### INFORMATION SCIENCES (IS)

IS Class Schedule ([Link](https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/IS))

#### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit:</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS 226</td>
<td>Introduction to HCI</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 229</td>
<td>Web Design Fundamentals</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 204</td>
<td>Research Design for Information Sciences</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 203</td>
<td>Analytical Foundations for Information Problems</td>
<td>3 Hours</td>
<td>None</td>
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<tr>
<td>IS 205</td>
<td>Programming for Information Problems</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 206</td>
<td>Introduction to Database Concepts &amp; Applications</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 207</td>
<td>Data Science Discovery</td>
<td>4 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 145</td>
<td>Mapping Inequalities</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 199</td>
<td>Undergraduate Open Seminar</td>
<td>1 to 5</td>
<td>May be repeated</td>
</tr>
<tr>
<td>IS 107</td>
<td>Data Science Discovery</td>
<td>4 Hours</td>
<td>Same as CS 107 and STAT 107. See STAT 107. This course satisfies the General Education Criteria for: Quantitative Reasoning I</td>
</tr>
<tr>
<td>IS 100</td>
<td>Exploring the iSchool with a Human-Centered Lens</td>
<td>1 Hour</td>
<td>Prerequisite: Restricted to Majors Only. First Semester Freshman, Intercolligate and Off-Campus Transfer Students Only.</td>
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<td>IS 101</td>
<td>Introduction to Information Sciences</td>
<td>3 Hours</td>
<td>This course provides an introduction to the field of information science and the major. It offers both historical and contemporary context for understanding the role of information in society. Focus is placed upon critical analysis of information problems as well as understanding the creation, use, and distribution of information in business, policy, education, government, health, and other sectors.</td>
</tr>
<tr>
<td>IS 102</td>
<td>Social Aspects Info Tech</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 103</td>
<td>Analytical Foundations for Information Problems</td>
<td>3 Hours</td>
<td>MATH 112 or Required ALEKS Score.</td>
</tr>
<tr>
<td>IS 104</td>
<td>Research Design for Information Sciences</td>
<td>3 Hours</td>
<td>None</td>
</tr>
<tr>
<td>IS 105</td>
<td>Programming for Information Problems</td>
<td>3 Hours</td>
<td>None</td>
</tr>
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Information listed in this catalog is current as of 02/2020
IS 236  User Research & Evaluation  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/236)
This course will teach students about user research and evaluation. They will learn to apply various user research methods, gather and understand user requirements and needs for a wide range of user populations, especially those that are under-served (e.g., children, older adults, people with disabilities), conduct user evaluations of prototypes and interactive systems, and communicate effectively about the research insights and make actionable design suggestions. Prerequisite: IS 204, or IS 226, or equivalent course.

IS 265  Innovation Illinois: From Accessible Design to Supercomputing Cultures  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/265)
Same as CS 265 and MACS 265. See MACS 265.

IS 266  Community Innovation  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/266)
How do communities contribute to transformative, world-changing innovations? Why is their participation indispensable for fostering change? And what makes change ultimately transformative across diverse spaces and time? Community Innovation explores how engagement with interdisciplinary communities and collaborations, as well as histories of globally-changing local innovations from the Illinois were critical to fostering and sustaining new social and technical practices across space and time. Same as MACS 266.

IS 304  Advanced Research Design  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/304)
This course is a practical, hands-on class in social science research methods in the field of information sciences. Students will learn both qualitative and quantitative methods, including survey design, interview techniques, and observation strategies. Examples and practical exercises will be geared towards future work as information professionals and will enable students to design and apply research strategies that help them understand the intersections between people, information, and technologies. Prerequisite: IS 204, or IS 236, or similar research course.

IS 305  Programming for Information Problems II  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/305)
Continuing coverage of common data processing and computing methods in the information sciences. Building on programming skills from IS 205, additional programming patterns will be explored, and additional tools like the command line and version control will be explored in the context of information problems. Course will be in Python. Some Python review will be provided, but students without prior experience in Python should contact the school or instructor for review material. Prerequisite: IS 205, or CS 101, or CS 105, or CS 125, or ECE 120, or equivalent. Basic programming (Python) proficiency required.

IS 308  Race, Gender, and Information Technology  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/308)
In this course we will critically examine the ways in which information and communication technologies (ICTs) are shaped by – and help to shape – social relations of race and gender; and we will extend our review to other categories of identity and exclusion as well, such as age, ability, geography and ethnicity. We will also explore the various benefits and burdens of the information society and how these are socially distributed, and conduct case-studies of policies, practices, and programs designed to enhance opportunities and/or mitigate disadvantages through the creative or disruptive use of ICTs. Directed and supervised investigation of selected topics in information studies that may include among others computers and culture; information policy; community information systems; production, retrieval and evaluation of scientific or social science knowledge; computer-mediated communication; and computer-supported cooperative work. Prerequisite: IS 202 Highly recommended. Sophomore standing.

IS 309  Computers and Culture  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/309)
This course explores cultural ideas about computers, including hopes and fears about the effects of computers on our lives. We will analyze images of computers in fiction and movies. The course will also discuss hackers, online subcultures, and other computer-related subcultures, and the integration of computers into various cultural practices. The course will also explore the different uses of digital media. Prerequisite: IS 202 Highly recommended.

IS 310  Computing in the Humanities  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/310)
Explores use and application of technology to scholarly activity in the humanities, including projects that put classic texts on the web or create multimedia application on humanities topics. Same as INFO 310. Prerequisite: Sophomore standing.

IS 311  History and Foundations of the Information Society  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/311)
Today’s information society bespeaks a long history, exhibiting marked continuities with the past as well as some sharply defined new features. Yet the historical foundations of the information society remain poorly understood. This course develops such a framework, by examining emergent information institutions and practices from early modern Europe to the later 20th century. It examines the historical development of the information society through a number of important conceptual lenses, including: modernity and post-modernity; Fordist and post-Fordist capitalism; social class and information poverty; social and technological determinism; utopianism and dystopianism; and empire and globalization. Prerequisite: IS 202 Highly recommended.

IS 316  The Design of Usable Information Interfaces  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/316)
Examines issues of Human Computer Interaction and the design of better computer interfaces. Prerequisite: Sophomore standing.
IS 334 Usable Privacy and Security  credit: 4 Hours. ([https://courses.illinois.edu/schedule/terms/IS/334](https://courses.illinois.edu/schedule/terms/IS/334))
From passwords to email encryption to privacy settings on social media services, it is widely recognized that human factors, usability or user experience play a crucial role in effective privacy and security solutions. Designers of privacy and security solutions need to understand how people might use, interact or appropriate the mechanisms they develop. This course introduces various aspects of user experience (e.g., usability problems, user interface designs, conflicting needs) related to privacy and security systems. It is also designed to provide students with knowledge and opportunities to analyze and evaluate user experience of privacy and security systems. This course is suitable for students who are interested in privacy and security, or user experience, or both.

IS 357 Introduction to Data Storytelling  credit: 3 Hours. ([https://courses.illinois.edu/schedule/terms/IS/357](https://courses.illinois.edu/schedule/terms/IS/357))
Communicating with the right audience in the right way connotes creation of ways and approaches that can serve diverse populations within and beyond a particular or specific culture. In the context of our school, the iSchool at the University of Illinois, we propose to approach strategic communication from the perspective of storytelling thinking. The goal is to introduce students to the philosophical, social, and relational dynamics of "story" among people as all human storyteller as well as organizations of all sizes across a wide spectrum of fields including library as storytelling organizations. It also aims to draw students to explore how a story foregrounds bridge-building dialog, affects the power of information, and thus maximize human potential. Students will be exposed to a range of opportunities to apply storytelling thinking as a tool to identify the audience, design means to communicate with them, and develop dynamic triangle of people sharing stories, engaging in constructive dialogues and reinterpreting etc.

IS 358 Introduction to Literacies for Youth  credit: 3 Hours. ([https://courses.illinois.edu/schedule/terms/IS/358](https://courses.illinois.edu/schedule/terms/IS/358))
An overview of youth literacies covering: popular literacy myths, censorship, cognitive processes behind reading, visual and digital literacies, contemporary youth practices, government policies, and literacy education in schools. Course readings include fictional works and scholarship from the fields of education, library science, history, media studies, critical race studies, and literary and cultural studies. Students learn the history of marginalized youth in America in order to understand how literacies are defined, promoted, or stigmatized today.

IS 368 Youth Community Engagement  credit: 3 Hours. ([https://courses.illinois.edu/schedule/terms/IS/368](https://courses.illinois.edu/schedule/terms/IS/368))
This course examines youth services by surveying how youth serving organizations meet young people's developmental, informational, social, personal, and cultural needs through programs and services. The course will provide both practical experience and theoretical knowledge for understanding the value and impact of youth services programs; strategies, techniques, and resources for developing these programs; approaches for ensuring programs are relevant to service communities; and methods for assessment and evaluation of program success. Prerequisite: IS 358 Highly recommended.

IS 370 Concepts of Information Behavior Theory  credit: 3 Hours. ([https://courses.illinois.edu/schedule/terms/IS/370](https://courses.illinois.edu/schedule/terms/IS/370))
This course will introduce students to the relationships between users and the information they encounter. Students will become familiar with the concepts of understanding the information needs and information behavior of users, as well as the methods of accessing and assimilating information employed by users. The course will also introduce a range of the major models and theories employed in exploring information needs and behavior. Prerequisite: IS 204, or equivalent course.

IS 378 Information Technology Services for Youth  credit: 3 Hours. ([https://courses.illinois.edu/schedule/terms/IS/378](https://courses.illinois.edu/schedule/terms/IS/378))
This course examines the intersections between youth, information, and technology from a socio-technical perspective. This course will provide both practical experience and theoretical knowledge for understanding the ways youth engage with information via technology, as well as various developmental, social, personal, and cultural contexts that inform those interactions. Students will evaluate examples of youth information and communication technology use and analyze factors including identities, educational and social structures, opportunities and risks, learning and literacy, and potential futures in these areas. Prerequisite: IS 358 Highly recommended.

IS 390 Special Topics in Information Studies  credit: 1 to 3 Hours. ([https://courses.illinois.edu/schedule/terms/IS/390](https://courses.illinois.edu/schedule/terms/IS/390))
Directed and supervised investigation of selected topics in information studies that may include among others computers and culture; information policy; community information systems; production, retrieval and evaluation of scientific or social science knowledge; computer-mediated communication; and computer-supported cooperative work. May be repeated. Prerequisite: Sophomore standing.

IS 401 Introduction to Network Information Systems  credit: 4 Hours. ([https://courses.illinois.edu/schedule/terms/IS/401](https://courses.illinois.edu/schedule/terms/IS/401))
This course provides a deep hands-on sociotechnical dive into technology including electronics, software, and networks culminating in a holistic understanding of networked information systems. The course also explores the methodological landscape of networked information systems including theoretical assumptions, research methods, and research techniques. Throughout, students will be introduced to, and make active use of, skills, frameworks, and standards employed by a wide range of information professionals in selecting, co-designing, appropriating, and innovating-in-use networked information systems. Additional fees may apply. See Class Schedule. 4 undergraduate hours. 4 graduate hours.

IS 403 Children's Materials  credit: 2 to 4 Hours. ([https://courses.illinois.edu/schedule/terms/IS/403](https://courses.illinois.edu/schedule/terms/IS/403))
Evaluation, selection and use of books and other resources for children (ages 0-14) in public libraries and school media centers; explores standard selection criteria for print and nonprint materials in all formats and develops the ability to evaluate and promote materials according to their various uses (personal and curricular) and according to children's various needs (intellectual, emotional, social and physical). 3 undergraduate hours. 2 or 4 graduate hours. Prerequisite: For undergraduates, junior or senior standing and consent of instructor.

IS 407 Introduction to Data Science  credit: 4 Hours. ([https://courses.illinois.edu/schedule/terms/IS/407](https://courses.illinois.edu/schedule/terms/IS/407))
This course introduces students to data science approaches that have emerged from recent advances in programming and computing technology. They will learn to collect and use data from a variety of sources, including the web, in a modern statistical inference and visualization paradigm. The course will be based in the programming language R, but will also use HTML, regular expressions, basic unix tools, XML, and SQL. Supervised and unsupervised statistical learning techniques made possible by recent advances in computing power will also be covered. 4 undergraduate hours. 4 graduate hours.
IS 409  Web Technologies & Techniques  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/409)
This course provides an introduction to the technologies behind the Web. Topics covered include: hypertext, hypermedia, the history of the Web, the role of Web standards and their impact on the development of Web resources. The course introduces principles of Web design and usability. Students will gain an understanding how the Web works and how to design, construct, evaluate, and maintain Web-based materials. 3 undergraduate hours. 4 graduate hours. Priority is given to students pursuing a transfer into the BS/IS degree (http://go.ischool.illinois.edu/BSIS).

IS 410  Storytelling  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/410)
Fundamental principles of the art of storytelling including techniques of adaptation and presentation; content and sources of materials; methods of learning; practice in storytelling; planning the story hour for school and public libraries and other public information settings; and audio, video, and digital media. 3 undergraduate hours. 2 or 4 graduate hours. Prerequisite: For undergraduates, junior or senior standing and consent of instructor.

IS 411  Information Systems Analysis  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/411)
This is an introductory course to Information Systems Analysis. Information Systems Analysts are typically involved in an entire information systems development life cycle from initial planning to final assessment. Several different approaches have been used. Students will gain experience in several aspects of Information Systems Analysis, including business process modeling, requirements gathering, data flow diagramming, and database design. This is a hands-on course with in-class exercises and group practical assignments. 3 undergraduate hours. 4 graduate hours.

IS 413  Teen Materials  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/413)
Evaluation, selection and use of books and other resources for young adults (ages 12-18) in public libraries and school media centers; explores standard selection criteria for print and nonprint materials in all formats and develops the ability to evaluate and promote materials according to their various uses (personal and curricular) and according to young adults’ various needs (intellectual, emotional, social and physical). 3 undergraduate hours. 2 or 4 graduate hours. Prerequisite: For undergraduates, junior or senior standing and consent of instructor.

IS 417  Data Science in the Humanities  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/417)
Human culture provides an ideal testbed for students exploring data science, because the interpretive challenges that lurk beneath the surface in other domains become starkly visible here. For instance, cultural materials usually come to analysts as unstructured texts, images, or sound files, forcing explicit decisions about data modeling and feature extraction. Cultural questions also highlight the importance of interpreting statistical models in relation to a social context. Last but not least: songs, poems, and stories confront us with vivid problems that are inherently fun to explore. This course will start by reviewing descriptive and inferential statistics, and build up to applications of supervised and unsupervised machine learning. We will apply those methods to a range of cultural materials using them to model the pace of stylistic change in popular music, for instance, and the representation of gender in fiction. 3 undergraduate hours. 4 graduate hours.

IS 419  Entrepreneurial Information Technology Design  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/419)
Introduces students to a range of rapid prototyping techniques and methods to analyze needs, opportunities and design spaces. Students will work in teams to develop ideas for novel computational devices or applications to meet identified needs. Covers the interlinked entrepreneurial skills of identifying an unmet need, exploiting technological opportunities, exploring a design space to refine an idea, and communicating a design vision through demonstrations with prototypes and proofs of concept. This enables developers to show how their envisaged working interactive technology will be used productively in a particular real-life context. Communicating the vision of computational devices is a challenge because dynamic use in context is hard for people other than the device’s developers to imagine. The ability to produce convincing, clear, powerful demonstrations even at the early stages of a project is a highly valuable entrepreneurial skill, and also highly applicable within an organization. Directed and supervised investigation of selected topics in information studies that may include among others the social, political, and historical contexts of information creation and dissemination; computers and culture; information policy; community information systems; production, retrieval and evaluation of knowledge; computer-mediated communication. 3 undergraduate hours. 4 graduate hours. Prerequisite: Undergraduate students: Priority is given to students pursuing a transfer into the BS/IS degree (http://go.ischool.illinois.edu/BSIS).

IS 420  Community Informatics  credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/IS/420)
A survey of key concepts in an emerging field that studies how local, historical communities are using information and communications technologies. Covers key principles for work in the non-profit/public sector as people harness new technologies and media as individuals, students, families, community organizations, and so on. Overarching ideas prepare both professionals and researchers to understand and master this environment, whatever their technology background. Especially useful for those interested in public or community libraries, youth services, social work, education, and anyone interested in working with or studying underserved communities. 3 undergraduate hours. No graduate credit.

IS 423  Early Literacy  credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/IS/423)
Librarians fill a key role in the literacy development of young children with opportunities for interaction both in the library and through outreach programs. Key skills center on developing literacy-rich library environments, classroom instructional support, intentional embedding of essentials skills and practices within daily activities and lessons, resources about early literacy strategies to share with families and caregivers. Practitioners will understand the importance of integration of technology to meet the diverse developmental, cultural, social and linguistic needs of children to ensure they are able to create meaning from text. No undergraduate credit. 2 graduate hours.
IS 424  Social Computing credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/424)
This interdisciplinary course introduces students to fundamental theories, methods, technologies and applications of social computing. Students learn about this emerging discipline from two perspectives: First, basic principles of collective information production and processing, and methods for studying these principles. Topics include prediction markets, games with a purpose, open source software development, social media, social networks, information visualization, and online games. Second, socio-technical aspects of the design and usage of respective technologies. This includes participation, privacy and security. Students learn how to solve problems in social computing in a systematic and rigorous fashion. At the end of the course, students will be able to design, manage and execute social computing projects for scholarly and commercial use, and to critically assess work in this area. 3 undergraduate hours. 4 graduate hours.

IS 426  Museum Informatics credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/426)
The course examines various ways that information technologies are and might be used in museums and other cultural heritage settings. Museum websites, visitor apps, interactive exhibits, and uses of digitized and federated collections are explored. Students gain an introduction to Design Thinking by working on a final project that involves the development of a novel computational resource. Students are encouraged to approach class topics from their individual backgrounds in the humanities, sciences, or social sciences. 4 undergraduate hours. 4 graduate hours. Prerequisite: Junior or senior standing and consent of instructor for undergraduates; consent of instructor for non-iSchool graduate students for on-campus sections.

IS 427  Mathematical Foundations for Data Analytics credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/427)
An introduction to topics and techniques in transformational geometry, linear algebra, and calculus most relevant for the study of multivariate analysis, and demonstrates their roles as bases for solving data analytic problems in the information sciences. 3 undergraduate hours. 4 graduate hours. Prerequisite: Recommended IS 203; or IS 205; or IS 206; or equivalent course.

IS 429  Web Content Strategy and Management credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/429)
This course focuses on the basics of web site design, content development, constructing web pages with standard HTML and CSS. We will also cover usability and accessibility, content management system options, multi-media and interactivity in the context of standard HTML and CSS, procedures and policies for organizations, with a concentration on public, academic and special libraries. Students will investigate, design, and draft a representative site. Students may work with non-profit and library clients in constructing and redesigning their web sites or design and construct their own personal professional pages. In this course we will learn how to design and deploy flexible websites that serve dynamically changing content, focusing in particular on the needs of public-service organizations such as libraries, associations, and other not-for-profit entities. No undergraduate credit. 4 graduate hours. Prerequisite: Laptop Required.

IS 430  Foundations of Information Processing credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/430)
Covers common data, document processing, and programming constructs and concepts. Focuses on problem solving and abstraction with a programming language. By the end of the course students will be able to design, develop and test a moderately complex computer program to manage full text, bibliographic records or multimedia. The course prepares students for working with applications in data analytics, data science, digital libraries, text mining and knowledge management. No prior programming background is assumed. 4 undergraduate hours. 2 or 4 graduate hours.

IS 436  Playful Design Methods credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/436)
In this immersive and experiential course, students consider “playfulness” as a key aspect of design methodologies and practices. Looking closely at the philosophical, social, and relational dynamics of play, we will explore how playful approaches to design thinking, game design, and other gameful methodologies can encourage collaboration, engagement, and emergent, transformative solutions to a range of challenges that face us in our rapidly-changing, information-based culture. The course aims to build student competency in design methods through a sequence of game design experiences arising from a broad consideration of play. 3 undergraduate hours. 4 graduate hours.

IS 439  Web Development Using Application Framework credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/439)
A course in the use and evaluation of Web application frameworks for system architects, designers, and developers. Experience in creating static Web sites using HTML and CSS. 3 undergraduate hours. 4 graduate hours. Prerequisite: Experience in Python programming (IS 430 or equivalent). Experience in creating static Web sites using HTML and CSS. Experience in creating dynamic Web sites using tools like PHP is helpful but not required. Experience in using relational databases is helpful but not required.

IS 440  Community Informatics Studio credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/440)
Studio-based learning methods, which are common in art and architectural education, are used to help students address a real-world problem or ‘case’. Working in teams and mentored by the instructor and experts, students will learn how to ‘be a professional’ in an environment in which process is as important as project. During the term, students will participate in a cyclical process of design creation, presentation and critique culminating in a final presentation during the final day(s) of class of the finished proposal/design of how to address the case. Assumes experience in community engagement within a social justice framework. 3 undergraduate hours. 4 graduate hours.

IS 441  Strategic Communication credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/441)
This course introduces students to collaborative approaches to strategic communication designed to persuade, influence and cause action through free and informed choices. There are many methods and tools at the disposal of the strategic communicator. This course will focus on the ethics, forms, techniques and practices of data storytelling as the centerpiece of strategic communications that are appropriate and effective for the information professional. Students learn to coordinate multiple aspects of human-centered information solutions such as information visualizations. Serving diverse information needs and ensuring those needs are met, future information professionals are expected to understand, support, and innovate dynamism of the relationships between people, information and technology. 3 undergraduate hours. 4 graduate hours.
IS 444  Legal Aspects of Information Systems  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/444)
This course is intended to introduce students to principles, fundamental ideas, and cases in the Legal Aspects of Information Systems, with an emphasis on Intellectual Property Law and using scholarship as an exemplar information system, which is considered broadly. This course will be conducted in a seminar format and survey the literature and case law including copyright and open licensing, patents, and trademark law. We will discuss recent policy changes and their impact on the Intellectual Property rights. Where appropriate we will compare American jurisprudence to international Intellectual Property Law. 3 undergraduate hours. 4 graduate hours.

IS 445  Data Visualization  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/445)
Data visualization is crucial to conveying information drawn from models, observations or investigations. This course will provide an overview of historical and modern techniques for visualizing data, drawing on quantitative, statistical, and network-focused datasets. Topics will include construction of communicative visualizations, the modern software ecosystem of visualization, and techniques for aggregation and interpretation of data through visualization. Particular attention will be paid to the Python ecosystem and multi-dimensional quantitative datasets. 3 undergraduate hours. 4 graduate hours.

IS 446  Systems Analysis and Design  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/446)
Covers how to evaluate, select and manage information systems that will be used in the daily operation of libraries and information centers. Includes the systems used by technical staff and the information consumers. Course will focus on information as a product. Attention is given to the operation of an organization as a whole and the impact of change on the integration of resources, work flow and usability. Formal methods for modeling systems, and industry practice techniques of analysis are used to address these problems and opportunities. 3 undergraduate hours. 4 graduate hours.

IS 449  Web Application Development  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/449)
This course focuses on concepts and skills needed to build full stack web applications. Topics include Model-View-Controller architecture, database access, business logic implementation, advanced client-side scripting, authentication, and application security. Students will use popular client-side and server-side web application frameworks, such as React.js and Django, to study how these concepts are implemented in practice and to apply design/development principles to build realistic web applications. 3 undergraduate hours. 4 graduate hours. Prerequisite: IS 205, IS 206, and IS 229.

IS 451  Bibliography of Africa  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/451)
We will focus on the identification and evaluation of African studies reference sources and library techniques as a foundation for in-depth research. Sources covered will be in all formats, including print, microform and electronic resources. 3 undergraduate hours. 4 graduate hours.

IS 453  Information Books and Resources for Youth  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/453)
Evaluation, selection and use of information books and other resources for young people (ages 0-18) in public libraries and school media centers; explores standard selection criteria for factual print and nonprint materials in all formats and develops the ability to evaluate and promote nonfiction books and resources according to their various uses (personal and curricular) and according to young people's various needs (intellectual, emotional, social and physical). 3 undergraduate hours. 2 or 4 graduate hours.

IS 455  Database Design and Prototyping  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/455)
The course provides students with both theoretical and practical training in good database design. By the end of the course students will create a conceptual data model using entity-relationship diagrams, understand the importance of referential integrity and how to enforce data integrity constraints when creating a database. Students will be proficient in writing basic queries in the structured query language (SQL) and have a general understanding of relational database theory including normalization. 4 undergraduate hours. 4 graduate hours. Prerequisite: Junior Standing required.

IS 456  Information Storage and Retrieval  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/456)
Introduces problems of document representation, information need specification, and query processing. Describes the theories, models, and current research aimed at solving those problems. Primary focus is on bibliographic, text, and multimedia records. 3 undergraduate hours. 4 graduate hours.

IS 457  Data Storytelling  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/457)
An introduction to understanding data as a source for storytelling and to telling stories based on data. This process will include understanding and analyzing data sets to find informative aspects, changes, or contrasts that will provide the basic information for developing stories. Course participants will learn storytelling concepts, narrative theories, and performance techniques and develop stories in a collaborative workshop style. Students will work with data visualization toolkits, which will involve variable levels of coding and skill. By using storytelling techniques with data, students can develop, and tell well-evidenced stories, organizations can make better data-driven decisions. 3 undergraduate hours. 4 graduate hours.

IS 459  Mobile Applications  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/459)
This course introduces students to the fundamental concepts, cutting edge technologies and state-of-the-art research in Human Computer Interaction areas of mobile computing and ubiquitous computing. The course presents major mobile application domains systems design challenges, and design opportunities. Students' understanding will be reinforced through practical work in mobile system design, e.g., applying a video prototyping tool to design and evaluate a mobile system. 3 undergraduate hours. 4 graduate hours.

IS 461  Russian, East European, and Eurasian Bibliography & Research Methods  credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/461)
With a focus on Russia, Eastern Europe, and Eurasia, students will investigate this fascinating part of the world, how it has been studied and represented by generations of scholars, scientists, writers, artists, government officials, and others, and how the many fruits of their labors are (or are not) accessible to us today. 3 undergraduate hours. 4 graduate hours.
IS 464 Information Assurance credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/464)
The course provides an introduction to the concepts, technologies, practices and challenges of Information Assurance. It takes a broad view of Information Security and Privacy and covers the essential principles for the protection of information systems; the relevant technologies; organizational concerns; policies, human aspects; legal approaches; criminality; and ethical issues. Students will gain an appreciation for the difficulty of designing, developing, deploying and maintaining information systems, services and software products that are secure and comply with expectations of security and privacy. 3 undergraduate hours. 4 graduate hours.

IS 466 Accessible and Inclusive Technologies credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/466)
This course introduces students to various technology challenges and needs of under-served populations (e.g., people with disabilities). We will examine various accessible and inclusive technologies to understand how they were built to serve specific under-served user groups but can also benefit a wider range of users. This course will also cover various design frameworks, guidelines and processes to create more inclusive designs and technologies. 3 undergraduate hours. 4 graduate hours.

IS 467 Ethics and Policy for Data Science credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/467)
The course will address common ethical challenges related to data including privacy, bias, and data access. These challenges will be explored through real-world cases of corporate settings, non-profits, governments, academic research, and healthcare. The course emphasizes the complexity of ethical decision-making and that trade-offs between priorities are often necessary. The course also considers how the burdens of addressing ethical concerns should be distributed among stakeholders. Students will be introduced to a range of relevant policy responses at the organizational, institutional, governmental and supranational levels. 3 undergraduate hours. 4 graduate hours.

IS 471 Instructional Strategies and Techniques for Information Professionals credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/471)
Provides an introduction to learning theories and instructional methods used in a variety of information settings, including libraries, archives, museums, online, and educational environments. Includes an overview of theoretical and applied research and discusses relevant issues and concepts. Students will have an opportunity to design and present an instructional program. 3 undergraduate hours. 2 to 4 graduate hours.

IS 477 Data Management, Curation & Reproducibility credit: 3 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/477)
This course addresses issues in Data Management, Curation & Reproducibility from a Data Science perspective. We discuss definitions of data science, and then introduce and use the Data Science Life Cycle as an intellectual foundation. Topics include Research Artifact Identification and Management, Metadata, Repositories, Economics of Artifact Preservation and Sustainability, and Data Management Plans. We use the case study to ground our discussions in both data sets and in specific data science research. This course requires a final project that applies course knowledge to a data science experiment and creates a data management plan for that experiment. 3 undergraduate hours. 4 graduate hours. Prerequisite: STAT 107/CS 107/IS 107; STAT 207/CS 207/IS 207; CS 227/STAT 227.

IS 490 Topics in Info Foundations credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/490)
Directed and supervised investigation of selected topics in information studies that may include among others the social, political, and historical contexts of information creation and dissemination; computers and culture; information policy; community information systems; production, retrieval and evaluation of knowledge; computer-mediated communication. Additional fees may apply. See Class Schedule. 2 to 4 undergraduate hours. 2 to 4 graduate hours. May be repeated. Prerequisite: For undergraduates, junior standing and IS 202, or consent of instructor.

IS 500 Theories of Information credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/500)
A theory of information attempts to articulate clearly and precisely what information is, and what it means to become informed. Theories of information can contribute to the scientific foundations for many important research and practice activities in IS, including data curation, information modeling, information access, digital preservation, and informatics support for science and scholarship. This course, Theories of Information – A, takes a logic-based approach to investigating the nature of information. Methodologically we draw from a family of methods that might be called formal methods, in contrast to the empirical methods of social and nature science. Formal methods typically make use of concepts from logic, set theory, and discrete mathematics to construct and explore formal systems. Formal methods are widely used in linguistics, mathematics, philosophy, and computer science. Within the general area of formal methods our approach in this course might be more specifically referred to as conceptual analysis, as it takes the form of a systematic analysis of a concept, namely information. Most of the prior work that is relevant to our analysis is from analytic philosophy, linguistics (especially formal semantics), and computer science (especially knowledge representation and AI). 4 graduate hours. No professional credit. Prerequisite: Some familiarity with formal logic would be useful, but is not required. Some familiarity with conceptual modeling (ER or UML diagrams, or RDF/S for instance) would also be useful, but not required.

IS 501 Reference and Information Services credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/501)
Explores reference and information services in a variety of settings, introduces widely used print and online sources, and develops question negotiation skills and search strategies. 4 graduate hours. No professional credit.

IS 503 History of Children's Lit credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/503)
Interpretation of children’s literature from the earliest times, including the impact of changing social and cultural patterns on books for children; attention to early printers and publishers of children’s books and to magazines for children. 2 or 4 graduate hours. No professional credit.

IS 504 Sociotechnical Information Systems credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/504)
The character, success, and costs/benefits of information technologies are socio-technical matters. Because of this, best practice for IT design and integration relies on participants’ ability to understand and create for the totality of those settings, including social and technical dimensions. This course provides students with analytic tools for examining socio-technical settings and experience in applying that knowledge in IT modeling, design and management. 4 graduate hours. No professional credit.
IS 505  Information Organization and Access  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/505)
Emphasizes information organization and access in settings and systems of different kinds. Traces the information transfer process from the generation of knowledge through its storage and use in both print and non-print formats. Consideration will be given to the creation of information systems: the principles and practice of selection and preservation, methods of organizing information for retrieval and display, the operation of organizations that provide information services, and the information service needs of various user communities. 4 graduate hours. No professional credit.

IS 506  Human-Centered Information Systems  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/506)
This course provides students the fundamental theory and skills necessary to design, develop, and evaluate human centered information systems. By the end of the course students will be able to gather user needs in light of existing sociotechnical systems, design effective human centered interfaces, implement interactive prototypes, and conduct unit testing and user studies of software. The course will employ lectures, mini projects and in-class hands-on activities to reinforce the ideas presented. 4 graduate hours. No professional credit.

IS 507  Data, Statistical Models and Information  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/507)
An introduction to statistical and probabilistic models as they pertain to quantifying information, assessing information quality, and principled application of information to decision making, with focus on model selection and gauging model quality. The course reviews relevant results from probability theory, parametric and non-parametric predictive models, as well as extensions of these models for unsupervised learning. Applications of statistical and probabilistic models to tasks in information management (e.g. prediction, ranking, and data reduction) are emphasized. 4 graduate hours. No professional credit. Prerequisite: Graduate standing.

IS 508  Seminar in Information Foundations  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/508)
This seminar course will offer an advanced graduate survey of research in areas related to information foundations, across a wide range of topics. This course is designed to incorporate multiple guest lectures. Weekly class meetings will be composed of both lectures and discussions. 4 graduate hours. No professional credit. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 509  History and Foundations of Information Science  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/509)
Provides an introduction to the historical foundations of IS. Examinations of the interactions of socio-cultural, technological and professional factors underlying the emergence of IS provide a basis for exploring more recent developments in theory and practice. Required IS Ph.D. course. 4 graduate hours. No professional credit.

IS 510  Libraries, Information and Society  credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/510)
Explores major issues in the library and information science professions as they involve their communities of users and sponsors. Analyzes specific situations that reflect the professional agenda of these fields, including intellectual freedom, community service, professional ethics, social responsibilities, intellectual property, literacy, historical and international models, the socio-cultural role of libraries and information agencies and professionalism in general, focusing in particular on the interrelationships among these issues. 2 or 4 graduate hours. No professional credit. Prerequisite: Required M.S. in library and information science degree core course.

IS 511  Scholarly Communications  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/511)
A basic level of scholarly communication literacy and sophistication is an increasing requirement of academic librarians, both to inform their work and to make those librarians effective partners in the scholarly enterprise. This course is designed to cultivate and develop that literacy. It will address topics such as: the established modes of scholarly communication and the emergence of alternatives influenced by the growth of social media and other forms of networked communication; the divide between formal and informal modes of scholarly communication and the current state of flux as that divide begins to collapse; the varying economics of scholarship (the reputation and prestige economy, the financial economy both in the market and in the mission-driven research academy, and the economic impact of scholarly communication decisions upon library budgets); modes of credentialing scholarship and their impact upon professional advancement, with special attention to peer review and its (current?) discontents; scholarship as intellectual property and the most effective ways to manage that property and achieve scholarly goals; and issues in access and preservation as they relate to ensuring the future of the scholarly conversation. 4 graduate hours. No professional credit.

IS 512  History of Libraries  credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/512)
The origins, development, and evolution of libraries and related institutions, from antiquity to the twentieth century, as a reflection of literacy, recognition of archival responsibility, humanistic achievement, scientific information needs, and service to society. Same as MDIA 512. 2 or 4 graduate hours. No professional credit.

IS 514  Applied Business Research  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/514)
As an experiential learning class, this course covers advanced techniques of business research with an emphasis on managing real-world client projects. Students will be assigned to teams and work with clients to identify research requirements and construct recommendations. Students will acquire critical skills in creating professional deliverables through client engagements. Students will build professional research portfolios at the conclusion of their projects. 4 graduate hours. No professional credit. May be repeated in separate terms up to 8 hours if topics vary. Prerequisite: Instructor approval required.

IS 515  Information Modeling  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/515)
An introduction to the foundations of information modeling methods used in current digital library applications. The specific methods considered include relational database design, conceptual modeling, markup systems, and ontologies. The basic concepts underlying these methods are, respectively, relations, entities, grammars, and logic. Implementations include relational database design, ER/EER/ UML diagrams, XML markup languages, and RDF/OWL semantic web languages. First order logic is emphasized throughout as the foundational framework for information modeling in general, and for contemporary web-based information management and delivery systems (including semantic web technologies) in particular. 4 graduate hours. No professional credit.
IS 516  Scalable Information Systems  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/516)
Focuses on large-scale information systems and analyzes the design and development principles and infrastructures that make them scalable and reliable. Topics include issues in scalability and availability, distributed system design, virtualization, scalability testing, and popular frameworks and platforms, such as Hadoop/MapReduce, Apache Spark, Amazon Web Services. Real-world, large-scale information systems, such as those developed by Google, Amazon, and Facebook, etc., are discussed and analyzed as use cases. 4 graduate hours. No professional credit.

IS 517  Methods of Data Science  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/517)
A dramatic increase in computing power has enabled new areas of data science to develop in statistical modeling and analysis. These areas cover predictive and descriptive learning and bridge between ideas and theory in statistics, computer science, and artificial intelligence. We will cover methods including predictive learning: estimating models from data to predict future outcomes. Regression topics include linear regression with recent advances using large numbers of variables, smoothing techniques, additive models, and local regression. Classification topics include linear regression, regularization, logistic regression, discriminant analysis, splines, support vector machines, generalized additive models, naive Bayes, mixture models and nearest neighbor methods as time permits. Lastly we develop neural networks and deep learning techniques, bridging the theory introduced in the earlier parts of the class to purely empirical methods. We situate the course components in the "data science lifecycle" as part of the larger set of practices in the discovery and communication of scientific findings. 4 graduate hours. No professional credit. Prerequisite: IS 507 or equivalent (e.g. intro probability/stats STAT 100, CS 361, or ECON 202); and IS 490 IDS/CS 398 ID/STAT 490 or CS101 or equivalent; or consent of the instructor. Linear Algebra recommended at the level of MATH 125; Calculus recommended at the level of MATH 220.

IS 518  Seminar in Information Services  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/518)
This seminar course will offer an advanced graduate survey of research in areas related to information services, across a wide range of topics. This course is designed to benefit from guest lectures. This seminar course will be composed of both lectures and discussions. 4 graduate hours. No professional credit.

IS 519  Research Design in Information Science  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/519)
Provides an introduction to the design of IS research, beginning with an in-depth consideration of the philosophical and logical underpinnings of research. A brief survey of different methods used in IS research is followed by an exploration of research design issues through comparative hands-on exercises. Throughout the course, the emphasis will be on research design choices, especially the connections between research questions and research methods. Required IS Ph.D. course. 4 graduate hours. No professional credit.

IS 520  Community Informatics  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/520)
A survey of key concepts in an emerging field that studies how local, historical communities are using information and communications technologies. Covers key principles for work in the non-profit/public sector as people harness new technologies and media as individuals, students, families, community organizations, and soon. Overarching ideas prepare both professionals and researchers to understand and master this environment, whatever their technology background. Especially useful for those interested in public or community libraries, youth services, social work, education, and anyone interested in working with or studying underserved communities. 4 graduate hours. No professional credit.

IS 521  Digital Libraries  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/521)
A comprehensive examination of the history and state-of-the-art in digital library research and practice. Focuses upon the theoretical, technological, human factors and evaluative components of digital library research and practice. Course includes an intensive reading of the literature, review of existing technologies and proof-of-concepts implementation projects. Students should have access to a personal computer on which they can experiment on their own with downloaded software tools. Students must be competent in basic computing including the installation and configuration of software packages. 4 graduate hours. No professional credit. Prerequisite: IS 501 or consent of instructor; previous or concurrent enrollment in IS 452 (either the 2 credit hours or the 4 credit hours of IS 452 are acceptable), or proof of competency in programming.

IS 522  Library Buildings  credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/522)
Studies the library's physical plant in the light of changing concepts and patterns of library service; analyzes present-day library buildings (both new and remodeled), and their comparison with each other as well as with buildings of the past; examines the interrelationship of staff, collections, users, and physical plant; discussion supplemented by visits to new libraries and conference with their staffs. A two-day field trip is required. Additional fees may apply. See Class Schedule. 2 or 4 graduate hours. No professional credit.

IS 523  Preserving Info Resources  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/523)
Covers the broad range of library preservation and conservation for book and nonbook materials relating these efforts to the total library environment; emphasizes how the preservation of collections affects collection management and development, technical services, access to materials and service to users. 4 graduate hours. No professional credit.

IS 524  Data Governance  credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/524)
The course will address issues of data governance, including data ethics, and design and implementation of policy responses and best practices. Topics include privacy, discrimination, data sharing, data quality, and building a diverse workforce. These topics will be explored through real-world cases in corporate settings, libraries, non-profits, healthcare, governments, and academe. The course will also cover principles and frameworks for analyzing and responding to issues. The course is suitable for anyone planning to work in a professional setting that will involve handling data or building information systems, or seeking a grounding for future study of data and information ethics. 2 or 4 graduate hours. No professional credit.
IS 525  Data Warehousing credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/525)
This course examines the construction of a data warehouse and business intelligence system. It will review the roles and requirements of building the system, including data modelling and business intelligence product design. This course will explore real-world case studies of data warehouse and business intelligence projects through hands-on experience with data modelling, Business Objects, Power BI and Tableau. The course culminates with a final project to design a solution for a business case. 4 graduate hours. No professional credit.

IS 526  Building Advanced Interactive Systems credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/526)
This course will teach students about building inclusive interactive systems. They will learn to gather and understand user requirements and needs for a wide range of user populations, especially those that are under-served (e.g., children, older adults, people with disabilities), apply inclusive design frameworks and principles, and design, develop, evaluate and improve interactive prototypes in an iterative manner. 4 graduate hours. No professional credit.

IS 527  Network Analysis credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/527)
Network Analysis has become a widely adopted method for studying the interactions between social agents, information and infrastructures. The strong demand for expertise in network analysis has been fueled by the widespread acknowledgement that everything is connected and the popularity of social networking services. This interdisciplinary course introduces students to fundamental theories, concepts, methods and applications of network analysis in a practical manner. Students learn and practice hands-on skills in collecting, analyzing and visualizing network data. 4 graduate hours. No professional credit.

IS 528  Seminar in Information Organizations & Social Contexts credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/528)
This seminar course will offer an advanced graduate survey of research in areas related to information in Information Organizations & Social Contexts, across a wide range of topics. This course is designed to incorporate multiple guest lectures. Weekly class meetings will be composed of both lectures and discussions. 4 graduate hours. No professional credit.

IS 530  Collection Development credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/530)
Examines issues affecting the development and management of collections for academic, public, special, and school libraries: collection development policies, collection assessment, the marketplace, publishing, legal issues, and budget allocation; document delivery; collaboration and cooperation. 4 graduate hours. No professional credit. Prerequisite: IS 501, or concurrent enrollment in IS 507 and IS 508.

IS 532  School Library Management credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/532)
School Library Information Specialists serve children and young adults (ages 5-18) in K-12 school library media centers. Students will acquire specific knowledge, skills and competencies needed to design, develop, integrate and assess curriculum and instruction with an emphasis on the information needs of K-12 students. Readings and projects provide students with opportunities to apply the practical knowledge and skills they have learned about building reading literacy, teaching information literacy skills, collaborating with teachers and integrating resources into teaching and learning. 2 or 4 graduate hours. No professional credit.

IS 534  Information Consulting credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/534)
This course is designed to provide fundamental knowledge in providing research services and also introduce the latest trends and innovative approaches in research services. Information professionals are increasingly being challenged to provide not just data but insights and recommendations that are critical for strategic decision making. Using methodologies widely adopted by professional firms and researchers, this course will cover basics of research consulting including framing research problems, developing deliverables, and presenting professionally. 4 graduate hours. No professional credit.

IS 537  Data Cleaning credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/537)
Data cleaning (also: cleansing) is the process of assessing and improving data quality for later analysis and use, and is a crucial part of data curation and analysis. This course identifies data quality issues throughout the data lifecycle, and reviews specific techniques and approaches for checking and improving data quality. Techniques are drawn primarily from the database community, using schema-level and instance-level information, and from different scientific communities, which are developing practical tools for data pre-processing and cleaning. Same as CS 513. 4 graduate hours. No professional credit.

IS 538  Seminar in Cultural Heritage, Collection Management, & Preservation credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/538)
This seminar course will offer an advanced graduate survey of research in areas related to research in Cultural Heritage, Collection Management, & Preservation, across a wide range of topics. This course is designed to incorporate multiple guest lectures. Weekly class meetings will be composed of both lectures and discussions. 4 graduate hours. No professional credit.

IS 540  Social Justice in the Information Professions credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/IS/540)
This course is intended to provide a historic and contemporary overview of social justice and advocacy work in librarianship. The course will be primarily focused on activities in the United States, though international movements and perspectives will be addressed. Topics include: desegregation of libraries and professional associations; recruitment and retention of library workers from traditionally underrepresented populations; library outreach; intellectual freedom; and emerging critical theories and issues in the field. 2 graduate hours. No professional credit. Prerequisite: Graduate student.

IS 541  Copyright for Information Professions credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/541)
Copyright is a complicated legal concept that affects all information institutions, including corporations, libraries, archives, and museums whether they are online or off. This course will explore copyright from both a legal and information management perspective to demystify the concept and provide practical tools for working with copyrighted material. Topics discussed include the Constitutional underpinnings of copyright, copyright basics, copyright exceptions, fair use, the open access movement, licensing, data and copyright, and educational issues relating to copyright including issues related to K-12 teaching. This course is designed for students with a variety of backgrounds and interests. 2 or 4 graduate hours. No professional credit.
IS 542 Research and Inquiry for Youth credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/542)
This course is designed to prepare school librarians to serve as instructional leaders in their learning communities, positioned to transform teaching and learning in order to ensure students are college, career, and community ready. Participants will develop strategies and practices to support the school’s curriculum through the roles of instructional partner, information specialist, and teacher. The school librarian has a leadership role in designing authentic learning activities in research and guided inquiry to prepare students in both the process and attitudes necessary to identify and meet their own lifelong information needs. 4 graduate hours. No professional credit.

IS 543 Digital Preservation credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/543)
Examines current problems with and approaches to digital preservation that are fundamental to the long-term accessibility of digital materials. Examines the range of current research problems, along with emerging methods and tools, and assesses a variety of organizational scenarios to plan and implement a preservation plan. Topics include basic information theory, preservation of complex digital objects; standards and specifications; sustainability and risk assessment; authenticity, integrity, quality control, and certification; and management of preservation activities. 4 graduate hours. No professional credit.

IS 544 Administration & Management of Libraries and Information Centers credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/544)
Designed to explore the principles that govern how organizations and institutions work, this course provides a foundation for an introduction to the theories, practices and procedures involved in the management and administration of libraries and information centers. 4 graduate hours. No professional credit.

IS 545 Advanced Data Visualization credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/545)
This seminar-style course will cover advanced topics in visualization techniques. This will cover topics such as the history of visualization techniques, the perception and understanding of visual information, and new frontiers in displaying quantitative information. We will explore the modern technical stack for creating and sharing visualizations, including topics in javascript, python, and reactive frameworks. 4 graduate hours. No professional credit.

IS 547 Foundations of Data Curation credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/547)
Data curation is the active and on-going management of data through its lifecycle of interest and usefulness to scholarship, science, and education; curation activities and policies enable data discovery and retrieval, maintain data quality and add value, and provide for re-use over time. This course provides an overview of a broad range of theoretical and practical problems in the emerging field, examining issues related to appraisal and selection, long-lived data collections, research lifecycles, workflows, metadata, and legal and intellectual property issues. 4 graduate hours. No professional credit.

IS 548 Seminar in Management, Ethics, & Policy credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/548)
This seminar course will offer an advanced graduate survey of research in areas related to research in management, ethics, & policy, across a wide range of topics. This course is designed to incorporate multiple guest lectures. Weekly class meetings will be composed of both lectures and discussions. 4 graduate hours. No professional credit.

IS 549 Practicum credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/IS/549)
Supervised field experience of professional-level duties in an approved library or information center. 2 graduate hours. No professional credit. Approved for S/U grading only. A maximum of 2 hours may be applied toward a degree program. Prerequisite: Completion of 12 graduate hours of information sciences courses; submission of Practicum forms.

IS 551 Youth Services Librarianship credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/551)
Theory and techniques in planning, implementing and evaluating library programs/services for youth (age 0-18) in public and school libraries/media centers; the knowledge base, skills, and competencies needed by the library media professional in the development of all aspects of young people’s reading/viewing/listening and information literacy skills. 4 graduate hours. No professional credit.

IS 555 Naming and Power credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/IS/555)
An advanced topics seminar in subject description and access that focuses upon representation in race, gender, sexuality and other contested categories. Critical intersections of bias, exclusion, and marginalization will be explored through a variety of case studies. Implications for how we construct search and discovery systems (e.g., databases, archival and museum finding aids, taxonomies and catalogues), and other tools, are crucial considerations for those engaging in cultural heritage work. Open to masters and doctoral students. 2 graduate hours. No professional credit.

IS 556 Internet of Things credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/556)
Relying primarily on case studies, this course will help develop the students’ understanding of how the IoT enables Business Data Analytics. Lectures and readings will be focused on the impact to a company’s business model created by IoT data and analytics. Because of the disruptive nature of IoT sensors or data, IT Innovation will also be discussed. While the course will reflect a practitioner’s view, the material will be presented on a solid academic underpinning. 4 graduate hours. No professional credit.

IS 557 Applied Machine Learning: Team Projects credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/557)
A comprehensive exploration of the applied machine learning workflow from inspiration to delivery of a machine learning solution broadly defined (i.e., from analytic finding to embedded machine learning applications). This course is firmly grounded in a "learning-by-doing" teaching philosophy with pedagogical priority clearly placed on the application of machine learning to real-world data and problems. Ongoing and intense practical experiences in team-based project management and work are another cornerstone of this course. This course includes student-led reviews of existing data sources and machine learning technologies along with several team-based fact-finding and proof-of-concept implementation projects. This course is designed for students wishing to engage seriously in the practical world of machine learning implementation. 4 graduate hours. No professional credit. Prerequisite: Students should have demonstrated ability, and must have taken one of the following courses, IS 577 (formerly IS 590 DT), IS 517 (formerly IS 590 MD), CS 412, CS 446 or a course demonstrably equivalent.
IS 559 CAS Project credit: 0 to 8 Hours. (https://courses.illinois.edu/schedule/terms/IS/559)
Individual study of a problem in library and information science; forms the culmination of the Certificate of Advanced Study program. 0 to 8 graduate hours. No professional credit. Approved for S/U grading only. May be repeated. Only eight hours will apply to the Certificate of Advanced Study. Prerequisite: Admission to Certificate of Advanced Study program in library and information science; submission of "Request to Enroll in IS 559 - CAS Project" form.

IS 560 Soc Sc Research in LIS credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/560)
Introduces students to the fundamentals of doing social science research in LIS. Students will learn how to frame a research problem, choose an appropriate research method, apply it, and write up the research for presentation and publication. 4 graduate hours. No professional credit.

IS 561 Use and Users of Information credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/561)
Explores information needs and uses at a general level, addressing formal and informal information channels, barriers to information, issues of value, and impacts of technology. Examines information seeking practices of particular communities and within various environments, introducing recent approaches to user-centered system design and digital library development. Provides an overview of methods that can be used to study information needs, information seeking behavior, and related phenomena. 4 graduate hours. No professional credit. Prerequisite: IS 501.

IS 562 Administration and Use of Archival Materials credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/562)
Administration of archives and manuscript collections in various types of institutions. Theoretical principles and archival practices of appraisal, acquisition, accessioning, arrangement, description, preservation, and reference services. Topics will include: records management programs, collecting archives programs/special collections, legal and ethical issues, public programming and advocacy, and the impact of new information technologies for preservation and access. Lectures, discussion, internet demonstration, and field trips to the Special Collections Department and University Archives. 4 graduate hours. No professional credit.

IS 563 Advanced Topics in Literature, Media and Materials credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/563)
Variety of newly developed and advanced topics courses within the field of Literature, Media and Materials, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. May be repeated in the same or separate terms, to a maximum of 16 hours, if topics vary.

IS 565 Cataloging for School Libraries credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/IS/565)
This course will introduce the student to the principles, practices and standards for information representation and organization in school media centers. Course content will include an introduction to original cataloging of non-standard materials (such as realia and audiovisual materials), evaluation of bibliographic records, exposure to authority control and subject access systems with a special focus on the Dewey Decimal System and Sears Subject Headings. The course will also provide an overview and exploration of different library systems/OPACS. 2 graduate hours. No professional credit.

IS 567 Text Mining credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/567)
The goal of this project-based course is to provide students with first-hand experience with how to create a well-formed text mining problem and how to select, transform, and mine a collection of text. Prior programming knowledge (in any language) is required. As students work on their own project, they will draw from key concepts in text mining using perspectives from both the knowledge discovery and natural language processing research communities. 4 graduate hours. No professional credit.

IS 568 Seminar in Human-Centered Design & Systems credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/568)
This seminar course will offer an advanced graduate survey of research in areas related to research in human-centered design and systems, across a wide range of topics. This course is designed to incorporate multiple guest lectures. Weekly class meetings will be composed of both lectures and discussions. 4 graduate hours. No professional credit.

IS 569 Internship credit: 0 Hours. (https://courses.illinois.edu/schedule/terms/IS/569)
Supervised field experience designed for learning professional-level duties in an approved information-related organization or institution. 0 graduate hours. No professional credit. Approved for S/U grading only. May be repeated in separate terms.

IS 571 Advanced Topics in Use and Users of Information credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/571)
Variety of newly developed and advanced topics courses within the field of Use and Users of Information, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit.

IS 573 Advanced Topics in Collections credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/573)
Variety of newly developed and advanced topics courses within the field of Collections, intended to augment the existing Information Sciences curricula. 2 or 4 graduate hours. No professional credit.

IS 575 Metadata in Theory & Practice credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/575)
Combines theoretical examination of the design of metadata schema with their practical application in a variety of settings. Hands-on experience in the creation of descriptive, administrative, and structural metadata, along with their application in systems such as OAI harvesting, OpenURL resolution systems, metasearch systems and digital repositories, will help students develop a thorough understanding of current metadata standards as well as such issues as crosswalking, metadata schema, metadata’s use in information retrieval and data management applications, and the role of standards bodies in metadata schema development. 4 graduate hours. No professional credit. Prerequisite: IS 501 or consent of instructor.

Information listed in this catalog is current as of 02/2020
IS 577  Data Mining  credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/577)
Data mining refers to the process of exploring large datasets with the goal of uncovering interesting patterns. This process usually involves a number of tasks such as data collection, pre-processing, & characterization; model fitting, selection, & evaluation; classification, clustering, & prediction. Although data mining has its roots in database management, it has grown into a discipline that focuses on algorithm design (to ensure computational feasibility) & statistical modeling (to separate the signal from the noise). It draws heavily upon a variety of other disciplines including statistics, machine learning, operations research, & information retrieval. Will cover the major data mining concepts, principles, & techniques that every information scientist should know about. Lectures will introduce & discuss the major approaches to data mining; computer lab sessions coupled w/assignments will provide hands-on experience with these approaches; term projects offer the opportunity to use data mining in a novel way. Mathematical detail will be left to the students who are so inclined. 2 or 4 graduate hours. No professional credit.

IS 578  Seminar in Research Methods  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/578)
This seminar course will offer an advanced graduate survey of research in areas related to research in research methods, across a wide range of topics. This course is designed to incorporate multiple guest lectures. 4 graduate hours. No professional credit.

IS 580  Information History  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/580)
Drawing on research in varied historical specializations, information history has become a vibrant area of study, one that improves our understanding, moreover, of today’s information universe. Information history covers diverse institutions and practices – from libraries and the book to the telegraph and postal systems, from surveillance to cartography, from documentary culture to statistical surveys – seeking to connect them with the major developmental processes of human history. Framed in a succession of major historical epochs, topics and trends, from Antiquity to the twentieth century, this course revises our sense of the historical record by situating information explicitly within it. 4 graduate hours. No professional credit.

IS 581  Advanced Topics in Youth Services  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/581)
Variety of newly developed and advanced topics courses within the field of Librarianship, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 582  Advanced Topics in Librarianship  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/582)
Variety of newly developed and advanced topics courses within the field of Librarianship, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 584  Advanced Topics in Ethics and Privacy  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/584)
Variety of newly developed and advanced topics courses within the field of ethics and privacy, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit.

IS 585  Bibliographic Metadata  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/585)
Introduction to basic principles and concepts of descriptive and subject cataloging in the context of information service needs for various user communities. Explores principles, structures, standards, technologies and practices relating to organizing and creating access to print and non-print media. Includes coverage of subject analysis and descriptive practices. Introduces controlled vocabularies. 4 graduate hours. No professional credit. Prerequisite: IS 505 (formerly IS 501).

IS 586  Usability Engineering  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/586)
The course provides an introduction to: issues in Human Computer Interaction; analysis of interfaces and their use; the interface design process as an engineering activity; designing usable interfaces under constraints; and the rapid prototyping and evaluation cycle. The course covers interface design in multiple contexts including websites, web-based applications, smartphone apps, regular computer apps and new contexts of interacting with computers. Elective course for the CAS in Digital Libraries concentration. 4 graduate hours. No professional credit.

IS 587  Seminar in Data Analytics and Data Science  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/587)
This seminar course will offer an advanced graduate survey of data analytics and data science in the information fields, across a wide range of topics. This course is designed to incorporate multiple guest lectures. 4 graduate hours. No professional credit.

IS 588  Data Consulting Capstone  credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/588)
This course will help to prepare students for a competitive job market in data consulting. They will build a portfolio including evidence of effective consulting abilities, database design, and knowledge of applying data to solve real world problems. Portfolios will demonstrate theoretical and practical understandings of areas such as entity-relationship modeling, creating tables, writing queries in SQL, and data analysis for decision making. 4 graduate hours. No professional credit.

IS 589  Independent Study  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/589)
Permits the intermediate or advanced student opportunity to undertake the study of a topic not otherwise offered in the curriculum or to pursue a topic beyond or in greater depth than is possible within the context of a regular course. 2 to 4 graduate hours. No professional credit. May be repeated by MS students to a maximum of 4 graduate hours. May be repeated by CAS students to a maximum of 8 graduate hours. May be repeated by PhD students to a maximum of 16 graduate hours. Prerequisite: Submission of “Request to Enroll in IS 592” form.

IS 590  Advanced Topics in Information Foundations  credit: 1 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/590)
Variety of newly developed and advanced topics courses within the field of information foundations, intended to augment the existing Information Sciences curricula. Additional fees may apply. See Class Schedule. 1 to 4 graduate hours. No professional credit. May be repeated.

IS 591  Advanced Topics in Information Services  credit: 2 or 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/591)
Variety of newly developed and advanced topics courses within the fields of Information Services, intended to augment the existing Information Sciences curricula. 2 or 4 graduate hours. No professional credit. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.
IS 592  Advanced Topics in Information Organizations  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/592)
Variety of newly developed and advanced topics courses within the fields of Information Organization, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 593  Advanced Topics in Preservation & Tech Services  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/593)
Variety of newly developed and advanced topics courses within the fields of Preservation & Tech Services, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 594  Advanced Topics in Management and Policy  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/594)
Variety of newly developed and advanced topics courses within the fields of Management and Policy, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 595  Advanced Topics in Organization & Representation  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/595)
Variety of newly developed and advanced topics courses within the fields of Organization & Representation, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. Approved for Letter and S/U grading. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 596  Advanced Topics in Human-Centered Design & Systems  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/596)
Variety of newly developed and advanced topics courses within the field of Human-Centered Design & Systems, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. Approved for Letter and S/U grading. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 597  Advanced Topics in Data Analytics & Data Science  credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/IS/597)
Variety of newly developed and advanced topics courses within the fields of Data Analytics & Data Science, intended to augment the existing Information Sciences curricula. 2 to 4 graduate hours. No professional credit. Approved for Letter and S/U grading. May be repeated in the same or separate semesters to a maximum of 16 hours, if topics vary.

IS 599  Thesis Research  credit: 0 to 16 Hours. (https://courses.illinois.edu/schedule/terms/IS/599)
Individual study and research. 0 to 16 graduate hours. No professional credit. Approved for S/U grading only. May be repeated. M.S. candidates, 0 to 8 hours. Doctoral candidates, 0 to 16 hours. Prerequisite: MS students must submit a "Request to Enroll in IS 599 - Master's Thesis" form.