

Computer-Related Study at the UW

University of Washington

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: <http://www.washington.edu/uua/advising/majors/tech.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. Math 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.

Prereqs: Calculus, differential equations, linear algebra, intro programming.

Admission: Competitive

Info: <http://www.math.washington.edu/acms/>

Business (Information Systems track)

The Michael G. Foster School of Business offers a formal option in Information Systems that addresses 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: Composition, calculus, micro- and macro-economics, financial and managerial accounting, statistics, and intro to law

Admission: Competitive.

Info: foster.washington.edu/undergrad/

Computer Science & Engineering

The CSE department offers two Bachelors of Science: Computer Engineering (College of Engineering) and Computer Science (College of Arts & Sciences). CSE majors ask questions, solve problems, and challenge how we view the world. 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, robotics, animation, software, algorithm design and analysis, networks, operating systems and databases.

Prereqs: Composition, calculus, calc-based physics or chem, intro programming. CE requires physics 121&122.

Admission: Competitive

Info: <http://www.cs.washington.edu/admissions>

Computing & Software Systems –

UW Bothell

The CSS program offers two undergraduate degrees: a BS in Computing and Software Systems (CSS) and a BA in Applied Computing. CSS 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

Info: <http://www.uwb.edu/CSS/>

Institute of Technology - UW Tacoma

The Institute of Technology offers a BS and BA in Computer Science and Systems (CSCI), a BS in Computer Engineering and Systems (CES), and a BS in Information Technology and Systems (ITS).

The CSCI program prepares students to enter the broad field of computer software design, development, and maintenance. The BS degree focuses on software development and engineering. The BA degree provides students the opportunity to apply the fundamental concepts of computer science to another academic discipline by combining computer science courses with a UW minor.

The CES program studies design, construction, implementation, and maintenance of both hardware and software of computing and embedded systems.

The ITS program emphasizes a practical, specialization-oriented curriculum that provides students with advanced concepts and skills needed to analyze, integrate, maintain, and manage complex information systems.

Admission: Competitive

Open CSE courses: Along with Intro Programming, the following courses are open to all students:

CSE/INFO 100 Fluency in Information Technology
CSE 190 Current Topics in CSE
CSE 373 Data Structures & Algorithms
CSE 374 Intermediate Programming Concepts & Tools
CSE 410 Computer Systems
CSE 413 Programming Languages
CSE 415 Intro to Artificial Intelligence
CSE 417 Algorithms & Comp Complexity

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

Info: <http://www.tacoma.washington.edu/tech/>

Design: Visual Communication Design, Industrial Design, Design Studies

Within the Division of Design, there are three majors: Visual Communication Design, Industrial Design and Design Studies. We also offer a series of courses in Interaction Design. The division educates and trains designers to create and develop concepts that optimize the function, value, and appearance of communications, products and systems for the benefit of both industry and society. Computer based tools are integrated throughout all three of these curricula.

Prereqs: ART 166 "Design Foundations" or equivalent.

Info: http://art.washington.edu/4_Design

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 concentration areas in digital VLSI circuits and embedded computing systems focus most specifically on computer-related applications. Students may also use courses from CSE as electives for EE.

Prereqs: Calculus, calc-based physics, chem, composition

Admission: Competitive

Info: www.ee.washington.edu/undergrad/

Geography (Geographic Information Systems)

Geographic Information Systems (GIS) integrate database management, spatial analysis, and geovisualization technologies into a computer system capable of assembling, storing, analyzing, and displaying geographic data. Geography students learn to use these powerful tools for problem solving in relation to a diverse range of societal concerns. Key skills include the design and production of maps to communicate effectively, the design and manipulation of databases to represent the world in diverse ways, and the use of spatial analysis techniques to manipulate geographic data. Students of GIS will also learn about the politics, ethics, and values of mapping, and integrate their social and technical skills to undertake projects with research partners in the region.

Admission: Open admission, no prerequisites

More Information: <http://depts.washington.edu/geog/program-details/>

Health Informatics, Health Information Management

Offered through Evening Degree program, HIHIM focuses on managing the collection, organization, use and evaluation of health data in health care for direct care and disease prevention, planning, outcome evaluation, research, and reimbursement with emphasis on technology. The program prepares students for the Registered Health Information Administrator exam.

Prereqs: Anatomy & Physiology, Statistics, Medical Terminology and Introduction to Computers; minimum of 90

credits that fulfill Composition, Natural World, Individuals and Society, and Visual Literary & Performing Arts requirements.

Admission: Competitive. Applications due April 15

Info: <http://depts.washington.edu/hihim/>

Human-Centered Design & Engineering

HCDE students advance design knowledge using innovative techniques to study human activity and then translating that knowledge into meaningful information, system, and technology designs. HCDE students consider the role of communication in human activity, and prioritize the needs, desires, and behaviors of people and communities who interact with technical systems. HCDE addresses the specifics of design through interdisciplinary coursework that combines usability, visual design, and advanced research methodologies. Students choose from official degree options in Human-Computer Interaction and Technical Communication, or an individualized course of study designed to fit their individual interests.

Prereqs: Composition, writing, tech writing, math, science

Admission: Competitive

Info: www.hcde.washington.edu

Informatics

Informatics students design, build, implement, and secure information systems that meet human, organizational, and societal needs. The major emphasizes understanding relationships among people, information, and technology. Informatics is a multi-disciplinary field that draws upon areas such as computer science, information science, sociology, psychology, design, and information management. Coursework is varied and includes technical classes such as programming, web development, and database management as well as courses in project management, user-centered design, systems analysis, and information policy.

In the informatics program, students learn how to:

- Design and build systems that support information management
- Develop complex systems that involve vast databases of distributed information
- Analyze national and global information policy
- Assure the security and integrity of information systems
- Design the information architecture necessary to store and access repositories of information
- Understand subtleties of information behavior needed to build social networking applications and mobile technologies

Prereqs: Foundations in Informatics, intro programming, Comp, statistics

Admission: Competitive

Info: www.ischool.washington.edu/informatics