INST - INFORMATION STUDIES

INST401 Design and Human Disability and Aging (3 Credits)
Focuses on the design of consumer products and information systems to enable their use by persons with a wider range of physical, sensory, and cognitive abilities. Overviews aging and major types of impairment as they relate to resulting problems using consumer products and information systems. Focuses on principles of design of mass market products.
Prerequisite: Minimum grade of C- from INST362 or INST367.
Restriction: Must be in Technology and Information Design or Information Science programs.
Credit Only Granted for: INST408B or INST401.
Formerly: INST408B.

INST402 Designing Patient-Centered Technologies (3 Credits)
Companies have created a vast array of apps and other technologies for understanding managing personal health and wellness, but many of them have been created with little understanding of audience needs or potential ethical issues. Course introduces students to the unique challenges of studying people's health and wellness needs as well as designing and evaluating technologies to meet those needs.
Prerequisite: Minimum grade of C- from INST362 or INST367.
Restriction: Must be in Technology and Information Design or Information Science programs.

INST403 Computational Journalism (3 Credits)
Designed to teach the application of computational methods in journalism and reporting. The methods include natural language processing, visualization, and web data mining. The course will also cover the necessity and impact of journalistic ethics in designing computation solutions.
Prerequisite: Permission of the Philip Merrill College of Journalism.
Cross-listed with: JOUR473.
Jointly offered with: JOUR773.
Credit Only Granted for: JOUR479V, JOUR473, INST408I or INST403.
Formerly: JOUR479V and INST408I.

INST405 Game Design (3 Credits)
Games are a structured form of play that are typically undertaken for recreational--but sometimes also educational and even professional--purposes. But what constitutes a successful game? In this course, you will learn the fundamentals of game design: applying elements and principles of game design, such as goals, rules, and challenges to create games, such as board games, card games, and digital games. You will be introduced to the basic tools and methods of game design: paper and digital prototyping, design iteration, design critique, and user testing. As part of the course, you will be designing several games of different types. You will also learn how to use your skills to deconstruct and critique the components of existing games, as well as gain an understanding of the role of the game designer in real-world game development teams.
Prerequisite: Minimum grade of C- in INST126, STAT100 or INST201; and minimum grade of C- from PSYC100 or SOCY105.
Restriction: Must be in the Information Science program or Technology and Information Design program.
Credit Only Granted for: INST408J or INST405.
Formerly: INST408J.

INST406 Cross Disciplinary Design Communication Lab (3 Credits)
Explores the world of communicating the ideas behind the things we make. In design, the product tends to be the prize: a manifestation of experience, sensibilities, and observations. But products do not always articulate a complete picture of what they are and how they came to be. Communication--speaking, writing, depicting, presenting to various audiences--is an under-leveraged component of design, connecting the product with emotion, process, context, and most importantly, the audience.
Prerequisite: Minimum grade of C- in INST380; and a minimum grade of C- in Professional Writing General Education requirement.
Restriction: Must be in the Technology and Information Design program.

INST407 Leading and Sustaining a Culture of Innovation (3 Credits)
Successful leaders know that the key to value creation and sustained growth lies in innovation -- continuously seeking opportunities to create value whether by launching new products and services, entering new markets, or rethinking key processes. This course will focus on the most efficient leadership strategies, change management, team motivation, technology team management for information management within organizations. We will examine some of the best ways to foster innovative behaviors within a team and organization. Students will engage with a course-long culture change challenge.
Restriction: Must be in Technology Innovation Leadership minor; or permission of INFO-College of Information Studies.
Credit Only Granted for: INST408L or INST407.
Formerly: INST408L.

INST408 Special Topics in Information Science (1-6 Credits)
Selected topics in information studies.
Prerequisite: Minimum of a C- from (STAT100, MATH115 or higher); minimum of a C- from (INST126 or GEOG276); minimum of a C- from (PSYC100, SOCY105, or BSOS233).
Restriction: Must be in Information Science, Technology and Information Design, or Social Data Science program.
Repeatable to: 9 credits if content differs.

INST410 Managing with Data and Simulations (3 Credits)
General principles of modeling, data analysis, and decision-making methods. Approaches to evaluating and assessing effective concepts, methods, and procedures of modeling and data analysis for decision making in management, advocacy, and communication situations. Ethical considerations in management, advocacy, and communication situations in professional life.
Prerequisite: Minimum grade of C- in INST126 and STAT100; minimum grade of C- in PSYC100 or SOCY105; minimum grade of C- in INST201 or INST301; and minimum grade of C- in MATH115 or higher.
Restriction: Must be in the Information Science or Technology and Information Design programs.
Credit Only Granted for: INST408M or INST410.
Formerly: INST408M.

INST414 Data Science Techniques (3 Credits)
An exploration of how to extract insights from large-scale datasets. The course will cover the complete analytical funnel from data extraction and cleaning to data analysis and insights interpretation and visualization. The data analysis component will focus on techniques in both supervised and unsupervised learning to extract information from datasets. Topics will include clustering, classification, and regression techniques. Through homework assignments, a project, exams and in-class activities, students will practice working with these techniques and tools to extract relevant information from structured and unstructured data.
Prerequisite: Minimum grade of C- in MATH115 (or higher) and STAT100; and a minimum grade of C- from INST126 or GEOG276; and a minimum grade of C- from one of the following (INST201, INST301, or BSOS233); and a minimum grade of C- from one of the following (AASP101, ANTH210, ANTH260, ECON200, ECON201, GEOG202, GVPT170, PSYC100, or SOCY100); and a minimum grade of C- from BSOS233 or INST314.
Recommended: Minimum C- in MATH140 and (INST326, BSOS326, or GEOG376).
Restriction: Must be in Information Science or Social Data Science program.

INST422 Modeling and Simulating Systemic Problems (3 Credits)
General principles of systems thinking and feedback dynamics modeling. Approaches, methods, and tools for identifying, articulating, and addressing non-linear, feedback-driven, systemic problems. Approaches to evaluating and assessing systems thinking and feedback dynamics models. Ethical considerations in systems thinking and feedback dynamics modeling practice.
Prerequisite: Minimum grade of a C- in INST201, STAT100, and INST126; and minimum of a C- in PSYC100 or SOCY105.
Restriction: Must be in the Information Science, Technology and Information Design, or Global Health major.

INST441 Digital Curation Ethics and Policy (3 Credits)
Explores via case studies the legal, ethical, and technological challenges in developing and implementing policies for managing digital assets and information. Emphasizes access questions pertinent to managing sensitive information and the roles and responsibilities of information professionals.
Prerequisite: Minimum grade of C- from INST341 or INST380.
Restriction: Must be in the Information Science program or Technology and Information Design program.

INST442 Digital Curation Across Disciplines (3 Credits)
Examines how to apply digital curation principles, tools, and strategies in managing diverse data collections and digital information in different disciplinary settings. Explores differences among data curation principles and practices across diverse settings, ranging from scientific organizations (such as business and academic research laboratories and computational science settings), to humanities-based institutions (such as cultural heritage organizations) to social science-based institutions (such as data-intensive professional environments).
Prerequisite: Must have completed with a C- or higher, or be concurrently enrolled in INST341 or INST380.
Restriction: Must be in the Information Science program or Technology and Information Design program.

INST443 Tools and Methods for Digital Curation (3 Credits)
Introduces students to the application of digital tools and methods in a variety of organizational settings, academic disciplines, and economic sectors.
Prerequisite: Must have completed with a minimum grade of C-, or be concurrently enrolled, in INST341 or INST380.
Restriction: Must be in the Information Science program or Technology and Information Design program.

INST447 Data Sources and Manipulation (3 Credits)
Examines approaches to locating, acquiring, manipulating, and disseminating data. Imperfection, biases, and other problems in data are examined, and methods for identifying and correcting such problems are introduced. The course covers other topics such as automated collection of large data sets, and extracting, transforming, and reformatting a variety of data and file types.
Prerequisite: Minimum grade of C- in STAT100 and INST327; and a minimum grade of C- from one of the following (INST201, INST301, BSOS233); and a minimum grade of C- from one of the following (AASP101, ANTH210, ANTH260, ECON200, ECON201, GEOG202, GVPT170, PSYC100, or SOCY100); and a minimum grade of C- from BSOS233 or INST314; and a minimum grade of C- from one of the following (BSOS331, GEOG273, or INST326).
Restriction: Must be in Information Science or Social Data Science program.

INST450 Introduction to CRM in Salesforce (3 Credits)
Students learn how to configure Salesforce so that they are able to collect, analyze and retrieve all of the vital information associated with their customer base. Moreover, students use Force.com fundamentals to understand Salesforce online application development and the deployment of next-generation cloud apps. The course offers practical hands-on learning that ensures students' job success as well as the theoretical knowledge needed to pass both Salesforce certification exams (ADM201 & Platform App Builder).
Prerequisite: INST327.
Credit Only Granted for: INST408P or INST450.
Formerly: INST408P.

INST451 Consumer Health Informatics (3 Credits)
Explores people's health-related information needs and whether, how, and why people seek out and use (or do not seek out and use) health information and the types of health information they find useful. We will also cover the important and interrelated topics of information avoidance, health behaviors, health literacy, digital health literacy, doctor-patient communication, and patient-to-patient communication through support groups and online communities. Throughout the course, we will also focus on the important concept of health justice - a world in which everyone has an adequate and equitable capability to be healthy.
Prerequisite: Minimum grade of C- in INST126, INST201 or STAT100; and minimum grade of C- from PSYC100 or SOCY105.
Restriction: Must be in the Information Science program or Technology and Information Design program.
Credit Only Granted for: INST408A or INST451.
Formerly: INST408A.

INST452 Health Data Analytics (3 Credits)
Health data analytics involves the extrapolation of actionable insights from patient data, using data sources such as electronic health records (EHRs), claims data, surveillance data, and surveys. Health data is complex, often unstructured and incomplete, and is organized for clinical care rather than to meet analytic needs. This course will involve the use of various analytical methods in order to translate large and complex data, whether structured or unstructured, into insights that improve decision-making from both the patient and provider perspectives. Healthcare data are rich and hold so much potential, but a challenge is presented to patients, providers, and even government agencies when it comes to figuring out how to leverage these data. Students in this course will learn foundational topics in data analytics focused on health data and will apply this knowledge to real health datasets through hands-on labs integrated into the lectures.
Prerequisite: Minimum grade of C- in INST126 or GEOG276; and minimum grade of C- in PSYC100 or BSOS233; and minimum grade of C- in STAT100 or MATH115 or higher.
Restriction: Must be in the Information Science program or Social Data Science program.

INST453 Project Management for Information Science (3 Credits)
Provides a comprehensive overview of project management, focusing on the needs of information resources (IR). The course covers the concepts and techniques for planning and execution of projects including developing work breakdown structure, estimating costs, managing risks, scheduling, staff and resource allocation, team building, communication, tracking, control, and other aspects of successful project completion.
Credit Only Granted for: BMGT485, ENCE320, ENCE325, INST408O or INST453.
Formerly: INST408O.

INST454 Project Development Studio (3 Credits)
Allows students to develop a self-selected project or product, such as a game UI system or a task management app, while building advanced design skills. Students bring an initial idea to the class, and through lectures, discussions, weekly critiques, and project milestones, they progress their concepts into tangible, public-facing work. Emphasizing industry-standard methodologies, the course focuses on three core activities: externalizing ideas, engaging in constructive critique, and documenting design decisions and progress. This hands-on approach fosters self-directed learning, collaborative reflection, and a comprehensive understanding of design and development.
Prerequisite: Minimum grade of C- in INST104, INST126, INST204, and INST380; and must have completed or be concurrently enrolled in INST367.
Restriction: Must be in the Technology and Information Design program.

INST455 Information Assurance and Compliance (3 Credits)
Examines the protection of organizational data, personalized information, intellectual property and the associated assurance of the data's transfer, storage and communication. Students will understand how to manage these concerns and respond to both emergent and existing threats within the information domain. We will look at the key principles of Information Assurance, compliance and best practices in the real world.
Credit Only Granted for: INST408U or INST455.
Formerly: INST408U.

INST456 Risk Management Leadership in the Information Age (3 Credits)
Helps students assess and mitigate a range of vulnerabilities within an organization's data networks, allowing them to understand how to protect the integrity, security, and confidentiality of information.
Credit Only Granted for: INST408B or INST456.
Formerly: INST408B.

INST461 Emerging Technologies and Risk Management (3 Credits)
Focuses on how people and companies can achieve various tangible and intangible benefits and assess risk in using and incorporating emerging technologies (i.e. mobile devices, social media, robotic process automation, 3-D printing, cloud computing, blockchain technologies, artificial intelligence, etc.) into the activities and operations of a company.
Credit Only Granted for: INST408Z or INST461.
Formerly: INST408Z.

INST462 Introduction to Data Visualization (3 Credits)
Exploration of the theories, methods, and techniques of visualization of information, including the effects of human perception, the aesthetics of information design, the mechanics of visual display, and the semiotics of iconography.
Prerequisite: Minimum grade of C- in STAT100; minimum grade of a C- from one of the following (INST201, INST301, or BSOS233); minimum grade of C- in INST126 or GEOG276; a minimum grade of C- from one of the following (AASP101, ANTH210, ANTH260, ECON200, ECON201, GEOG202, GVPT170, PSYC100, SOCY100, or SOCY105); and a minimum grade of C- from BSOS233 or INST314.
Restriction: Must be in Information Science or Social Data Science program.

INST463 Technology Socialprenuer (3 Credits)
Introduces students to the role of technology and entrepreneurship in our society. Students will be able to choose an existing society issue and develop creative entrepreneurial ideas to solve it using innovative technologies. The course allows students to meet industry professionals and learn more about various social problems and projects companies focus on and try to solve in the modern world. Students are also able to contribute to those solutions.
Credit Only Granted for: INST398B or INST463.
Formerly: INST398B.

INST464 Decision Making for Cybersecurity (3 Credits)
Discusses human and organizational decision making from a variety of perspectives. Applies different risk assessment and decision making frameworks that are relevant to personal and organization cybersecurity, with a focus on the quantitative Factor Analysis of Information Risk (FAIR) model. Considers monetary, social and societal costs of cybersecurity decisions. Considers a range of questions relating to cybersecurity, from whether to install a game on a smartphone to how to allocate scarce information security resources in an organization.
Prerequisite: Must have earned a minimum grade of C- in INST201, INST126, MATH115, PSYC100, and INST364.
Restriction: Must be in Information Science program.
Credit Only Granted for: INST408W or INST464.
Formerly: INST408W.

INST466 Technology, Culture, and Society (3 Credits)
Individual, cultural, and societal outcomes associated with development of information & communication technologies (ICTs), including pro- and anti-social factors. Unpacking how gender, race, ethnicity, sexual orientation, disabilities, and political affiliations affect consumption and production of online experiences. Unpacking how structures of dominance, power and privilege manifest at individual, institutional and cultural levels.
Prerequisite: Minimum grade of C- in INST201 or INST301; and minimum grade of C- in PSYC100 or SOCY105.
Restriction: Must be in the Information Science program or Technology and Information Design program.

INST467 Fundamentals of Cybersecurity for Policy Makers (3 Credits)
Explores the key issues facing policy makers attempting to manage the problem of cybersecurity from its technical foundations to the domestic and international policy considerations surrounding governance, response, critical infrastructure risk management, and privacy. Designed for students with little to no background in information technology, and will provide the principles to understand the current debates shaping a rapidly evolving security landscape.
Prerequisite: Must have completed with a C- or be concurrently enrolled in INST364.
Restriction: Must be in Information Science program.
Credit Only Granted for: INST408V, PLCY388C, or INST467.
Formerly: INST408V.

INST470 Competitive Business Intelligence (3 Credits)
Competitive intelligence (CI) is a derivative of governmental intelligence, as well as business marketing, economics, and management, that is defined similarly: the collection, evaluation, analysis, and application of legally available information relevant to the plans, decisions, and operations of one's organization. Topics will include an overview and comparison of the intelligence process in government and in business (i.e., the intelligence cycle), a detailed consideration of the requirements and the analytical segments of that process, a survey of current analytical tools, a survey of information sources and information acquisition activities, a survey of required personnel, physical and information security policies, and the necessary efforts in creating an effective CI unit within any business enterprise.
Credit Only Granted for: INST408K or INST470.
Formerly: INST408K.

INST480 Technology Design Ethics (3 Credits)
Recent years have seen increasing attention to technology design ethics: the steps necessary to ensure that technologies support (and don't undermine) human values, human rights, and human flourishing. But what ethical design looks like can vary based on contexts, industries, and individual workplaces. This course will explore, critique, and expand on tools meant to prioritize ethics in technology workplaces. We will experiment with, assess, and then create our own checklists, toolkits, games, and other creative interventions to make ethical conversations central to technology design.
Prerequisite: Must have completed or be concurrently enrolled in INST204.

INST490 Integrated Capstone for Information Science (3 Credits)
The capstone provides a platform for Information Science students where they can apply a subset of the concepts, methods, and tools they learn as part of the Information Science program to addressing an information problem or fulfilling an information need.
Prerequisite: Minimum grade of C- in INST311, INST314, INST326, INST327, INST335, INST346, INST352, and INST362.
Restriction: Must be in Information Science program; and must have earned a minimum of 90 credits; and permission of INFO-College of Information Studies.

INST600 Foundations for Librarians and Information Professionals (3 Credits)
An introduction to the field of library and information science (LIS), its history, and future direction that provides students with an understanding and appreciation of the nature and functions of the profession(s) they have entered. The focus is on core concepts underlying the LIS discipline, with particular emphasis on professional ethics/values, diversity, equity, inclusion and accessibility (DEIA), and the ways in which technology has shaped and continues to shape the field.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: LBSC791 or INST600.
Formerly: LBSC791.

INST604 Introduction to Archives and Digital Curation (3 Credits)
Overview of the principles, practices, and applications in the archival and digital curation fields.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: LBSC604 or LBSC605.

INST607 Government Information (3 Credits)
An introduction to the nature and scope of government information (federal, state, and local). Tracing the ongoing efforts of government agencies to offer information, services, and resources online, this course also examines the nature and current impact of new technologies on participatory democracy. More specifically, the course explores information and communication technologies designed to make government more open and transparent; the design, implementation, and evaluation of new government and governance mechanisms, including through the use of social media and AI; the role of legal authorities and information institutions such as libraries in supporting access to government information; and the development and implementation of selected public facing online tools (e.g., data visualization, crowd-sourcing, etc.).
Restriction: Permission of INFO-College of Information Studies.

INST608 Special Topics in Information Studies (1-3 Credits)
Covers special topics in information studies.
Repeatable to: 6 credits if content differs.

INST610 Information Ethics (3 Credits)
Investigation of the diverse range of ethical challenges facing society in the information age. Ethical theories, including non-Western and feminist theories. Application of theories to information ethics issues.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INFM718Q, INST610, or LBSC708I.
Formerly: INFM718Q and LBSC708I.

INST611 Privacy and Security in a Networked World (3 Credits)
Evolving conceptualization of privacy and security issues in light of technological developments in the 21st century. Analysis of legal, ethical, design, and socially constructed challenges that organizations and individuals face when developing privacy and security solutions.
Restriction: Permission of INFO-College of Information Studies.

INST612 Information Policy (3 Credits)
Nature, structure, development and application of information policy. Interactions of social objectives, stakeholders, technology and other forces that shape policy decisions.
Restriction: Permission of INFO-College of Information Studies.

INST613 Information and Human Rights (3 Credits)
An examination of information as a human right, including topics: social, cultural, economic, legal, and political forces shaping information rights; the impact of information rights on information professions, standards, and cultural institutions; and information rights and disadvantaged populations.
Restriction: Permission of INFO-College of Information Studies.

INST614 Literacy and Inclusion (3 Credits)
The educational and psychological dimensions of helping and supporting new users to become information literate and experienced users to remain engaged.
Restriction: Permission of INFO-College of Information Studies.

INST615 Information Professionals and the Law (3 Credits)
An exploration of the interrelated issues of the provision of and information literacy about legal information by information organizations and the impacts of legal issues, such as privacy and filtering, on the practice of information organizations that serve the public.
Restriction: Permission of INFO-College of Information Studies.

INST616 Open Source Intelligence (3 Credits)
An introduction to Open Source Intelligence (OSINT) for Information Professionals. For the purposes of this course, OSINT is defined as the use of free, publicly available online sources to gather information about people, organizations/groups, places, businesses, activities/events, and capabilities. Collected information is used to conduct analysis or reach conclusions with estimated level of certainty. Students will learn basic and advanced techniques for using search engines, people directories, social networks, location-based services, images and videos, public records, domain analytics, documents, archives, and other sources. Throughout the modules, data quality and validation procedures will be key topics. Professional applications of the skills taught are extensive and include libraries, law offices, journalism, human resources, competitive intelligence, law enforcement, opposition research, government agencies, ethical hacking, and many more.
Restriction: Permission of INFO-College of Information Studies.

INST617 Computational Journalism (3 Credits)
Designed to teach the application of computational methods in journalism and reporting. The methods include natural language processing, visualization, and web data mining. The course will also cover the necessity and impact of journalistic ethics in designing computation solutions.
Prerequisite: Permission of the Philip Merrill College of Journalism.
Cross-listed with: JOUR773.
Jointly offered with: JOUR473.
Credit Only Granted for: JOUR779V, JOUR773, JOUR473, JOUR479V, INST617, INST408I, or INST403.
Formerly: JOUR779V.

INST620 Diverse Populations, Inclusion, and Information (3 Credits)
Importance of equality of information access. Social, political, and technological barriers to information. Information needs of diverse and underrepresented populations. Principles of inclusive information services.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: LBSC620 OR INST620.
Formerly: LBSC620.

INST622 Information and Universal Usability (3 Credits)
Information services and technologies to provide equal experiences and outcomes to all users. Laws, standards, approaches, component concepts, access needs, and technologies in relation to physical and online information environments.
Restriction: Permission of INFO-College of Information Studies.

INST626 CSS/HTML Basics (3 Credits)
Learn the introductory steps of building a static website using HTML and CSS. The course will introduce students to web architecture such as client-server architecture and the three tier model. The course will also briefly cover the topics of web protocol such as HTTP,HTTPS, FTP.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INST728J or INST626.
Formerly: INST728J.

INST627 Data Analytics for Information Professionals (3 Credits)
Skills and knowledge needed to craft datasets, perform quantitative and qualitative analyses, and develop information resources that bridge the gap between raw data and decision makers' needs.
Restriction: Permission of INFO-College of Information Studies.

INST630 Programming Human-Centered Interfaces (3 Credits)
An introduction to the development and programming of user interfaces intended for students interested in human-computer interaction. Topics include fundamentals of programming, history and current trends in user interface implementation that are relevant to information professionals.
Restriction: Permission of INFO-College of Information Studies.

INST632 Human-Computer Interaction Design Methods (3 Credits)
Methods of user-centered design, including task analysis, low-tech prototyping, user interviews, usability testing, participatory design, and focus groups.
Prerequisite: LBSC671, INFM603, or INST631; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST633 Analyzing Social Networks and Social Media (3 Credits)
Introduces students to the science and social science of network analysis. Through real world examples, including analysis of their own social networks, students will develop skills for describing and understanding the patterns and usage of services like Facebook, Twitter, YouTube, and others. Students will read classic and cutting edge articles and books about these topics and discuss their applicability to this new social media. The class will culminate with a capstone project in which students will apply the analysis methods they have learned to understanding a particular question about social networks and social media.
Restriction: Permission of INFO-College of Information Studies.

INST638 HCI Professional Preparation Seminar (1 Credit)
The human-computer interaction area is huge and diverse, yet all HCI professionals will face a common set of challenges upon embarking into their future careers, including job hunting, interviewing, joining a team, managing group dynamics, and staying abreast of current technology. Students will learn how to tackle these challenges from a series of speakers familiar with current industry practice.
Repeatable to: 3 credits if content differs.

INST639 Practical Skills in HCI (1-3 Credits)
Current industry practice in the HCI and UX field involves being familiar with many practical skills and specialized software. In this repeatable course, HCIM students will be able to acquire some of these vital practical skills in order to be better prepared for joining industry upon graduation. Furthermore, this will also be an opportunity for students to develop their portfolio for future job hunts. Offered in both Fall and Spring semesters, the intention is for these "practical skills" to be taught by professional instructors with expert knowledge. The content of the course will vary from semester to semester, but here is a sample of topics: Graphic and visual design and communication; UX design and research in games; Voice and gestures; UX mockups and wireframing tools; Practical web design and technologies; UX project management software.
Repeatable to: 9 credits if content differs.

INST640 Principles of Digital Curation (3 Credits)
Principles for the design and implementation of long-term curation of digital data and information assets, including born-digital and digitized assets. Frameworks for analysis of technical, practical, economic, legal, social and political factors affecting digital curation decisions. Case studies of specific digital curation scenarios.
Restriction: Permission of INFO-College of Information Studies.

INST641 Policy and Ethics in Digital Curation (3 Credits)
Discussion of strategies to address intellectual property, privacy, security and other policy and ethics concerns raised by the curation of digital records and data.
Prerequisite: INST604; or INST640; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST643 Curation in Cultural Institutions (3 Credits)
An overview of the principles, practices, and current debates in the management, care and representation of digital artifacts in libraries, archives, and museums.
Restriction: Permission of INFO-College of Information Studies.

INST644 Introduction to Digital Humanities (3 Credits)
A survey of the history, methods, and principal topics of the Digital Humanities, examined from theoretical and applied perspectives.
Restriction: Permission of INFO-College of Information Studies.

INST646 Principles of Records and Information Management (3 Credits)
Principles and practices of managing records in the context of information management programs in government, corporate and other institutional settings. Includes access; legal requirements; digital technologies; and creation, administration, appraisal, and retention and disposition of records.
Restriction: Permission of INFO-College of Information Studies.

INST647 Management of Electronic Records & Information (3 Credits)
Focuses on the life cycle of records and the impact of technology programs for managing electronic records. Explores the roles of records managers in the management of electronic records.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: LBSC682 OR INST647.
Formerly: LBSC682.

INST650 Facilitating Youth Learning in Formal and Informal Environments (3 Credits)
The historical, organizational, and contemporary contexts of formal and informal learning spaces; the principles of teaching, learning, and information literacy that underlie the formal and informal learning spaces; and the leadership role that information professionals can play within their schools, libraries and communities.
Restriction: Permission of INFO-College of Information Studies.

INST651 Promoting Rich Learning with Technology (3 Credits)
Exploration of how technology can be used to promote rich learning experiences, with a particular focus on youth populations. Assessment of the how, when, and why of infusing technology into the teaching and learning process.
Restriction: Permission of INFO-College of Information Studies.

INST652 Design Thinking and Youth (3 Credits)
Methods of design thinking specifically within and for youth contexts, including user-centered design, understanding user needs, ideation, contextual design, participatory design, iterative prototyping, and visual design. These topics will specifically be studied in the context of designing with and for youth.
Restriction: Permission of INFO-College of Information Studies.

INST653 Introduction to Museum Scholarship (3 Credits)
Provides students a basic understanding of museums as cultural and intellectual institutions. Topics include the historical development of museums, museums as resources for scholarly study, and the museum exhibition as medium for presentation of scholarship.
Cross-listed with: AMST655, ANTH655, HIST610.
Credit Only Granted for: AMST655, ANTH655, HIST610, INST728T or INST653.

INST660 Strategic Leadership (3 Credits)
Students will use research and best practices to act and think like a leader, increase your self-awareness, and learn how to unlock potential in others. From the stories of great leaders and everyday people, you will learn and practice empowerment, accountability, courage, creativity, and humility, which are the key leadership skills. In addition, this course will teach you how to create new opportunities and lasting impact to drive growth and value creation in your organization.
Prerequisite: INFM612; or LBSC631; or LBSC635; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INST660, LBSC708F or INFM718F.
Formerly: LBSC708F, INFM718F.

INST661 Introduction to Game, Entertainment, and Media Analytics (3 Credits)
With the continuing global growth in the Game, Entertainment, and virtual/augmented reality and immersive experiences industries, entertainment providers increasingly depend on data analytics to maintain a competitive edge while continuing to improve the customer experience. This course provides an overview of the Game, Entertainment, and Media (GEM) industries, discuss the relationships between the entertainment providers and the entertainment consumers, and explore the analytical techniques used to maximize the overall value to both the providers and consumers. The course will focus on the uses of analytics methods such as personalization, recommendation, clustering and segmentation, behavioral analytics, etc., will discuss core data management and data architecture concerns, and examine how big data infrastructure can support scalability as data volumes grow and as streaming speeds accelerate. In addition we review socio-technical aspects of entertainment, especially in the areas of cyberpsychology, social networks, and information policy concerns such as privacy protection, fraud, equity, and national security concerns.
Prerequisite: Permission of the instructor.

INST670 Introduction to Javascript Programming (1 Credit)
Introduction to the fundamentals of Javascript programming. Basic components of all programming languages, including variables, types, data structures, and control flow, with a focus on leveraging Javascript libraries for more advanced functionality. No prior experience needed.

INST671 Introduction to Web Programming (1 Credit)
Introduction to the fundamentals of designing and programming web sites. HTML programming extended by work with Cascading Style Sheets. Programming skills are complemented with fundamentals of design and usability. No prior programming experience needed.
Credit Only Granted for: INST728W or INST671.
Formerly: INST728W.

INST673 Hands On Machine Learning with Weka (1 Credit)
Students will receive hands on experience with the open-source machine learning tool Weka. Topics covered will be classification, regression, basic algorithm types, how to get data into a format Weka can process, how to interpret results, and basic document classification. The class will meet online.
Recommended: It is recommended that students have some familiarity with programming prior to taking this course.
Restriction: Permission of INFO-College of Information Studies.

INST680 Health Informatics (3 Credits)
An introduction to the ways in which medical data, information, and knowledge are created, stored and used. Students will gain an understanding of the current trends in the delivery of medical care and the ways in which these trends influence health information resources and systems.
Prerequisite: Must have completed or be concurrently enrolled in INFM600 or LBSC602; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST681 Health Information Behavior (3 Credits)
Exploration of information needs of healthcare professionals and the general public, as well as how they seek information to fulfill these information needs, impacts and outcomes of health-related information-seeking by multiple populations. Examination of models and theories and empirical studies of patient and healthcare professional information behavior.
Prerequisite: INFM600; or LBSC602; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST682 Personal Health Informatics & Visualization (3 Credits)
Personal Health Informatics cover a broad concept that encompasses an array of approaches to collect, store, share, analyze, and reflect on personal health data. Not only health care providers are relying on Health Technologies to improve patient care, people are increasingly using health devices and apps in their everyday life. Individuals have started using new technologies to collect data, increase awareness, and reflect on and change their behaviors. They also use various tools for curiosity and fun. This course will provide an overview of this exciting field and examine how social and behavioral theories can be applied to create effective health applications.It is difficult to create health technologies that can successfully be integrated into people's daily life due to many obstacles in individuals' data collection, integration, self-reflection, and sharing practices. Understanding these challenges is an important part of designing Health Technologies. Therefore, this course will cover HCI and design thinking methods that you can leverage in understanding the adoption of Health Technologies. Moreover, visualizations facilitate people to gain insights from their data, so we will cover common visualization approaches used in the personal data contexts.

INST701 Introduction to Research Methods (3 Credits)
Techniques and strategies of research as applied to the definition, investigation, and evaluation of information problems. Qualitative, quantitative, and mixed methods of research design methods are considered from the aspects of implementation, analysis, and interpretation.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: LBSC701, INFM718M or INST701.
Formerly: LBSC701, INFM718M.

INST702 Advanced Usability Testing (3 Credits)
Usability test design, implementation and analysis for computer and mobile devices; special attention will be paid to remote testing. Students will learn the complex process of coordinating and facilitating a usability test and how to synthesize test data into reports appropriate for various audiences.
Prerequisite: Permission of instructor; or (INFM605 or INST631).
Restriction: Permission of INFO-College of Information Studies.

INST703 Visual Design Studio (3 Credits)
This hands-on studio course will help students develop foundational visual skills related to user experience (UX) design. Students will explore methodologies and processes used in many of the industry's top creative environments and study the entire visual design skillset, including concept development, content creation, system design, and tools and process.
Restriction: Must be in the Human-Computer Interaction Master's program.

INST704 Inclusive Design in HCI (3 Credits)
An introduction to inclusive technology design, that is, the design and evaluation of user interfaces for diverse users and use contexts. Building on basic concepts in human-computer interaction, students will learn about design exclusion and barriers to use, and methods by which these can be overcome. Assistive input and output technologies will also be covered. Populations include older adults, users with visual, cognitive or motor impairments, users who are deaf or hard of hearing, children, users in low resource contexts, and users in mobile contexts. Research trends and practical design considerations (e.g., web accessibility requirements) will be covered. Students will interact with the material through readings, discussion, and individual and group assignments.
Restriction: Permission of INFO-College of Information Studies.

INST705 Game Design Studio (3 Credits)
Learn the fundamentals of game design by applying elements and principles of game design, such as goals, rules, and challenges, to create board games, card games, and digital games. Students will be introduced to the basic tools and methods of game design: paper and digital prototyping, design iteration, design critique, and user testing. Students will design several games of different types to add to a growing portfolio of game design concepts. Students will also learn how to use their skills to deconstruct and critique the components of existing games, as well as gain an understanding of the role of the game designer in real-world game development teams.
Recommended: Programming experience will be useful, but not strictly necessary.
Credit Only Granted for: INST705, INST728E, or INST408J.

INST706 Project Management (3 Credits)
Comprehensive overview of project management, focusing on the needs of information resource (IR) projects. Concepts and techniques for planning and execution of projects including developing work breakdown structure, estimating costs, managing risks, scheduling, staff and resource allocation, team building, communication, monitoring, control, and other aspects of successful project completion.
Prerequisite: INFM603 and INFM612; or (LBSC631 and LBSC671); or (LBSC635 and LBSC670); or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INST706 or INFM706.
Formerly: INFM706.

INST709 Independent Study (1-3 Credits)
Intensive individual study, reading, or research in an area of specialized interest under faculty supervision. Registration limited to the advanced student with the approval of the advisor and of the faculty member involved.
Prerequisite: Completion of all core courses.
Restriction: Permission of INFO-College of Information Studies; and permission of instructor.
Repeatable to: 9 credits.
Additional Information: A student may complete no more than 9 credits registered under 709 or a total of 12 credits registered under 708 and 709.

INST710 User Experience Research Methods (3 Credits)
Students will learn to conduct user research in industry and to provide foundational knowledge needed for academic research. It examines the theoretical and epistemological differences between research paradigms and provides an overview of qualitative, quantitative and mixed-method approaches. It overviews user-centered design (UCD) methods, and uses Contextual Inquiry/Contextual Design as the backbone for a research project, incorporating related formative UCD methods and techniques. It is a project-based course, where students conduct a semester-long project to prepare them for the HCIM Capstone as well as other types of formative user research.

INST711 Interaction Design Studio (3 Credits)
Covers basic interaction design principles and design process from a studio-based design perspective. Focuses on how to design for interactions that will resonate with your audiences: how the features and functions of a project get translated into something people find usable, useful, and desirable. Explores the role of interaction designers. Students design and prototype interactive products, systems, and services.
Additional Information: Enrollment is prioritized for HCIM students. Remaining seats may be filled with permission from the INFO program or the instructor.

INST713 Futures of Work (3 Credits)
Are robots taking our jobs? Are there any jobs even worth taking? What other futures of work might we build? This course examines these questions by focusing on the labor process of computer-supported collaborative work (CSCW) in domains ranging from transportation to software development to sex work, drawing on research and theory from sociology, organizational studies, HCI, and more. Design-oriented students will be encouraged to develop interventions to enhance not just productivity but autonomy and democracy. Research-oriented students will learn to study workplaces and situate shopfloor developments in global political economy.
Credit Only Granted for: INST713 or INST728Y.
Formerly: INST728Y.

INST717 Internship Practicum in Human-Computer Interactions (3 Credits)
Required, supervised experience working in an industry, government, non-profit organization or an educational institution to address a problem in Human-Computer Interaction. Students will spend a minimum of 120 hours working in the agency during the internship.
Prerequisite: INST631 and INST632.
Recommended: INST701.
Restriction: Permission of INFO-College of Information Studies; and must be in Human-Computer Interaction (Master's) program.

INST725 Legal Research for Information Professionals (3 Credits)
An in-depth exploration the methods, resources, and context of conducting advanced legal research. After offering an overview of various types of legal materials, the course will focus on finding and analyzing legal materials through various primary sources, databases, secondary sources, and public records for government and corporate settings. The course will also discuss practical issues of conducting legal research, such as data management and budgeting.
Prerequisite: INST615.
Restriction: Permission of INFO-College of Information Studies.

INST726 Information Governance (3 Credits)
Offers a comprehensive introduction to information governance, an emerging discipline concerned with how organizations minimize risk and maximize the value associated with their information assets. Drawing from real-life examples from the private and public sectors, the course will explore important facets of information governance, including how institutions incorporate best practices in records and information management, data storage and archiving, e-discovery, privacy, cybersecurity, analytics, risk management, and compliance. The course will also provide practical lessons in developing a state-of-the-art information governance program.

INST727 Information Institutions Roles and Responses during Crises (3 Credits)
By embracing a preparation lens, examine the roles and responses that information institutions can play before, during, and after crises (defined broadly). Engage in the processes of design, execution, reflection, iteration, and evaluation of the agile and dynamic structures needed to respond to crises. Acquire the knowledge, skills, and mindsets necessary to serve communities in times of crisis. Given that new crises are constantly emerging, this course will weave in tried-and-true examples of essential tasks that need to be executed before, during, and after crises; reflective exercises to measure readiness and gauge the effectiveness of approaches; assessments to evaluate the achievement of intended outcomes; and guidance for information institution staff and administrators that emphasizes comfort with ambivalence, uncertainty, and imperfection.
Credit Only Granted for: LBSC708X or INST727.
Formerly: LBSC708X.

INST728 Special Topics in Information Studies (1-3 Credits)
Selected topics in information studies.
Restriction: Permission of INFO-College of Information Studies.
Repeatable to: 9 credits if content differs.

INST729 International Opportunities in Information Studies (3 Credits)
Short term, experiential course offered in conjuction with the University's Study Abroad Office, to volunteer, complete a project, or conduct research in a library or information organization outside the U.S. Focus and location varies.
Prerequisite: Permission of instructor.
Restriction: Permission of INFO-College of Information Studies.
Formerly: LBSC708S and LBSC729.

INST730 Games as Emergent Experiences (3 Credits)
Videogames are designed objects that players bring their own history to, resulting each time in a unique emergent experience. If you've ever wondered why you love a certain game but others hate it, why you prefer one genre of game over another, or why the frustration you feel in complicated games is often actually enjoyable, this is the class for you! We will examine design principles instantiated in various games, analyze how failure and feedback support productive gameplay, discuss how mechanics and aesthetics contribute to emergent experiences, and develop an understanding of the field of games scholarship.
Credit Only Granted for: INST608K, INST408K or INST730.
Formerly: INST608K.

INST731 Advanced Game, Entertainment, and Media Analytics (3 Credits)
Analytical techniques and research methods are on the rise in gaming, entertainment, and media (GEM) industries. Students will expand their critical thinking skills, explore the current state of GEM analytics, summarize data creatively, improve data-driven decision making, and optimize reporting in real-world situations. This course will assist students in applying and developing advanced analytical skills specifically designed for gaming, entertainment, and media analytics in their individual areas of interest. Students will achieve this through the development of critical thinking skills as well as advanced demonstration of skills and knowledge in various data science techniques and analytical methods, such as modeling, database management, information workflow analysis, usability research, statistical analysis, predictive analytics, natural language processing (NLP), data mining, and machine learning techniques.
Prerequisite: INST661.
Credit Only Granted for: INST728Z or INST731.
Formerly: INST728Z.

INST732 Entertainment Theory (3 Credits)
An entertainment environment is a setting in which audiences interact with content developed to please, charm, cheer, interest, engage, and enthrall distinct individuals and groups. Entertainment environments surround us in all parts of our lives-this course aims to dissect them using a foundation of entertainment theory, including a set of models and theories examining motivations for entertainment consumption; selection of content; processing of content; evaluation of content; and cognitive, attitudinal, and behavioral effects of content.

INST733 Database Design (3 Credits)
Principles of user-oriented database design. Requirements analysis. Data modelling. Data integrity and security and multi-user databases. Implementing an information system using a database management system (DBMS).
Prerequisite: LBSC690, LBSC671, or INFM603; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INST733 or LBSC793.
Formerly: LBSC793.

INST734 Information Retrieval Systems (3 Credits)
Principles of organizing and providing access to information using automated information storage and retrieval systems. Retrieval systems models, index language selection, data structure, user interfaces, and evaluation for text and multimedia applications.
Prerequisite: LBSC671 or INFM603; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INST734 or LBSC796.
Formerly: LBSC796.

INST735 Natural Language Processing (3 Credits)
Introduce fundamental concepts, techniques, and algorithms for the computational handling of natural language. Statistical and machine learning techniques, models, and algorithms that enable computers to deal with the ambiguity and implicit structure of human language. Approaches that focus on uncovering linguistic structure, such as syntactic or semantic parsing, as well as those that focus on manipulating text in useful ways, such as question answering or machine translation.
Prerequisite: Minimum grade of C- in CMSC422; and permission of CMNS-Computer Science department.
Cross-listed with: CMSC723, LING723.
Credit Only Granted for: CMSC723, LING723, or INST735.
Additional Information: CMSC students may only receive PhD Comp. credit for CMSC723 or CMSC823, not both.

INST736 Computational Linguistics II (3 Credits)
Natural language processing with a focus on corpus-based statistical techniques. Topics include: stochastic language modeling, smoothing, noisy channel models, probabilistic grammars and parsing; lexical acquisition, similarity-based methods, word sense disambiguation, statistical methods in NLP applications; system evaluation.
Prerequisite: LING723, CMSC723, or INST735; or permission of instructor. Cross-listed with CMSC773, LING773.
Credit Only Granted for: CMSC773, LING773, or INST736.
Additional Information: CMSC students may only receive PhD Comp. credit for CMSC723 or CMSC823, not both.

INST737 Introduction to Data Science (3 Credits)
An exploration of some of the best and most general approaches to get the most information out of data through clustering, classification, and regression techniques.
Prerequisite: INST627 and (LBSC690, LBSC671, INFM603, or JOUR652).
Restriction: Permission of INFO-College of Information Studies.

INST741 Social Computing Technologies and Applications (3 Credits)
Tools and techniques for developing and configuring social computing applications. Theories and paradigms for social computing. Strengths and limitations of different application styles and types. Evolution of applications as responses to social computing challenges. Information and organizational systems co-development.
Prerequisite: INFM603 and INFM605; or (LBSC602 and LBSC671); or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INFM741 or INST741.
Formerly: INFM741.

INST742 Implementing Digital Curation (3 Credits)
Management of and technology for application of digital curation principles in specific settings. Characteristics, representation, conversion, and preservation of digital objects. Application of standards for digitization, description, and preservation. Planning for sustainability, risk mitigation and disaster recovery.
Prerequisite: INST604; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST744 Solving Problems in Digital Curation - Capstone Course (3 Credits)
Project-based course that applies digital curation principles and techniques first-hand in an institutional program setting. The focus is on a well-defined project that constitutes a learning experience and also permits the student to contribute to the ongoing work of the host institution. The project must address one or more aspects of digital curation: design and implementation for long-term digital curation of a discrete collection; application of technologies and standards for digitization, description, and preservation of digital assets; or implementation of strategies to provide access to a digital collection.
Restriction: Must be enrolled in the Curation and Management of Digital Assets (CMDA) Certificate.

INST747 Research in Advanced Digital Curation (3 Credits)
Students will build their ability to understand the complexity of research strategies and apply tools involved in the management and use of digital information in the Age of Big Data. The class will contain class lectures, class discussions, assigned readings, and extensive hands-on experience with student experience in digital curation projects. The research projects are focused around six major themes that will engage students in multiple arenas of research in Big Data. These are: community displacement, refugee narratives, movement of people, citizen internment, racial zoning, and cyberinfrastructure for digital curation. Project participants will have the opportunity to work with external stakeholders.
Prerequisite: INST604; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST750 Advanced Data Science (3 Credits)
Application of data science techniques to unstructured, real-world datasets including social media and geo-referenced sources. Techniques and approaches to extract information relevant for experts and non-experts in areas that include smart cities, public health, and disaster management.
Prerequisite: INFM603 and INST737; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.
Credit Only Granted for: INFM750 OR INST750.
Formerly: INFM750.

INST751 IoT and Streaming Data Analytics (3 Credits)
An increasing number of sensors, actuators, Internet-connect instruments and apparatuses, smart devices, and systems are generating and broadcasting a wide variety of continuous data streams. Machine-generated structured data sources are joined by a myriad of unstructured data streams from social media, weather, and news sources, among others. Integrated into networks, these continuously-streaming devices (collectively referred to as the Internet of Things, or IoT) provide a fertile array of data sources that can be ingested and analyzed to inform and automate decision processes for numerous purposes including operational intelligence, process monitoring, optimization, risk management, personalization, and prediction in real time. This course looks at architectures and operational modes for streaming data sources and examine methods for descriptive analytics, creation of predictive models, and integrated deployment of these models via centralized and edge computing resources. We will discuss a variety of uses cases for streaming data analytics and how they are applied in different industries including public utilities, smart cities, manufacturing, telecommunications, and healthcare.
Prerequisite: INFM603, INST733, or other programming and database courses, or Permission of the instructor.

INST752 Location Intelligence (3 Credits)
Provides a comprehensive overview of the principles of geographic information systems and location analytics for a variety of business scenarios. Explores the processes for integrating location information, maps, and demographic information with business information and implementing analytical applications. Reviews business contexts such as government and citizen analysis, zoning and planning, retail site selection, supply chain management and logistics, fieldservice planning and tracking, real estate, insurance, public safety, municipal maintenance, and others. Provides hands-on opportunities to apply location intelligence methods.
Prerequisite: INFM600, INFM603, INST630, and INST733; or permission of INFO-College of Information Studies.

INST753 Data Governance and Data Quality (3 Credits)
Surveys the methods and practices for understanding the relationship between organizational performance objectives and their effective oversight, use, and management of information. Examines methods for instituting information governance, data governance, and data quality in the context of information policies for assessing information risk, observing data policies, and enforcing accountability for protection of sensitive information. Explores models of data ownership and accountability, roles and responsibilities for data governance and data stewardship, and processes for soliciting and documenting information and data requirements. Covers techniques for data quality assessment, specification of data quality rules, and applications for validating compliance with data quality expectations, monitoring levels of data quality, and notifications and dashboards for monitoring data compliance.
Prerequisite: INFM600, INFM603, and INST733; or permission of INFO-College of Information Studies.

INST754 Data Integration and Preparation for Analytics (3 Credits)
Provides a comprehensive overview of the end-to-end processes for acquiring, ingesting, managing, cleansing, transforming and integrating data sources for the purposes of reporting andanalytics. Concepts include data acquisition, data streaming, data staging, standardization, data quality, concept and metadata harmonization, transformation, and data modeling. Students will learn how ingested data sets can be transformed, integrated, and prepared for analytical use.
Prerequisite: INFM600, INST630, and INST733; and (INFM603 or JOUR652) ; or permission of INFO-College of Information Studies.

INST755 eGovernment for Smart Cities (3 Credits)
Federal, state, and local government entities are increasingly communicating, interacting, and providing services digitally in an online and networked environment. Concurrently, urban planners and administrators seek to leverage the potential of rapidly evolving technologies to transform service provisioning for the efficient management of assets and resources, with the goal of creating sustainable, livable, innovative, and economically vibrant cities and communities. This course will examine the intersection of these two developments and provide a framework for understanding the technical, policy, and information management issues that are emerging.

INST756 Information Risk Management (3 Credits)
Looks at information system threats, vulnerabilities, risk assessment and management. Explores how regulations scope and define what is considered to be protected information. Considers how data assets are assessed and classified in terms of their levels of sensitivity. Discusses specifying data protection policies and the techniques for enforcing compliance with those policies.
Prerequisite: INFM600; or permission of INFO-College of Information Studies.

INST760 Data Visualization (3 Credits)

Introduction to the science and technology of data visualization--the graphical representation of data to aid understanding--and includes both theoretical foundations as well as practical applications of integrated visualization techniques on real-world problems. Application of these techniques to state-of-the-art problem domains within research, society, and industry.

Prerequisite: INST630; or INFM603; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST762 Visual Analytics (3 Credits)

Visual analytics is the use of interactive visual interfaces to facilitate analytical reasoning. In essence, visual analytics is based on the--not uncontroversial--idea that humans and computers working alone are insufficient for the data challenges of today and tomorrow, and that effective synthesis of both humans and computational algorithms are needed to create human-in-the-loop systems. Thus, visual analytics bridges human-centered disciplines such as visualization and human-computer interaction with computation-centered disciplines such as machine learning, probabilistic methods, and knowledge discovery. The course contents will include both theoretical foundations of this interdisciplinary science as well as practical applications of integrated visual analysis techniques on real-world problems.

Prerequisite: INFM603, INST630, or JOUR652; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST764 Data Literacy for Arts and Entertainment Management (3 Credits)

This survey course provides an overview of the integral use of data and information to manage, inform the operations, engage customers, patrons, and donors, and influence product/exhibit/program design in arts and entertainment businesses and organizations. The course will introduce core concepts of data literacy such as metadata and data management for collection curation and management, information seeking behaviors and enabling search, data management for business operations, descriptive analytics for reporting, using data for customer relationship management, and more advanced analytics. The course will explore how all these concepts fit together in the context of Arts and Entertainment Management and provide laboratory projects that provide hands-on experience with the different information and data management practices discussed.

Restriction: Permission of INFO-College of Information Studies.

INST767 Big Data Infrastructure (3 Credits)

Principles and techniques of data science and business intelligence. Technologies and architectures for large-scale data warehousing and scale-out data analytics platforms. Supervised and unsupervised data mining.

Prerequisite: INST737; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST770 Information and Preparedness, Response and Recovery in Japan (3 Credits)

Education abroad program in Japan. Examines how individuals and groups respond to disaster through informal and formal practices of community resilience and recovery. Focuses on Japanese uses of information for these purposes, including storytelling, game-based learning, social media, archives, and memorials. Examines Japanese principles of community and kizuna ("connectedness"). Includes 2 weeks of pre-departure online course in the US, 1 week of study and travel in Japan over spring break, and 2 weeks of post-return online coursework in the US.

Credit Only Granted for: INST370 or INST770.

INST771 Foundations of Cybersecurity (3 Credits)

Explores the foundational concepts of cybersecurity including the Threat Landscape, the evolution and structures of the global telecommunications network, key communication protocols and foundations of networks, the history, culture and emergence of the hacking process, and the core motivations and tactics of threat actors.

INST772 Policy and Practice of Ethical Hacking (3 Credits)

Provides students with an understanding of the ethical frameworks and technical approach in the conduct of penetration testing and ethical hacking. Students will work with real systems in real environments and will leverage real vulnerability analysis and exploitation tools in a live environment. Upon completion, students will understand the overall concepts guiding penetration testing from a practical, hands-on vantage point.

Prerequisite: Must have completed or be concurrently enrolled in INST771.

INST773 Cyber Intelligence Fundamentals (3 Credits)

Provides students with an understanding of how to identify, track, and report on malicious activity. Students will learn to identify and work with malware and network data and pair it with a broader set of threat intelligence information to draw conclusions based on the totality of open source information and network intelligence. Students will gain a in depth understanding of the principles of cyber threat intelligence and techniques applied in the cyber threat industry. Students will engage in in-depth discussion and practice in evaluating and interpreting indicators of compromise, command and control, and artifacts left by malicious actors.

Prerequisite: INST771.

INST775 HCIM CAPSTONE PREP (3 Credits)

Students will define a project, which requires a high level of background research, rigor in execution and evaluation, and documentation. Capstone projects may follow the design, prototyping and evaluation process from end-to-end or may focus on a subset of elements in that process, such as formative study and design.

Prerequisite: INST631, INST632, and INST717; and must have completed Research Methods; and permission of INFO-College of Information Studies. Or permission of instructor.
Restriction: Must be taken in the fall semester of the year in which the student plans to graduate; and permission of INFO-College of Information Studies.

INST776 HCIM CAPSTONE PROJECT (3 Credits)

The opportunity to apply the skills learned through coursework in a semester-long project applied to a real -world problem. Capstone projects may follow the design, prototyping and evaluation process from end-to-end or may focus on a subset of elements in that process, such as formative study and design.

Prerequisite: INST775; or permission of instructor.
Restriction: Must be taken in the semester immediately following completion of INST775 HCIM Capstone Prep; and permission of INFO-College of Information Studies.
Additional Information: Enrollment is prioritized for HCIM students. Remaining seats may be filled with permission from the INFO program or the instructor.

INST779 Readings Seminar (1 Credit)
Readings in emerging topics. Through readings and discussion the class will critically assess future directions and highlight intersection points with other disciplines (e.g., medicine) and sub-disciplines of information studies and computer science (e.g., information retrieval, computer vision, machine learning). One or more themes will be covered over the semester (e.g., inclusive design, health informatics, environmental sustainability, social networking) and will be chosen based on instructor and student interest.
Restriction: Permission of INFO-College of Information Studies.
Repeatable to: 3 credits if content differs.
Credit Only Granted for: INST779, INST728J.
Formerly: INST728J.

INST782 Arrangement, Description, and Access for Archives (3 Credits)
Introduction to the key concepts and practices involved with arrangement and description of archives, and the techniques appropriate to enable users to access archival information in traditional and nontraditional archival contexts.
Prerequisite: INST604; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST784 Digital Preservation (3 Credits)
Issues and practices regarding digitization of analog materials and preservation of digital materials, both digitized and born digital.
Prerequisite: INST604; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST785 Documentation, Collection, and Appraisal of Records (3 Credits)
Development of documentation strategies and plans; collecting policies to guide programs in acquiring records; theories and techniques for appraising records to identify those with continuing value.
Prerequisite: INST604; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies.

INST786 Museum Research Seminar (3 Credits)
A research seminar focusing on the practice and presentation of cultural and historical scholarship in museums and historical sites. Students will complete an original research project on the challenges and opportunities of public exhibition and interpretation of cultural and historical research.
Prerequisite: AMST655, ANTH655, or HIST610.
Cross-listed with: AMST856, ANTH856, HIST810.
Credit Only Granted for: AMST856, ANTH856, HIST810, INST728U or INST786.

INST787 Museum Scholarship Practicum (3-6 Credits)
Students devise and carry out a research program using the collections at the Smithsonian Institution or some other cooperating museum, working under joint supervision of a museum professional and a university faculty member.
Prerequisite: AMST856, ANTH856, or HIST810.
Cross-listed with: AMST857, ANTH857, HIST811.
Restriction: Permission of Museum Scholarship Program required.
Credit Only Granted for: AMST857, ANTH857, HIST811, INST728I or INST787.

INST788 Special Topics: Collaborative Curation (3 Credits)
This seminar considers the history of curation and curators within the institutional setting of museums and offers participants the opportunity, and challenge, to engage in curatorial practice by planning an exhibition that focuses on a critical aspect of life at and around the University of Maryland over the years.
Prerequisite: AMST655, ANTH655 or HIST610.
Recommended: AMST856, ANTH856, or HIST810; and AMST857, ANTH857 or HIST811.
Cross-listed with: AMST659, ANTH659, HIST688.
Restriction: Must have permission of the Museum Studies and Material Culture program.
Repeatable to: 6 credits if content differs.
Additional Information: Students enrolled in the MSMC (Museum Studies and Material Culture) certificate program will be given priority for enrollment.

INST789 Non-Thesis Research (1-6 Credits)
Covers non-thesis research in the field of Information Studies
Restriction: Must be in a program within the College of Information (INFO).
Repeatable to: 12 credits.

INST794 Capstone in Youth Experience (3 Credits)
Through a supervised project, to synthesize design thinking, participatory design, connected learning, and learning theory/frameworks students will produce a technology-infused program for and with youth. Students will develop and carry out a project with a community partner through their library system. The project must incorporate technology and design thinking, and must be based on one or more learning theory/frameworks. Through the course, students will learn many practical skills related to planning and implementation of a technology-infused programming at or through their library, including marketing, fundraising, budgeting, legal issues, logistical issues, developing and sustaining community partnerships, developing engaging experiences for youth, and creating and analyzing learning assessments.
Prerequisite: INST650, INST651, and INST652; or permission of instructor.
Restriction: Permission of INFO-College of Information Studies; and must be part of Youth Experience (YX) certificate program.

INST798 Seminar in Research Methods and Data Analysis (3 Credits)
Topics and issues in information studies research. Design and conduct of research project.
Jointly offered with: INST808.
Restriction: Permission of INFO-College of Information Studies; or permission of instructor.
Repeatable to: 9 credits if content differs.

INST799 Master's Thesis Research (1-6 Credits)
Repeatable to: 99 credits.

INST800 The Engaged Intellectual: An Introduction to Research and Academic Work (3 Credits)
An introduction to the academic life with a particular focus on what it means to undertake research, teaching, and service.
Restriction: Permission of INFO-College of Information Studies; and restricted to students in Ph.D. in Information Studies (INFS) program.

INST801 Theoretical and Epistemological Foundations in Information Studies (3 Credits)
Pursuing a doctorate in information studies involves the scholarly examination of the interaction between people, information, technology, and society. There are, however, as many ways to examine the interaction of people, information, technology, and society as there are researchers and ways of understanding what counts as evidence and knowledge in different components of the field. Students will be introduced to the diverse scholarly traditions that comprise information studies. Students will explore why there are so many ways of knowing and methods of discovery within the field, in order to help them identify the social theory and methods that will support their path through information scholarship.
Credit Only Granted for: INST888 or INST801.
Formerly: INST888.

INST802 Pragmatic and Methodological Foundations for Information Studies (3 Credits)
Information Studies' eclectic interdisciplinarity is both its greatest strength and its most significant weakness. As an increasingly multi/inter/trans/non-disciplinary intellectual community, Information Studies embraces a wide variety of conceptual frameworks, theories, methodological approaches, and intellectual traditions. As such, it is necessary to be able to bring many different intellectual perspectives to bear on the complex, nuanced, phenomena that are its focus. The variety in the intellectual toolbox of Information Studies is central to its ability to avoid reduction of its focal topics to trite, simplistic characterizations. However, the field's paradigmatic richness places particular burdens on the individual researcher. The purpose of this seminar is to help students develop a reflective practice that they can rely on to turn their interests into valuable new insights in an interdisciplinary domain like Information Studies.
Credit Only Granted for: INST888 or INST802.
Formerly: INST888.

INST808 Seminar in Research Methods and Data Analysis (3 Credits)
Topics and issues in information studies research. Design and conduct of research project.
Restriction: Permission of INFO-College of Information Studies. And must be in Information Studies (Doctoral) program; or permission of instructor.
Repeatable to: 9 credits if content differs.
Credit Only Granted for: INST808, LBSC802, or INST802.
Formerly: LBSC802, INST802.

INST809 Individualized Teaching Experience (3-5 Credits)
Introduction to the techniques and challenges associated with design, delivery, and evaluation of couses offered at the University level. The doctoral student will work one-on-one with a faculty member in the development and co-teaching of a graduate level course.
Prerequisite: Must have completed 18 credit hours of doctoral course work.
Restriction: Permission of INFO-College of Information Studies; and permission of instructor.
Repeatable to: 6 credits.
Credit Only Granted for: INST809, LBSC774, INST728G.
Formerly: INST728G.

INST811 Pedagogy and Curriculum Development (3 Credits)
In this course, doctoral students will gradually and iteratively build a syllabus for an original course related to Information Studies. The course will cover, in sequence: curriculum models and development; learning outcome development; syllabus development; classroom management and dynamics; design of student assessments; design and delivery of classroom lectures; discussion moderation; working with teaching assistants; hybrid and online pedagogy; learning outcomes assessment; course evaluations; and teaching statements. Upon completion of the course, students will have a fully developed teaching portfolio.

INST818 Individual Research Experience (1-3 Credits)
Pre-candidacy individual research experience directed by a faculty member.
Repeatable to: 3 credits.

INST878 Special Topics in Information Studies (3 Credits)
Seminar topics offered as faculty and student interests warrant. Topic varies.
Restriction: Permission of INFO-College of Information Studies. And must be in Information Studies (Doctoral) program; or permission of instructor.
Repeatable to: 9 credits if content differs.
Credit Only Granted for: INST878 or LBSC878.
Formerly: LBSC878.

INST888 Doctoral Seminar (3 Credits)
Advanced seminar on selected topics in information studies.
Restriction: Must be in Information Studies (Doctoral) program; and permission of INFO-College of Information Studies.
Repeatable to: 6 credits if content differs.
Credit Only Granted for: INST888 or LBSC888.
Formerly: LBSC888.

INST898 Pre-Candidacy Research (1-8 Credits)

INST899 Doctoral Dissertation Research (1-8 Credits)