COMPUTER SCIENCE AND LIBERAL ARTS AND SCIENCES DISCIPLINE

The LAS major in Computer Science and an LAS Discipline is a flexible program for students who plan to pursue technical or professional careers in arts and sciences areas requiring a sound grounding in computer science. This major allows students to combine study of computer science with training in a field in Liberal Arts and Sciences to offer students novel perspectives in interdisciplinary work. Students can use the supporting coursework to prepare for employment immediately upon graduation or for pursuing graduate study in a wide variety of fields or to complete a significant body of courses in a single area, such as a double major or minor.

Students are strongly encouraged to get involved in undergraduate research through independent studies and funded research experiences, with the goal of learning from the University of Illinois CS and LAS internationally recognized scholars outside the classroom and participating in the exciting quest for new contributions to the field.

Students interested in Mathematics or Statistics should enroll in the Math/CS (http://catalog.illinois.edu/undergraduate/las/academic-units/math/mathematics-computer-scientific-major) or Stat/CS (http://catalog.illinois.edu/undergraduate/las/academic-units/stats/statistics-computer-scientific-major) degree.

Current approved curricula include:

**Computer Science and Anthropology**

Today, anthropologists use computational tools and algorithms to analyze large amounts of data either gathered from a field site or by studying on-line social communities and social networks. Students majoring in CS + Anthropology will have knowledge of how people live and communicate as social beings, which can inform best designs and user interfaces for software.

**Computer Science and Astronomy**

Astronomy is a computer-intensive discipline. Computational challenges in astronomy, including radio astronomical data processing, analysis of large optical image data sets, and dynamical and statistical simulation of astronomical systems, test the limits of currently available hardware and software and have led to significant advances in computational science. This major will offer computationally focused students with a grounding in astronomy for them to understand astronomically motivated computational challenges such as mysteries of the origins of life and our universe.

**Computer Science and Chemistry**

Students majoring in Computer Science and Chemistry are prepared for a variety of careers, including helping manufacturers design more productive and efficient processes, helping pharmaceutical firms characterize new compounds for drug discovery, and conducting research that requires studying the fundamental properties of atoms, molecules, and chemical reactions. Computer Science and Chemistry majors might develop computer models or simulate chemical and biochemical processes, perform statistical analysis of large data sets, or create visualizations of reaction pathways, molecular interactions, or other phenomena.

**Computer Science and Economics**

The Computer Science and Economics program provides students with enhanced quantitative analysis and programming skills. Students learn a variety of economic analytical skills, both theoretical and empirical, and computational skills. These are an asset for students interested in nearly all fields of economics, including the three of the core fields (microeconomics, macroeconomics, and econometrics), but also the applied fields of industrial organization, public economics, labor economics, development economics, international economics, and financial economics.

There is an increasing need for more sophisticated skills to examine large administrative datasets (“Big Data”), thus combining the computer science and economics curriculums will produce students who are able to write their own code and develop their own software for analyzing these data sets. Possible job opportunities for graduates include area such as banking, finance, insurance, policy centers, government agencies and non-profit organizations. The degree will also prepare students for various graduate programs, including areas of economics, finance, policy, and financial engineering.

**Computer Science and Geography & Geographic Information Science**

The widespread use of location-aware devices (GPS-equipped smartphones) and geospatial technologies (e.g., remote sensing) has led to the generation of massive amounts of place-based data. These data often contain high-resolution and continuous space-time information about a wide variety of phenomena of interest to geographers (e.g., the spatial patterns of people moving through a city). The development and application of computational algorithms or methods in geography has become increasingly important in understanding the physical and social processes that shape the landscape, from public health to urban sustainability to ecological modeling. Students in Computer Science and Geographic Information Science will bring together social, physical, and computer sciences to investigate spatial processes and solve geographic problems.

**Computer Science and Linguistics**

The Computer Science and Linguistics program brings together students and faculty interested in different aspects of the computer – natural language relationship – i.e., studying the cognitive aspects of natural languages; endowing computers with human-like behavior and understanding of spoken and written natural language; and designing user-friendly computer programs and interfaces using natural language communication.

Students will be exposed to the tools of both disciplines — formal methods, philosophical analysis, computer programming, and empirical research — with the aim of acquiring the appropriate skills required by the field. Graduates will be successful in landing jobs in various areas, including natural language software design and applications, teaching and research, law, medicine, and public service. The innovative aspect of the program is its focus on relating computers to language, technology, and society where the combination has potential for great impact.

**Computer Science and Philosophy**

The Computer Science and Philosophy major provides students strong analytical, critical, technical, and communications skills that will prove useful for careers in academia, industry, public service, and
elsewhere. Computer science and philosophy share deep historical roots. Questions about the nature of algorithms, complexity, the ability of computers to think, and computation itself are as much philosophical as they are technical. Likewise, many basic philosophical questions -- what does it take to know something, when does something cause something else, what makes an action right or wrong to do -- matter for practical computer science applications. As computers and machines continue to play an ever-increasing role in our daily lives, there is also a corresponding need to think clearly about the ethical implications of machine technology with respect to, e.g., questions of privacy, security, equality, and justice. Tools from both computer science and philosophy help to clarify and to answer such questions, as well as many others.

- Computer Science and Anthropology (http://catalog.illinois.edu/undergraduate/las/comp-science/anthropology)
- Computer Science and Astronomy (http://catalog.illinois.edu/undergraduate/las/comp-science/astronomy)
- Computer Science and Chemistry (http://catalog.illinois.edu/undergraduate/las/comp-science/chemistry)
- Computer Science and Economics (http://catalog.illinois.edu/undergraduate/las/comp-science/economics)
- Computer Science and Geography & Geographic Information Systems (http://catalog.illinois.edu/undergraduate/las/comp-science/ggis)
- Computer Science and Linguistics (http://catalog.illinois.edu/undergraduate/las/comp-science/linguistics)
- Computer Science and Philosophy (http://catalog.illinois.edu/undergraduate/las/comp-science/philosophy)