competitive

**More info:** <http://www.tacoma.washington.edu/tech/>