

# Information (INFO)

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## Courses

### INFO C8 Foundations of Data Science 4 Units

Terms offered: Fall 2025, Summer 2025 8 Week Session, Spring 2025, Fall 2024, Spring 2023, Fall 2022, Spring 2022, Fall 2021, Summer 2021 8 Week Session, Fall 2020

Foundations of data science from three perspectives: inferential thinking, computational thinking, and real-world relevance. Given data arising from some real-world phenomenon, how does one analyze that data so as to understand that phenomenon? The course teaches critical concepts and skills in computer programming and statistical inference, in conjunction with hands-on analysis of real-world datasets, including economic data, document collections, geographical data, and social networks. It delves into social and legal issues surrounding data analysis, including issues of privacy and data ownership.

#### Rules & Requirements

**Prerequisites:** This course may be taken on its own, but students are encouraged to take it concurrently with a data science connector course (numbered 88 in a range of departments)

**Credit Restrictions:** Students will receive no credit for DATA C8\COMPSCI C8\INFO C8\STAT C8 after completing COMPSCI 8, or DATA 8. A deficient grade in DATA C8\COMPSCI C8\INFO C8\STAT C8 may be removed by taking COMPSCI 8, COMPSCI 8, or DATA 8.

#### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

**Summer:** 8 weeks - 6 hours of lecture and 4 hours of laboratory per week

#### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Computer Science C8/Statistics C8/Information C8

**Also listed as:** COMPSCI C8/DATA C8/STAT C8

### INFO 98 Directed Group Study for Lower Division Undergraduates 1 - 4 Units

Terms offered: Spring 2025, Fall 2024, Fall 2022

Lectures and small group discussions focusing on topics of interest, varying from semester to semester.

#### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

#### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

#### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

### INFO 101 Introduction to Information Studies 3 Units

Terms offered: Fall 2022

This class introduces key issues, concepts, and methodologies of information studies. Students consider questions such as: what does it mean to live in an information society? What are the human and social aspects of the design of technology? How do policy, law, and other social forces affect this? How can technology and data be designed for social good? Students will become familiar with the kinds of research and multidisciplinary methods used in information studies. Students leave the course with tools to understand the politics, economics, and culture of information systems; a nuanced understanding of contemporary case studies involving technological systems in society; and a solid foundation for further study in information science.

#### Objectives & Outcomes

**Student Learning Outcomes:** Be introduced to the technology industry, technology design, human-computer interaction, and 'the sociotechnical' Establish a foundation for succeeding in additional upper-division INFO courses.

Gain a nuanced understanding of contemporary case studies involving technological systems in society

Learn tools to understand the politics, economics, and culture of information systems

#### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

#### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Ames

**Formerly known as:** Information Systems and Management 101

## INFO 114 User Experience Research 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Methods and concepts of creating design requirements and evaluating prototypes and existing systems. Emphasis on computer-based systems, including mobile system and ubiquitous computing, but may be suitable for students interested in other domains of design for end-users. Includes quantitative and qualitative methods as applied to design, usually for short-term studies intended to provide guidance for designers.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for 114 after taking 214.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 10 weeks - 4.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

## INFO 134 Information Technology Economics, Strategy, and Policy 3 Units

Terms offered: Spring 2024, Spring 2022, Spring 2021

This course applies economic tools and principles, including game theory, industrial organization, information economics, and behavioral economics, to analyze business strategies and public policy issues surrounding information technologies and IT industries. Topics include: economics of information goods, services, and platforms; economics of information and asymmetric information; economics of artificial intelligence, cybersecurity, data privacy, and peer production; strategic pricing; strategic complements and substitutes; competition and antitrust; Internet industry structure and regulation; network cascades, network formation, and network structure.

### Rules & Requirements

**Prerequisites:** Senior standing

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Chuang

## INFO 153A Front-End Web Architecture 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course is a survey of technologies that power the user interfaces of web applications on a variety of devices today, including desktop, mobile, and tablet devices. This course will delve into some of the core Front-End languages and frameworks (HTML/CSS/JS/React/Redux), as well as the underlying technologies enable web applications (HTTP, URI, JSON).

The goal of this course is to provide an overview of the technical issues surrounding user interfaces powered by the web today, and to provide a solid and comprehensive perspective of the Web's constantly evolving landscape.

### Rules & Requirements

**Prerequisites:** COMPSCI 61A. Strong programming skills

**Credit Restrictions:** Students will receive no credit for INFO 153A after completing INFO 253A.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of laboratory per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

## INFO 153B Back-End Web Architecture 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course is a survey of web technologies that are used to build back-end systems that enable rich web applications. Utilizing technologies such as Python, FastAPI, Docker, RDBMS/NoSQL databases, and Celery/Redis, this class aims to cover the foundational concepts that drive the web today. This class focuses on building APIs using microservices that power everything from content management systems to data engineering pipelines that provide insights by processing large amounts of data. The goal of this course is to provide an overview of the technical issues surrounding back-end systems today and to provide a solid and comprehensive perspective of the web's constantly evolving landscape.

### Rules & Requirements

**Prerequisites:** COMPSCI 61A and COMPSCI 61B. Strong Programming Skills

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of laboratory per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

## INFO 159 Natural Language Processing 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course introduces students to natural language processing and exposes them to the variety of methods available for reasoning about text in computational systems. NLP is deeply interdisciplinary, drawing on both linguistics and computer science, and helps drive much contemporary work in text analysis (as used in computational social science, the digital humanities, and computational journalism). We will focus on major algorithms used in NLP for various applications (part-of-speech tagging, parsing, coreference resolution, machine translation) and on the linguistic phenomena those algorithms attempt to model. Students will implement algorithms and create linguistically annotated data on which those algorithms depend.

### Rules & Requirements

**Prerequisites:** COMPSCI 61B; COMPSCI 70, COMPSCI C100 / STAT C100 / DATA C100, MATH 55, STAT 134 or STAT C140 / DATA C140; strong programming skills

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Bamman

## INFO 188 Behind the Data: Humans and Values 3 Units

Terms offered: Fall 2024, Fall 2022, Fall 2021

This course blends social and historical perspectives on data with ethics, law, policy, and case examples to help students understand current ethical and legal issues in data science and machine learning. Legal, ethical, and policy-related concepts addressed include: research ethics; privacy and surveillance; bias and discrimination; and oversight and accountability. These issues will be addressed throughout the lifecycle of data--from collection to storage to analysis and application. The course emphasizes strategies, processes, and tools for attending to ethical and legal issues in data science work. Course assignments emphasize researcher and practitioner reflexivity, allowing students to explore their own social and ethical commitments.

### Objectives & Outcomes

**Student Learning Outcomes:** Critically assess one's own work and education in data science

Identify and articulate basic ethical and policy frameworks

Understand the relationship between one's own work and ethical frameworks and legal obligations

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Mulligan

## INFO 190 Special Topics in Information 1 - 3 Units

Terms offered: Spring 2024, Fall 2020, Fall 2019

A seminar focusing on topics of current interest. Topics will vary. A seminar paper will be required. Open to students from other departments.

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-3 hours of seminar per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

## INFO 198 Directed Group Study for Advanced Undergraduates 1 - 4 Units

Terms offered: Fall 2023, Spring 2023, Spring 2015

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

## INFO 199 Individual Study 1 - 4 Units

Terms offered: Fall 2023, Spring 2023, Spring 2016

Individual study of topics in information management and systems under faculty supervision.

### Rules & Requirements

**Credit Restrictions:** Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

### Additional Details

**Subject/Course Level:** Information/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

## INFO 201 Research Design and Applications for Data and Analysis 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

This course introduces students to the data sciences landscape, focusing on learning how to apply data science techniques to uncover, enrich, and answer the questions you will encounter and originate in the industry. After an introduction to data science and an overview of the course, students will explore decision-making in organizations and big data's emerging role in guiding tactical and strategic decisions. Lectures, readings, discussions, and assignments will teach how to apply disciplined, creative methods to ask better questions, gather data, interpret results, and convey findings to various audiences in ways that change minds and behaviors.

### Objectives & Outcomes

**Student Learning Outcomes:** Design a data science project that follows best-practice research design principles.

Design effective research questions that lead to actionable insight and strategic decisions.

Develop a strategy to communicate data-driven insight.

Develop data collection methods for specific outcomes.

Evaluate risks in data science projects related to scientific validity, stakeholder expectations, and law and ethics.

Justify an analytical approach to inform efficient and effective decision-making.

Justify the role and importance of data science in organizations.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 202 Information Organization and Retrieval 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course introduces the intellectual foundations of information organization and retrieval: conceptual modeling, semantic representation, vocabulary and metadata design, classification, and standardization, as well as information retrieval practices, technology, and applications, including computational processes for analyzing information in both textual and non-textual formats.

### Rules & Requirements

**Prerequisites:** Students should have a working knowledge of the Python programming language

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 203 Social Issues of Information 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course is designed to be an introduction to the topics and issues associated with information and information technology and its role in society. Throughout the semester we will consider both the consequence and impact of technologies on social groups and on social interaction and how society defines and shapes the technologies that are produced. Students will be exposed to a broad range of applied and practical problems, theoretical issues, as well as methods used in social scientific analysis. The four sections of the course are: 1) theories of technology in society, 2) information technology in workplaces 3) automation vs. humans, and 4) networked sociability.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 205 Information Law and Policy 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course uses examples from various commercial domains—retail, health, credit, entertainment, social media, and biosensing/quantified self—to explore legal and ethical issues including freedom of expression, privacy, research ethics, consumer protection, information and cybersecurity, and copyright. The class emphasizes how existing legal and policy frameworks constrain, inform, and enable the architecture, interfaces, data practices, and consumer facing policies and documentation of such offerings; and, fosters reflection on the ethical impact of information and communication technologies and the role of information professionals in legal and ethical work.

### Rules & Requirements

**Prerequisites:** Consent of instructor required for nonmajors

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Mulligan

## INFO 206A Introduction to Programming and Computation 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course introduces the basics of computer programming that are essential for those interested in computer science, data science, and information management. Students will write their own interactive programs (in Python) to analyze data, process text, draw graphics, manipulate images, and simulate physical systems. Problem decomposition, program efficiency, and good programming style are emphasized throughout the course.

### Hours & Format

**Fall and/or spring:** 7.5 weeks - 4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 206B Introduction to Data Structures and Analytics 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

The ability to represent, manipulate, and analyze structured data sets is foundational to the modern practice of data science. This course introduces students to the fundamentals of data structures and data analysis (in Python). Best practices for writing code are emphasized throughout the course. This course forms the second half of a sequence that begins with INFO 206A. It may also be taken as a stand-alone course by any student that has sufficient Python experience.

### Rules & Requirements

**Prerequisites:** INFO 206A or equivalent, or permission of instructor

**Credit Restrictions:** Course must be completed for a letter grade to fulfill degree requirements.

### Hours & Format

**Fall and/or spring:** 7.5 weeks - 4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Formerly known as:** Information 206

## INFO 213 Introduction to User Experience Design 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

In this course, students will learn how to design technologies that work well and meet the needs of their users, how to communicate and defend your design decisions, and how human-centered design fits into the broader product development lifecycle. Students are introduced to the field of Human-Computer Interaction (HCI) and build a strong foundation in User Experience (UX) Design. This course is designed to help students understand how design fits within the product development lifecycle and to practice key skills you'll need as a UX practitioner in industry.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 214 User Experience Research 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course addresses concepts and methods of user experience research, from understanding and identifying needs, to evaluating concepts and designs, to assessing the usability of products and solutions. We emphasize methods of collecting and interpreting qualitative data about user activities, working both individually and in teams, and translating them into design decisions. Students gain hands-on practice with observation, interview, survey, focus groups, and expert review. Team activities and group work are required during class and for most assignments. Additional topics include research in enterprise, consulting, and startup organizations, lean/agile techniques, mobile research approaches, and strategies for communicating findings.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 215 Product Design Studio 3 Units

Terms offered: Fall 2024, Fall 2023

This course will give participants hands-on digital product design experience oriented around current industry practice. The course will be project-based with an emphasis on iteration, practice, and critique. During the course, participants will work on a series of design projects through a full design process, including developing appropriate design deliverables, gathering feedback, and iterating on designs.

### Objectives & Outcomes

**Course Objectives:** The course objective is to provide students interested in web and mobile Product Design with skills, practice, and experience that will prepare them for careers in product design and design-related roles.

### Rules & Requirements

**Prerequisites:** DES INV 15 or COMPSCI 160 or INFO 213 AND INFO 214; or permission of the instructor. Students can take INFO 214 and INFO 215 concurrently, but students may not drop INFO 214 and remain in INFO 215

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Formerly known as:** Information Systems and Management 215



## INFO 217A Human-Computer Interaction (HCI) Research 3 Units

Terms offered: Spring 2024, Fall 2021, Fall 2020

This course is a graduate-level introduction to HCI research. Students will learn to conduct original HCI research by reading and discussing research papers while collaborating on a semester-long research project. Each week the class will focus on a theme of HCI research and review foundational and cutting-edge research relevant to that theme. The class will focus on the following areas of HCI research: ubiquitous computing, social computing, critical theory, and human-AI interaction. In addition to these research topics the class will introduce common qualitative and quantitative methodologies in HCI research.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Salehi

## INFO 218 Concepts of Information 3 Units

Terms offered: Spring 2024, Spring 2022, Spring 2020

As it's generally used, "information" is a collection of notions, rather than a single coherent concept. In this course, we'll examine conceptions of information based in information theory, philosophy, social science, economics, and history. Issues include: How compatible are these conceptions; can we talk about "information" in the abstract? What work do these various notions play in discussions of literacy, intellectual property, advertising, and the political process? And where does this leave "information studies" and "the information society"?

### Rules & Requirements

**Prerequisites:** Graduate standing

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructors:** Duguid, Nunberg

## INFO 225 Foundations of Leadership and Influence in Tech 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

Succeeding in today's distributed, technology-rich companies, demands effectively leading and influencing others. This dynamic, interactive course is designed for ambitious professionals who are looking to have an impact, whether just starting out or already managing teams. Drawing heavily from social psychology and organizational behavior, this course goes beyond theory to develop real-world approaches. Students will engage with case studies and hands-on exercises to build the practical, research-backed skills needed to drive business impact with leadership and influence. A key focus is understanding workplace hierarchies and social dynamics, equipping students to thrive in complex, organizations—whether in tech or beyond.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 231 Decisions and Algorithms 3 Units

Terms offered: Fall 2024, Spring 2013, Spring 2011

This class is for graduate students interested in getting an advanced understanding of judgments and decisions made with predictive algorithms. The course will survey the vast literature on the psychology of how people arrive at judgments and make decisions with the help of statistical information, focused mostly on experimental lab evidence from cognitive and social psychology. Then study the burgeoning evidence on how people use statistical algorithms in practice, exploring field evidence from a range of settings from criminal justice and healthcare to housing and labor markets. Special attention is paid to psychological principles that impact the effectiveness and fairness of algorithms deployed at scale.

### Objectives & Outcomes

**Course Objectives:** Help students understand systematic human errors and explore potential algorithmic solutions.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 233 Social Psychology and Information Technology 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Discusses application of social psychological theory and research to information technologies and systems; we focus on sociological social psychology, which largely focuses on group processes, networks, and interpersonal relationships. Information technologies considered include software systems used on the internet such as social networks, email, and social games, as well as specific hardware technologies such as mobile devices, computers, wearables, and virtual/augmented reality devices. We examine human communication practices, through the lens of different social psychology theories, including: symbolic interaction, identity theories, social exchange theory, status construction theory, and social networks and social structure theory.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Cheshire

## INFO 234 Information Technology Economics, Strategy, and Policy 3 Units

Terms offered: Spring 2024, Spring 2022, Spring 2021

This course applies economic tools and principles, including game theory, industrial organization, information economics, and behavioral economics, to analyze business strategies and public policy issues surrounding information technologies and IT industries. Topics include: economics of information goods, services, and platforms; economics of information and asymmetric information; economics of artificial intelligence, cybersecurity, data privacy, and peer production; strategic pricing; strategic complements and substitutes; competition and antitrust; Internet industry structure and regulation; network cascades, network formation, and network structure.

### Objectives & Outcomes

#### Course Objectives:

INFO234 is a graduate level course in the school's topical area of Information Economics and Policy, and can be taken by the masters and doctoral students to satisfy their respective degree requirements.

#### Student Learning Outcomes:

Students will learn to identify, describe, and analyze business strategies and public policy issues of particular relevance to the information industry. Students will learn and apply economic tools and principles to analyze phenomena such as platform competition, social epidemics, and peer production, and current policy issues such as network neutrality and information privacy. Through integrated assignments and project work, the students will apply the theoretical concepts and analytic tools learned in lectures and readings to develop and evaluate a business model, product, or service of their choosing, e.g., a start-up idea they are pursuing.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Chuang



## INFO 239 Technology and Delegation 3 Units

Terms offered: Fall 2025, Fall 2021, Fall 2019

The introduction of technology increasingly delegates responsibility to technical actors, often reducing traditional forms of transparency and challenging traditional methods for accountability. This course explores the interaction between technical design and values including: privacy, accessibility, fairness, and freedom of expression. We will draw on literature from design, science and technology studies, computer science, law, and ethics, as well as primary sources in policy, standards and source code. We will investigate approaches to identifying the value implications of technical designs and use methods and tools for intentionally building in values at the outset.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Mulligan

## INFO 241 Experiments and Causal Inference 3 Units

Terms offered: Fall 2025, Fall 2024, Spring 2024

This course introduces students to experimentation in data science. Particular attention is paid to the formation of causal questions, and the design and analysis of experiments to provide answers to these questions. This topic has increased considerably in importance since 1995, as researchers have learned to think creatively about how to generate data in more scientific ways, and developments in information technology has facilitated the development of better data gathering.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 247 Information Visualization and Presentation 4 Units

Terms offered: Spring 2025, Spring 2023, Spring 2022

The design and presentation of digital information. Use of graphics, animation, sound, visualization software, and hypermedia in presenting information to the user. Methods of presenting complex information to enhance comprehension and analysis. Incorporation of visualization techniques into human-computer interfaces. Course must be completed for a letter grade to fulfill degree requirements.

### Rules & Requirements

**Prerequisites:** INFO 206B or knowledge of programming and data structures with consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Hearst

## INFO 251 Applied Machine Learning 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Provides a theoretical and practical introduction to modern techniques in applied machine learning. Covers key concepts in supervised and unsupervised machine learning, including the design of machine learning experiments, algorithms for prediction and inference, optimization, and evaluation. Students will learn functional, procedural, and statistical programming techniques for working with real-world data.

### Objectives & Outcomes

#### Student Learning Outcomes: •

Effectively design, execute, and critique experimental and non-experimental methods from statistics, machine learning, and econometrics.

- Implement basic algorithms on structured and unstructured data, and evaluate the performance of these algorithms on a variety of real-world datasets.
- Understand the difference between causal and non-causal relationships, and which situations and methods are appropriate for both forms of analysis.
- Understand the principles, advantages, and disadvantages of different algorithms for supervised and unsupervised machine learning.

### Rules & Requirements

**Prerequisites:** INFO 206B, or equivalent course in Python programming; INFO 271B, or equivalent graduate-level course in statistics or econometrics; or permission of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Blumenstock

## INFO 253A Front-End Web Architecture 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course is a survey of technologies that power the user interfaces of web applications on a variety of devices today, including desktop, mobile, and tablet devices. This course will delve into some of the core Front-End languages and frameworks (HTML/CSS/JS/React/Redux), as well as the underlying technologies enable web applications (HTTP, URI, JSON).

The goal of this course is to provide an overview of the technical issues surrounding user interfaces powered by the web today, and to provide a solid and comprehensive perspective of the Web's constantly evolving landscape.

### Rules & Requirements

**Prerequisites:** Introductory programming

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of laboratory per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Formerly known as:** Information 253

## INFO 253B Back-End Web Architecture 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course is a survey of web technologies that are used to build back-end systems that enable rich web applications. Utilizing technologies such as Python, Flask, Docker, RDBMS/NoSQL databases, and Spark, this class aims to cover the foundational concepts that drive the web today. This class focuses on building APIs using micro-services that power everything from content management systems to data engineering pipelines that provide insights by processing large amounts of data.

The goal of this course is to provide an overview of the technical issues surrounding back-end systems today, and to provide a solid and comprehensive perspective of the web's constantly evolving landscape.

### Rules & Requirements

**Prerequisites:** Introductory programming

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of laboratory per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 255 Privacy Engineering 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

The course overviews a broad number of paradigms of privacy from a technical point of view. The course is designed to assist system engineers and information systems professionals in getting familiar with the subject of privacy engineering and train them in implementing those mechanisms. In addition, the course is designed to coach those professionals to critically think about the strengths and weaknesses of the different privacy paradigms. These skills are important for cybersecurity professionals and enable them to effectively incorporate privacy-awareness in the design phase of their products.

### Objectives & Outcomes

**Course Objectives:** Critique the strengths and weaknesses of the different privacy paradigms  
Describe the different technical paradigms of privacy that are applicable for systems engineering  
Implement such privacy paradigms, and embed them in information systems during the design process and the implementation phase  
Stay updated about the state of the art in the field of privacy engineering

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for INFO 255 after completing INFO 255. A deficient grade in INFO 255 may be removed by taking INFO 255.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 256 Applied Natural Language Processing 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course examines the use of natural language processing as a set of methods for exploring and reasoning about text as data, focusing especially on the applied side of NLP — using existing NLP methods and libraries in Python in new and creative ways. Topics include part-of-speech tagging, shallow parsing, text classification, information extraction, incorporation of lexicons and ontologies into text analysis, and question answering. Students will apply and extend existing software tools to text-processing problems.

### Rules & Requirements

**Prerequisites:** INFO 206A and INFO 206B or proficient programming in Python (programs of at least 200 lines of code). Proficient with basic statistics and probabilities

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Bamman

## INFO 258 Data Engineering 4 Units

Terms offered: Spring 2025, Spring 2024, Fall 2022

This course will cover the principles and practices of managing data at scale, with a focus on use cases in data analysis and machine learning. We will cover the entire life cycle of data management and science, ranging from data preparation to exploration, visualization and analysis, to machine learning and collaboration, with a focus on ensuring reliable, scalable operationalization.

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### Rules & Requirements

**Prerequisites:** INFO 206B or equivalent college-level course in computer science in Python with a C- or better AND COMPSCI C100/DATA C100/STAT C100 or COMPSCI 189 or INFO 251 or DATA 144 or equivalent college-level course in data science with a C- or better

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructors:** Hellerstein, Parameswaran, Jain

## INFO 259 Natural Language Processing 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course introduces students to natural language processing and exposes them to the variety of methods available for reasoning about text in computational systems. NLP is deeply interdisciplinary, drawing on both linguistics and computer science, and helps drive much contemporary work in text analysis (as used in computational social science, the digital humanities, and computational journalism). We will focus on major algorithms used in NLP for various applications (part-of-speech tagging, parsing, coreference resolution, machine translation) and on the linguistic phenomena those algorithms attempt to model. Students will implement algorithms and create linguistically annotated data on which those algorithms depend.

### Rules & Requirements

**Prerequisites:** Familiarity with data structures, algorithms, linear algebra, and probability

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Bamman

## INFO C262 Theory and Practice of Tangible User Interfaces 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course explores the theory and practice of Tangible User Interfaces, a new approach to Human Computer Interaction that focuses on the physical interaction with computational media. The topics covered in the course include theoretical framework, design examples, enabling technologies, and evaluation of Tangible User Interfaces. Students will design and develop experimental Tangible User Interfaces using physical computing prototyping tools and write a final project report.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Ryokai

**Also listed as:** NWMEDIA C262

## INFO C265 Interface Aesthetics 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course will cover new interface metaphors beyond desktops (e.g., for mobile devices, computationally enhanced environments, tangible user interfaces) but will also cover visual design basics (e.g., color, layout, typography, iconography) so that we have systematic and critical understanding of aesthetically engaging interfaces. Students will get a hands-on learning experience on these topics through course projects, design critiques, and discussions, in addition to lectures and readings.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Ryokai

**Also listed as:** NWMEDIA C265

## INFO 271B Quantitative Research Methods for Information Systems and Management 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

Introduction to many different types of quantitative research methods, with an emphasis on linking quantitative statistical techniques to real-world research methods. Introductory and intermediate topics include: defining research problems, theory testing, casual inference, probability, and univariate statistics. Research design and methodology topics include: primary/secondary survey data analysis, experimental designs, and coding qualitative data for quantitative analysis.

### Rules & Requirements

**Prerequisites:** Introductory statistics recommended

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Cheshire

## INFO 272 Qualitative Research Methods for Information Systems and Management 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

Theory and practice of naturalistic inquiry. Grounded theory. Ethnographic methods including interviews, focus groups, naturalistic observation. Case studies. Analysis of qualitative data. Issues of validity and generalizability in qualitative research.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Burrell

## INFO 288 Big Data and Development 3 Units

Terms offered: Spring 2024, Spring 2021, Spring 2019

As new sources of digital data proliferate in developing economies, there is the exciting possibility that such data could be used to benefit the world's poor. Through a careful reading of recent research and through hands-on analysis of large-scale datasets, this course introduces students to the opportunities and challenges for data-intensive approaches to international development. Students should be prepared to dissect, discuss, and replicate academic publications from several fields including development economics, machine learning, information science, and computational social science. Students will also conduct original statistical and computational analysis of real-world data.

### Rules & Requirements

**Prerequisites:** Students are expected to have prior graduate training in machine learning, econometrics, or a related field

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Blumenstock

## INFO 289 Public Interest Cybersecurity: The Cybersecurity Clinic Practicum 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

This course provides students with real-world experience assisting politically vulnerable organizations and persons around the world to develop and implement sound cybersecurity practices. In the classroom, students study basic theories and practices of digital security, intricacies of protecting largely under-resourced organizations, and tools needed to manage risk in complex political, sociological, legal, and ethical contexts. In the clinic, students work in teams supervised by Clinic staff to provide direct cybersecurity assistance to civil society organizations. We emphasize pragmatic, workable solutions that take into account the unique needs of each partner organization.

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit with instructor consent.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 290 Special Topics in Information 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Specific topics, hours, and credit may vary from section to section, year to year.

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes. Students may enroll in multiple sections of this course within the same semester.

### Hours & Format

#### Fall and/or spring:

8 weeks - 2-8 hours of lecture per week

15 weeks - 1-4 hours of lecture per week

**Summer:** 10 weeks - 1.5-6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 290M Special Topics in Management 1 - 4 Units

Terms offered: Fall 2025, Fall 2024, Spring 2024

Specific topics, hours, and credit may vary from section to section and year to year.

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes. Students may enroll in multiple sections of this course within the same semester.

### Hours & Format

#### Fall and/or spring:

8 weeks - 2-8 hours of lecture per week

15 weeks - 1-4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 290S Special Topics in Social Science and Policy 2 - 4 Units

Terms offered: Fall 2024, Fall 2023, Spring 2023

Specific topics, hours, and credit may vary from section to section and year to year.

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes. Students may enroll in multiple sections of this course within the same semester.

### Hours & Format

#### Fall and/or spring:

8 weeks - 4-8 hours of lecture per week  
15 weeks - 2-4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 290T Special Topics in Technology 2 - 4 Units

Terms offered: Spring 2025, Spring 2024, Fall 2023

Specific topics, hours, and credit may vary from section to section and year to year.

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes. Students may enroll in multiple sections of this course within the same semester.

### Hours & Format

#### Fall and/or spring:

8 weeks - 4-8 hours of lecture per week  
15 weeks - 2-4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 291 Special Topics in Information 1 - 4 Units

Terms offered: Prior to 2007

Specific topics, hours, and credit may vary from section to section, year to year.

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Hoofnagle

## INFO 293 Information Management Practicum 0.5 Units

Terms offered: Fall 2016, Summer 2016 10 Week Session, Spring 2016

This course is designed to help School of Information graduate students maximize their internship, practicum, or independent research experiences.

### Objectives & Outcomes

**Course Objectives:** Experience the practical application of your academic knowledge to real-world professional contexts;  
Gain insight into an organization and how one might make a valuable contribution;  
Reflect on the information the experience has provided, to see if it fits within one's personal value set and work/life manifestos.  
Try out various professional activities to see when you are in 'flow';

**Student Learning Outcomes:** Assess the organizational culture of a company, governmental body, or non-governmental organization  
Connect academic knowledge about information management to real-world professional contexts  
Evaluate the effectiveness of a variety of information science techniques when deployed in organizational situations  
Integrate the student's own individual professional goals with the organization's needs relevant to the internship or practicum  
Reflect critically on the internship or practicum experience

### Rules & Requirements

**Prerequisites:** Consent of a Head Graduate Adviser for the School of Information

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of internship per week

**Summer:** 10 weeks - 1.5 hours of internship per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.



## INFO 294 Doctoral Research and Theory Workshop 2 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

An intensive weekly discussion of current and ongoing research by Ph.D. students with a research interest in issues of information (social, legal, technical, theoretical, etc.). Our goal is to focus on critiquing research problems, theories, and methodologies from multiple perspectives so that we can produce high-quality, publishable work in the interdisciplinary area of information research. Circulated material may include dissertation chapters, qualifying papers, article drafts, and/or new project ideas. We want to have critical and productive discussion, but above all else we want to make our work better: more interesting, more accessible, more rigorous, more theoretically grounded, and more like the stuff we enjoy reading.

### Rules & Requirements

**Prerequisites:** PhD students only

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of workshop per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

**Instructor:** Cheshire

## INFO 295 Doctoral Colloquium 1 Unit

Terms offered: Fall 2024, Fall 2023, Spring 2023

Colloquia, discussion and readings designed to introduce students to the range of interests of the school.

### Rules & Requirements

**Prerequisites:** Ph.D. standing in the School of Information

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of colloquium per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

## INFO 296A Seminar 2 - 4 Units

Terms offered: Spring 2025, Fall 2024, Spring 2024

Topics in information management and systems and related fields. Specific topics vary from year to year.

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-4 hours of seminar per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 298 Directed Group Study 1 - 4 Units

Terms offered: Fall 2019, Spring 2016, Fall 2015

Group projects on special topics in information management and systems.

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Credit Restrictions:** Students will receive no credit for INFO 298 after completing INFOSYS 298.

**Repeat rules:** Course may be repeated for credit when topic changes. Students may enroll in multiple sections of this course within the same semester.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

**Summer:** 8 weeks - 1.5-7.5 hours of directed group study per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 298A Directed Group Work on Final Project 1 - 4 Units

Terms offered: Spring 2022, Spring 2016, Spring 2015

The final project is designed to integrate the skills and concepts learned during the Information School Master's program and helps prepare students to compete in the job market. It provides experience in formulating and carrying out a sustained, coherent, and significant course of work resulting in a tangible work product; in project management, in presenting work in both written and oral form; and, when appropriate, in working in a multidisciplinary team. Projects may take the form of research papers or professionally-oriented applied work.

### Rules & Requirements

**Prerequisites:** Consent of instructor. Course must be taken for a letter grade to fulfill degree requirements

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 299 Individual Study 1 - 12 Units

Terms offered: Fall 2023, Summer 2016 8 Week Session, Spring 2016

Individual study of topics in information management and systems under faculty supervision.

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes. Students may enroll in multiple sections of this course within the same semester.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-12 hours of independent study per week

**Summer:** 8 weeks - 2-22.5 hours of independent study per week

### Additional Details

**Subject/Course Level:** Information/Graduate

**Grading:** Letter grade.

## INFO 375 Teaching Assistance Practicum 2 Units

Terms offered: Spring 2025, Spring 2024, Fall 2021

Discussion, reading, preparation, and practical experience under faculty supervision in the teaching of specific topics within information management and systems. Does not count toward a degree.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Information/Professional course for teachers or prospective teachers

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Duguid