INFORMATION SCIENCE

Information science considers the relationships between people, places and technology and the information those interactions yield. The internet is a broad example of a socio-technical system that is comprised of hardware and software, but in daily life is better understood as a constantly changing social infrastructure upon which complex forms of human-human and human-information interaction rest. Scholars and students of information science develop new methods to study these socio-technical phenomena, and translate those findings to the design and development of useful and meaningful technology.

The department will equip students with the conceptual machinery to succeed in a future characterized by new ways of working with information and communication technology.

The knowledge and skills of our graduates will enable them to participate in and shape new structures of enterprise. Customized, creative production—as in the "maker culture" movement—is expanding notions of the enterprise, as are distributed and mobile workforces.

The MS and PhD degrees align with standards set by other universities. Both include liberal arts education combined with empirical work and computing knowledge, and both incorporate the grant-driven, collaborative "lab model" research that characterizes the natural and engineering sciences.

Course code for this program is INFO.

Master's Degree

- Information Science - Master of Science (MS) (https://catalog.colorado.edu/graduate/colleges-schools/communication-media-design-information/programs-study/information-science/information-science-master-science-ms/)

Doctoral Degree

- Information Science - Doctor of Philosophy (PhD) (https://catalog.colorado.edu/graduate/colleges-schools/communication-media-design-information/programs-study/information-science/information-science-doctor-philosophy-phd/)

Faculty

While many faculty teach both undergraduate and graduate students, some instruct students at the undergraduate level only. For more information, contact the faculty member's home department.

Barker, Lecia Jane (https://experts.colorado.edu/display/fisid_101367/)
Associate Professor; PhD, University of Colorado Boulder

Brubaker, Jed Richards (https://experts.colorado.edu/display/fisid_156193/)
Assistant Professor; PhD, University of California, Irvine

Burke, Robin D. (https://experts.colorado.edu/display/fisid_165005/)
Chair, Professor; PhD, Northwestern University

Carruth, Christopher (https://experts.colorado.edu/display/fisid_153706/)
Instructor; MS, University of Colorado Boulder

Devendorf, Laura (https://experts.colorado.edu/display/fisid_158564/)
Assistant Professor; PhD, University of California, Berkeley

Fiesler, Casey Lynn (https://experts.colorado.edu/display/fisid_155950/)
Assistant Professor, Associate Chair; PhD, Georgia Institute of Technology

Iyasele, Abel
Teaching Assistant Professor; MBA, University of Dundee (UK)

Keegan, Brian (https://experts.colorado.edu/display/fisid_158122/)
Assistant Professor; PhD, Northwestern University

Palen, Leysia A. (https://experts.colorado.edu/display/fisid_114604/)
Professor; PhD, University of California, Irvine

Roque, Ricarose (https://experts.colorado.edu/display/fisid_158315/)
Assistant Professor; PhD, Massachusetts Institute of Technology

Voida, Amy Kathryn Mitchell (https://experts.colorado.edu/display/fisid_155855/)
Associate Professor; PhD, Georgia Institute of Technology

Voida, Stephen A. (https://experts.colorado.edu/display/fisid_155856/)
Assistant Professor; PhD, Georgia Institute of Technology

Courses

INFO 5301 (3) Computation for Research in Information Science
Introduces principles of computational thinking through the manipulation, transformation and creation of data artifacts used in research. Students will be exposed to a high-level overview of algorithms, functions, data structures, recursion and object-oriented computer programming through a series of assignments that emphasize the use of computation as a means of scholarship.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5501 (3) Open Collaboration
Analyzes the mechanisms of peer production and crowdsourcing systems like Wikipedia and OpenStreetMap. Students will investigate how these crowdsourced platforms work socially and technically, develop skills using tools for their analysis and critically evaluate platform and community limitations.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3501
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5502 (3) Online Communities
Explores practical and theoretical topics in online communities through inquiry into one or more particular online communities. Student projects will explore online communities as social and technical systems, including their alignment with conceptualizations of community, expressed and apparent interests, nature of membership and participation, history, participants' motivations for involvement, and explicit, implicit, and infrastructural features that enable and constrain behaviors.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3502
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5503 (3) Everyday Information Behavior
Familiarizes students with practical and theoretical topics in the discipline of information behavior and its application to everyday events, activities and environments. Explores the information dimension of various everyday activities such as buying a car, playing a game or looking up health information online. Students learn to analyze the informational dimensions that occur in their everyday lives.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3503
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5504 (3) Digital Identity
Explores and analyzes identity in a digital era. Through applied research, students investigate both social and technical aspects of how identity is captured, represented and experienced through technology using theoretical, empirical and design-based inquiry. Methods and platforms studied vary by semester.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3504
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5505 (3) Designing for Creative Learning
Analyzes learning technologies, discusses learning theories and develops prototypes to investigate strategies for engaging people in creative and inclusive learning experiences. Students explore design, learning and technology by examining sociotechnical systems like construction kits, online communities and makerspaces with a critical lens on equity and inclusion. Studio format enables students to apply constructionist ideas into the design of technology-enabled environments.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3505
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5506 (3) Online Fandom
Explores and analyzes fan communities in a digital context. Through applied research, students will investigate online spaces devoted to participatory and remix culture, media fandom, and fan creation. This class will draw concepts and methods from fan studies, social computing, ethnography, data science, and sociology to drive project-based inquiry.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3506
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5507 (3) Data and the Humanities
Introduces students to foundational computing and statistical concepts for analyzing humanities data. This course discusses the influence of digitization and data on humanist inquiry and exposes students to techniques for working with data in different areas of the humanities, including literature, history, and art. The course emphasizes technical practices involved in humanist data analysis. Comfort with programming is strongly encouraged.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3507
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5509 (3) Personal Health Informatics
Surveys the theoretical and practical foundations for the design of patient-centered health and wellness technologies. Students will conduct an in-depth exploration of the multidisciplinary research literature informing the design of these systems, participate in discussions about the practical information management and interaction design challenges that must be addressed in their implementation, and demonstrate their learning through a variety of research study- and system-design activities. Formerly offered as a special topics course.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3509
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5601 (3) Information Ethics and Policy
Explores ethical and legal complexities of information and communication technology. By combining real-world inquiry with creative speculation, students will probe everyday ethical dilemmas they face as digital consumers, creators and coders, as well as relevant policy. Explores themes such as privacy, intellectual property, social justice, free speech, artificial intelligence, social media and ethical lessons from science fiction.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4601
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5602 (3) Information Visualization
Explores the design, development and evaluation of information visualizations. Covers visual representations of data and provides hands-on experience with using and building exploratory tools and data narratives. Students create visualizations for a variety of domains and applications, working with stakeholders and their data. Covers interactive systems, user-centered and graphic design, perception, data storytelling and analysis, and insight generation. Programming knowledge is strongly encouraged.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4602
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5603 (3) Survey Research Design
Familiarizes students with practical and theoretical topics in using survey methods for conducting information science research. Through discussion and real world assignments, students will learn when and why to use surveys for collecting data; effective, efficient and ethical approaches to maximizing response; sampling issues; development of valid items and scales; and how to implement, analyze and report on survey data collection.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4603
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5604 (3) Applied Machine Learning
Introduces algorithms and tools for building intelligent computational systems. Methods will be surveyed for classification, regression and clustering in the context of applications such as document filtering and image recognition. Students will learn the theoretical underpinnings of common algorithms (drawing from mathematical disciplines including statistics and optimization) as well as the skills to apply machine learning in practice.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4604
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5605 (3) Ethnographic Research in Applied Settings
Demonstrates the power of ethnography as an investigative approach that is useful in design, evaluation and question formation for information scientists across all workforce sectors. Teaches students how to be keen observers of the unusual as well as the everyday to reveal meaningful insights that elaborate information science projects.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4605
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5606 (3) Critical Technical Practice
Surveys design theory and methods that can be used to question relationships between technology, culture, and the environment. Students will discuss readings and synthesize those readings through design exercises. The course will equip students with resources for thinking more critically and creatively about design and possible future human-technology relationships.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5606, ATLS 4606 and INFO 4606
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5607 (3) Software Engineering for Data-Centered Systems
Explores design and engineering of systems for data storage and analysis. Introduces fundamental development concepts used in real-world data systems. By combining software engineering with knowledge from data science and human-centered computing, prepares students to develop systems, interpret and modify codebases, understand modern concepts for managing data at scale, and work in teams to create cutting-edge applications for consumer use.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4607
Requisites: Requires prerequisites of INFO 2201 or CSCI 2270 (all minimum grade C-). Restricted to students with 57-180 credits (Junior or Senior)
Grading Basis: Letter Grade

INFO 5608 (3) Community-Based Design
Surveys techniques in cooperative design with community members as collaborators rather than subjects. Students will explore approaches such as participatory design and co-design. Students will work in teams in partnership with community stakeholders to create tools, experiences, or systems that meet the needs of communities, contribute to social change, and/or lead to advancing academic knowledge.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4608
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5609 (3) User-Centered Design
Surveys the theoretical and practical foundations of human-computer interaction and user-centered design. Students learn theories of interaction (including cognitive, organizational, collaborative, and task-based approaches), user interface design techniques, design guidelines, and usability testing in the context of developing technology. Course content is explored through a variety of interfaces (desktop, mobile, touch, vision, audio, etc.) and contexts (personal, organizational, cross-cultural, etc.).
Equivalent - Duplicate Degree Credit Not Granted: INFO 4609
Requisites: Restricted to graduate students only.

INFO 5611 (3) Ubiquitous Computing Experience Design
Introduces the field of ubiquitous computing, including sensors, ambient displays, tangibles, mobility, location awareness and context awareness. These topics are explored from a user-centered design perspectives, focusing on how a situated models of computing affect requirements gathering, interaction design, prototyping and evaluation. Students gain mastery with contemporary "UbiComp" technologies and learn to incorporate them into a user-centered design process.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4611
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5612 (3) Recommender Systems
Explores the space of personalized information access applications known as recommender systems. This class will introduce students to a range of approaches for building recommender systems including collaborative, content-based, knowledge-based, and hybrid methods. Students will also explore a variety of applications for recommendation including consumer products, music, social media, and online advertising. The course will also examine controversies surrounding recommendation, including Pariser's "filter bubble", and questions of algorithmic bias. Proficiency in Python programming required.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5613 (3) Network Science
Introduces theories and methods for analyzing relational data in social, information, and other complex networks. Students will understand the processes and theories explaining network structure and dynamics as well as develop skills analyzing and visualizing real-world network data. No math or statistics training required, but course will assume familiarity with Python.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4613
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 5615 (3) Fair Machine Learning
Equips students with the foundational knowledge needed to understand fairness in machine learning from an interdisciplinary perspective and the essential skills necessary to address fairness challenges in practice. Provides an overview of core concepts concerning fair machine learning, from defining fairness to the measurement and mitigation of fairness-related harms. Proficiency in Python programming and prior coursework in machine learning required.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4615
Grading Basis: Letter Grade

INFO 5617 (3) Web Data Science
The internet makes many kinds of information easy to access. The ability to retrieve, parse, and analyze this information is a valuable skill for data scientists. This course will provide an overview of computational tools and practices for transforming web documents and APIs into data for common research designs.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4617
Grading Basis: Letter Grade

INFO 5620 (3) Race and Technology
This course is designed with the understanding that race and racial inequality have been central to how societies and societal systems of power have been shaped and reshaped over time. Students will critically examine how race is created by and through sociotechnical systems. Students will explore how the design, implementation, and use of digital platforms and their data continue to perpetuate and embody white, cisgender, heteronormative systems of power. This course will cover a wide range of foundational and emergent scholarship¿giving voice to Scholars of Color¿providing students with a foundation through which they can continue to critique and explore sociotechnical and other societal arrangements more broadly.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4620
Requisites: Restricted to graduate students only.

INFO 5651 (3) Fundamental Concepts in Data Science
This intensive course provides a general understanding of the mathematical concepts required for success in data science. This course will cover a wide range of mathematical tools in data science including an overview of calculus and linear algebra along with selected topics from numerical analysis. The course will also explore computational implementations of these ideas. This course provides a bridge for students without these advanced math concepts to learn to apply them within a data science career or within a graduate program in data science.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4651

INFO 5652 (3) Statistical Programming in R
This intensive course covers foundational data science tools and techniques in the R programming language, including acquiring, cleaning, exploring, and analyzing data, programming, and conducting reproducible research. The course will emphasize the use of data management best practices such as the tidyverse toolkit in R.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4652

INFO 5653 (3) Text Mining
Introduces students to techniques for extracting information from text data, including text gathering and cleaning, and text processing methods, such as dimensionality reduction, normalization, and text visualization. It will introduce applications and methodologies of machine learning for text, such as sentiment analysis, association rule mining, and topic modeling.

INFO 5747 (4) Defamiliarizing Data: The Ethnography and Design of Making Data Strange
Introduces students to the design and use of data in an unfamiliar, international context. Develops students¿ ethnographic and design skills for defamiliarizing data¿seeing, characterizing, and designing for data in ways that render it as unfamiliar and strange in order to gain new perspectives and insights about those data and the contexts in which they are produced and consumed.
Equivalent - Duplicate Degree Credit Not Granted: INFO 4747

INFO 5841 (1-3) Independent Study
Independent Study
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.

INFO 5871 (1-4) Special Topics
Topics will vary by semester.
Repeatable: Repeatable for up to 15.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.

INFO 5901 (3) Digital Legacy Clinic
Gain hands-on experience running CU¿s Digital Legacy Clinic, supporting end-of-life planning and digital affairs management. Students will learn to establish a startup, collaborate effectively, and solve common startup challenges. Through team-based work, students will gain practical skills in service design, collaboration, technical research, and client support.
Equivalent - Duplicate Degree Credit Not Granted: INFO 3901
Repeatable: Repeatable for up to 12.00 total credit hours.
Requisites: Restricted to students with minimum of 90 credit hours taken (Seniors) and Information Science (INFO) majors.
Grading Basis: Letter Grade

INFO 5919 (3) HCC Survey and Synthesis: Foundations and Trajectories
Examines the interdisciplinary field of human-centered computing through a comprehensive content and historical survey. Considers new trajectories of inquiry and how the field merges with others. Social computing, is emphasized as a central topic. Students across disciplines will find the course foundational for understanding human-centered technology matters, including computer scientists, information scientists, social scientists, and business and media arts students.
Equivalent - Duplicate Degree Credit Not Granted: CSCI 5919
Requisites: Restricted to graduate students only.

INFO 5931 (1-3) Internship
Internship
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to graduate students only.

INFO 6101 (3) Theories and Concepts in Information Science
Surveys foundational theories and concepts in information science. Students will learn to read and reflect critically about seminal texts, tracing their intellectual genealogies from a variety of originating disciplines to their appropriation by information science. Students will apply these theories to contemporary issues and problems.
Requisites: Restricted to PhD students only.
Grading Basis: Letter Grade

INFO 6201 (3) Interdisciplinary Ways of Knowing
Introduces principles of research design and surveys the breadth of research methods appropriated by the field of information science. Students will explore the diversity of epistemological orientations that make up the field, that influence the types of often mixed research methods applied and that shape the kinds of questions that are and are not explored.
Requisites: Restricted to PhD students only.
Grading Basis: Letter Grade

INFO 6301 (3) Computation for Research in Information Science
Examines the diversity of roles that computation can play in information science research, ranging from an overview of some data-driven practices to prototyping and infrastructure development to computation-as-research-support. Provides students with a level of computational literacy to engage with the multiplicity of roles that computation serves in the different kinds of research work that is happening across the domain, including exemplars of different kinds of technical contributions and approaches.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 6401 (3) Information and Ideas in Design Disciplines
Introduces fundamental principles and practices from user-centered design disciplines and examines how those principles and practices intersect with contemporary issues in information science. Theory, research and exemplary practices from interaction, graphic, product, communication and experience design are introduced through readings, problems and case histories. Projects provide direct experience with common design tools and exposure to leading practitioners.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 6500 (1) Information Science Seminar
Enculturates graduate students in the discipline of Information Science through weekly seminar series that hosts guest speakers, internal faculty and graduate speakers and other community building and professional development activities.
Repeatable: Repeatable for up to 8.00 total credit hours.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

INFO 6871 (3) Special Topics
Topics will vary by semester.
Repeatable: Repeatable for up to 15.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.

INFO 6940 (1-6) Supervised Master's Research Project
Students enrolling in this course will conduct supervised research in Information Science under the supervision of one or more faculty advisors, to include preparation of academic literature reviews, laboratory or field experiments, surveys or interviews with technology stakeholders, interface or system design and development, system evaluation, or other examples of rigorous scholarship in the discipline of Information Science. Some research projects may be carried out in collaboration with other graduate students and faculty members. Although contribution to publishable scholarship (e.g., posters, demonstrations, conference papers, or journal articles) is one possible outcome of this educational experience, the student and his/her advisor(s) may agree to determine alternate mechanisms for assessing mastery of the academic research process, depending on the scope of work carried out as part of this experience, the publishability of the research, and the specific needs and career goals of the student.
Repeatable: Repeatable for up to 6.00 total credit hours.

INFO 6950 (1-6) Master's Thesis
Designing, researching and writing a master's thesis under the supervision of the student's advisors.
Repeatable: Repeatable for up to 6.00 total credit hours.

INFO 7000 (3) Introduction to Doctoral Studies in Information Science
Introduces students to practices associated with successful advancement in a doctoral program, rigorous scholarship in information science and more expert and early participation in their scholarly community of practice.
Requisites: Restricted to Information Science (INFO) Ph.D. graduate students only.
Grading Basis: Letter Grade

INFO 7841 (1-3) Independent Study
Independent Study
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to PhD students only.

INFO 7871 (3) Special Topics
Topics will vary by semester.
Repeatable: Repeatable for up to 15.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to PhD students only.

INFO 8991 (1-10) Doctoral Dissertation
Repeatable: Repeatable for up to 40.00 total credit hours.
Requisites: Restricted to PhD students only.