INST - INFORMATION STUDIES

INST101 Bits and Bytes of Computer and Information Sciences (1 Credit)
Students are introduced to the fields (and disciplines) of computer science and information science within a small classroom setting. They will learn to make a successful transition from high school to the university, while exploring study skills, student success plans and research opportunities.
Restriction: For first time freshmen and first time transfer students; or permission of CMNS-Computer Science department. Cross-listed with: CMSC100.
Credit Only Granted for: CMSC100 or INST101.

INST104 Design Across Campus (3 Credits)
What is design, who does it, and how is it done? There is no one answer to this question--it depends on who you ask. The answers to these questions vary across disciplines and across the University campus. This course, designed with modules from contributors in UMD programs including Information Studies, Human-Computer Interaction, Graphic Design, Immersive Media Arts, Journalism, Architecture, Landscape Architecture, Engineering, and Policy, will introduce students to the goals and values, approaches, skills, and practices of diverse fields of design. It will enable students to identify grand challenges in design and serve as a sorting hat to help students find a design practice that matches their own values, approaches, skills and goals.

INST123 Databases for All (3 Credits)
An introduction to relational databases for students with no previous programming experience. Provides a means for students of diverse backgrounds to successfully learn how to store, retrieve, and maintain data in relational databases. Topics include a brief comparison of database systems with an emphasis on relational databases, fundamental relational database concepts, and data types. Includes technical approaches to accessing information stored in relational databases.
Restriction: Must not have completed or be currently taking INST327 or BMGT402.

INST126 Introduction to Programming for Information Science (3 Credits)
An introduction to computer programming for students with very limited or no previous programming experience. Topics include fundamental programming concepts such as variables, data types, assignments, arrays, conditionals, loops, functions, and I/O operations.
Prerequisite: Math placement of STAT100 or higher.
Restriction: Must not have completed INST326; and must be in Information Science, Technology and Information Design, or Social Data Science programs.

INST127 Introduction to Programming for Information Science Lab (1 Credit)
Laboratory component of INST126, Introduction to Programming for Information Professionals, is designed to complement the lecture and provide structured exercises and activities for students to practice and develop programming skills. INST 126 is an introduction to computer programming for students with very limited or no previous programming experience. Topics include fundamental programming concepts such as variables, data types, assignments, arrays, conditionals, loops, functions, and I/O operations.
Corequisite: INST126.

INST151 Becoming A Social Media Influencer (3 Credits)
Teaches students how to create, grow, and manage influential social media accounts. Topics will include tools for content creation, analyzing and strategizing with analytics, building community, and defining their niche and approach.
Credit Only Granted for: INST408N or INST151.
Formerly: INST408N.

INST152 "Fake Checking": Battling Misinformation and Disinformation in the Real World (3 Credits)
Examining the phenomenon of "fake news" using the principles of information literacy, students will develop their skills in locating, analyzing, and evaluating different information sources -- in the classroom, in their personal lives, and in the workplace.

INST153 Records Scandals & Data Vandals: Public & Private Sector Controversies Ripped From The Headlines (3 Credits)
Expressly organized around case studies about well-known individuals and organizations involved in scandals and controversies that have generated headlines around the world. It places these events in a larger historical, legal, technological, ethical and societal context. Drawing upon contemporaneous records in a variety of media, as well as presentations from invited speakers representing the greater archival, historical, and public interest communities, the course seeks to deepen students' appreciation of the role that records and information plays in issues going to the heart of government transparency, corporate accountability, and social justice.

INST154 Apollo at 50 (3 Credits)
Examines Apollo mission, one of the greatest engineering accomplishments of all time, in which Neil Armstrong walked on the moon. Since the mission, people have asked: if we can land on the moon, why can't we eliminate poverty? Why can't we cure cancer? Why can't we prevent global warming? Asks what were the social, political, financial, scientific, engineering, operational, and human aspects of the Apollo program that came together to make the moon landings possible?

INST155 Social Networking (3 Credits)
Introduces methods for analyzing and understanding how people use social media - social networking websites, blogging and microblogging, and other forms of online interaction and content generation - and their societal implications. Introduces students to the science and social science of network analysis. Through real world examples, including analysis of their own social networks, students develop skills for describing and understanding the patterns and usage of services like Facebook, Twitter, YouTube, and others.
Credit Only Granted for: INFM289I or INST155.
Formerly: INFM289I.

INST156 How NASA Sees the Earth (3 Credits)
The world of Earth science data is complex and can be overwhelming with a wide range of data sources and formats, hefty downloads and the need for complicated analytical tools. To make use of enormous volumes of available data and geoinformation products, one has to know where and how to search and obtain the data, how to analyze the data, and how to extract useful information and knowledge. In this course, you will learn about the state-of-the-art Web-based tools that allow you to efficiently display and analyze a large number of datasets in a way many professionals working in the Earth science domain would. You will learn how to visualize multiple Earth science datasets produced by NASA in a variety of ways directly on the Internet, without the need to download, manage and store them. Students will be introduced to comprehensive functions to analyze the data and generate customized maps, animations, multi-variable correlations, regional subsetting, etc.Cross-listed with: GEOG156.
Credit Only Granted for: GEOG156 or INST156.

INST201 Introduction to Information Science (3 Credits)
Examining the effects of new information technologies on how we conduct business, interact with friends, and go through our daily lives. Understanding how technical and social factors have influenced the evolution of information society. Evaluating the transformative power of information in education, policy, and entertainment, and the dark side of these changes.
Credit Only Granted for: INST201 or INST301.
Formerly: INST301.

INST204 Designing Fair Systems (3 Credits)
Reviews how specific values are built into different automated decision-making systems as an inevitable result of constructing mechanisms meant to produce specific outcomes. These values create differential outcomes for the different people enmeshed in these systems, but both these values and these systems can be changed to support different values and different outcomes. The class serves as an introduction to the emerging field of algorithmic bias that bridges the disciplines of information science, computer science, law, policy, philosophy, sociology, urban planning, and others.
Credit Only Granted for: INST208D or INST204.
Formerly: INST208D.

INST208 Special Topics in Information Studies (1-6 Credits)
Covers special topics in information studies.
Repeatable to: 9 credits if content differs.

INST210 The Nuts & Bolts of Getting Hired (1 Credit)
Have you thought about finding an internship, getting a job, or starting your career? Perhaps you're confused about how to begin. Welcome to The Nuts and Bolts of Getting Hired, where you'll learn the skills necessary to develop your professional tool kit and obtain the internship or job that can help you build the career you want. This course will help you prepare for the next step in your career by exploring the following topics: Identifying your career goals, mastering the skills of crafting a professional resume, effective interviewing, strategic networking, and professional communication.
Restriction: Must be in the Information Science program, Technology and Information Design program, or Social Data Science program.
Credit Only Granted for: INST208C or INST210.
Formerly: INST208C.

INST227 Fundamentals of Academic Peer Mentoring in Information Studies (1 Credit)
Students will be exposed to scholarship of teaching and learning in support of developing applied skills to support active learning as an iSchool academic peer mentor. Students will learn to effectively coach and support the performance of other people. Guided online and face-to-face participation will culminate in a portfolio of teaching activities and professional development.
Restriction: Permission of the College of Information Studies.

INST228 Academic Peer Mentor Experience in Information Science (1-3 Credits)
Students who are participating in instructional activities for undergraduate courses offered by the College of Information Studies, or by faculty members of the College through other units, can take this course to earn course credit for their AMP work.
Prerequisite: Must have completed or be concurrently enrolled in TLTC333.
Restriction: Permission of INFO-College of Information Studies required.
Repeatable to: 6 credits if content differs.
Formerly: INST208M.

INST232 Health Justice: Investigating the Roles of Information in Preventing & Addressing Health Disparities (3 Credits)
How do we ensure that every individual has the information they need to live a long and healthy life? In this course, we explore health justice - the conviction and enactment of the idea that every person is morally entitled to a fair and sufficient capability to be healthy. We especially focus on the ways in which information-related factors, such as people's access to health information, their strategies for seeking (or avoiding) health information, and their health and digital health literacy, contribute to health (in)justice. Our goal in this class is to promote health justice for all by identifying information-related solutions that will help to facilitate people's access to health information and improve their abilities to find, assess, and make use of information to optimize their own and others' health.
Restriction: Must be a student in the Health Justice Carillon Community.

INST301 Introduction to Information Science (3 Credits)
Examining the effects of new information technologies on how we conduct business, interact with friends, and go through our daily lives. Understanding how technical and social factors have influenced the evolution of information society. Evaluating the transformative power of information in education, policy, and entertainment, and the dark side of these changes.
Restriction: Must be in Information Science program; and restricted to students in the Information Science Program on the Universities at Shady Grove campus.
Credit Only Granted for: INST201 or INST301.

INST308 Education Abroad in Information Studies (1-3 Credits)
Covers special topics in information studies in education abroad settings.
Prerequisite: Minimum grade of C- in MATH115 or higher; minimum grade of C- in INST126; and 1 course with a minimum grade of C- from (PSYC100, SOCY105, BSOS233).
Restriction: Must be in the Information Science program, Technology and Information Design program, or Social Data Science program.
Repeatable to: 9 credits if content differs.

INST309 Independent Study in Information Science (1-3 Credits)
Individual independent study of an aspect of information science, selected according to student interest and need in consultation with a member of the iSchool faculty. Repeatable to 6 credits if content differs.
Prerequisite: Must have completed INST301

INST311 Information Organization (3 Credits)
Examines the theories, concepts, and principles of information, information representation and organization, record structures, description, and classification. Topics to be covered in this course include the methods and strategies to develop systems for storage, organization, and retrieval of information in a variety of organizational and institutional settings, as well as policy, ethical, and social implications of these systems.
Prerequisite: Minimum grade of C- in PSYC100 or SOCY105.
Restriction: Must be in Technology and Information Design or Information Science program.

INST314 Statistics for Information Science (3 Credits)
Basic concepts in statistics including measure construction, data exploration, hypothesis development, hypothesis testing, pattern identification, and statistical analysis. The course also provides an overview of commonly used data manipulation and analytic tools. Through homework assignments, projects, and in-class activities, you will practice working with these techniques and tools to create information resources that can be used in individual and organizational decision-making and problem-solving.
Prerequisite: Minimum grade of C- in INST126 or GEOG276; and minimum grade of C- in STAT100, and MATH115 (or higher).
Restriction: Must be in Information Science or Social Data Science program.

INST320 Leadership in Collaborative Learning Communities for Information Studies (3 Credits)
This course is the experiential learning component for student leaders selected by the College of Information Studies to facilitate Guided Study Sessions. Student leaders plan and facilitate study sessions that supplement courses by providing additional opportunities to engage with the material. In this course, student leaders will explore and apply evidence-based learning strategies while developing an understanding of how we learn. Throughout this course you will apply principles of teaching and learning, group facilitation, and leadership into the design of your guided study session.
Restriction: Must be in the Information Science, Technology and Information Design, or Social Data Science program; and permission of the INFO College.

INST326 Object-Oriented Programming for Information Science (3 Credits)
An introduction to programming, emphasizing understanding and implementation of applications using object-oriented techniques. Topics to be covered include program design and testing as well as implementation of programs.
Prerequisite: Minimum grade of C- in INST126 or GEOG276.
Restriction: Must be in Information Science or Social Data Science program.

INST327 Database Design and Modeling (3 Credits)
Introduction to databases, the relational model, entity-relationship diagrams, user-oriented database design and normalization, and Structured Query Language (SQL). Through labs, tests, and a project, students develop both theoretical and practical knowledge of relational database systems.
Prerequisite: Minimum grade of C- in INST126 or GEOG276.
Restriction: Must be in Information Science or Social Data Science program.
Credit Only Granted for: INST327 or BMGT402.

INST335 Organizations, Management and Teamwork (3 Credits)
Examines principles, methods and types of leadership with an emphasis on goal setting, motivation, problem solving, and conflict resolution. Examines principles of developing teams and managing team projects through planning and execution, including estimating costs, managing risks, scheduling, staff and resource allocation, communication, tracking, and control. Trains students to recognize and capitalize on opportunities to use information to increase efficiency, improve performance, and support innovation within teams and organizations. Focuses on strategic use of emerging technologies and new information resources to execute information-enabled change.
Prerequisite: 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in PSYC100.
Restriction: Must be in Information Science program.

INST341 Introduction to Digital Curation (3 Credits)
Explores various dimensions and contexts for digital curation, which includes all activities involving the management, representation and preservation of both born-digital and digitized information. Focuses on opportunities, challenges and demands of every-increasing digital data and networked information infrastructure.
Prerequisite: Must have completed with a C- or higher, or be concurrently enrolled in INST311.
Restriction: Must be in Technology and Information Design or Information Science programs.

INST346 Technologies, Infrastructure and Architecture (3 Credits)
Examines the basic concepts of computer hardware, systems software, networking, client/server architectures, cloud computing, distributed systems, and high performance computing as applied to information rich domains. Technology and architectures will be discussed within the contexts of solving social issues, supportingscience, and conducting business operations. Current computing topics such as web environments, IoT, security, management, and policy will also be reviewed.
Prerequisite: Minimum grade of C- from INST201 or INST301; and minimum grade of C- in INST326 and INST327.
Restriction: Must be in the Information Science program; and must have earned a minimum of 60 credits.
Credit Only Granted for: INST346 or BMGT405.

INST347 Cloud Computing for Information Science (3 Credits)
What is cloud computing? Where does cloud computing occur? How can we use cloud computing to solve problems and create opportunities in information science? In this course, the foundations and operation of cloud computing, with a focus on information science applications, will be presented. Key cloud functions such as computing, storage, databases, and networking will be examined. Major cloud providers will be contrasted. The course will conclude with a practical application of cloud services to design and implement a cloud solution to a social, technical, or environmental problem.
Prerequisite: Minimum grade of C- in INST346.
Restriction: Must be in the Information Science major.

INST352 Information User Needs and Assessment (3 Credits)
Focuses on use of information by individuals, including the theories, concepts, and principles of information, information behavior and mental models. Methods for determining information behavior and user needs, including accessibility issues will be examined and strategies for using information technology to support individual users and their specific needs will be explored.
Prerequisite: Minimum grade of C- from INST201 or INST301; and minimum grade of C- in INST311.
Restriction: Must be in Technology and Information Design or Information Science programs.

INST354 Decision-Making for Information Science (3 Credits)
Examines the use of information in organizational and individual decision-making, including the roles of information professionals and information systems in informed decision-making through techniques such as data analysis and regression, optimization, sensitivity analysis, decision trees, risk analysis and business simulation models.
Prerequisite: Minimum grade of C- from INST201 or INST301; and minimum grade of C- in INST314 and PSYC100.
Restriction: Must be in the Information Science program.

INST362 User-Centered Design (3 Credits)
Introduction to human-computer interaction (HCI), with a focus on how HCI connects psychology, information systems, computer science, and human factors. User-centered design and user interface implementation methods discussed include identifying user needs, understanding user behaviors, envisioning interfaces, and utilizing prototyping tools, with an emphasis on incorporating people in the design process from initial field observations to summative usability testing.
Prerequisite: Minimum grade of C- from INST201 or INST301; and minimum grade of C- from PSYC100 or SOCY105; and minimum grade of C- in INST326 and STAT100.
Restriction: Must be in the Information Science program or Technology and Information Design program; and must have earned a minimum of 60 credits.

INST363 Fundamentals of Technology Innovation (3 Credits)
Introduces students to the fundamentals of technology innovation, and how leaders approach innovation in the information science field. The course explores approaches and perspectives on how to develop an individual's capabilities to be better at leading others in an innovative environment. Combining theory and practice, students will be introduced to problem solving and explore ways to become an exceptional innovation leader.
Restriction: Must be in the Technology Innovation Leadership Minor; or permission of INFO-College of Information Studies.
Credit Only Granted for: INST408T or INST363.
Formerly: INST408T.

INST364 Human-Centered Cybersecurity (3 Credits)
Cybersecurity is fundamentally a problem of human interaction with technology, but its technical challenges are better understood than its human challenges. This course is designed to give you an overview of human interactions with cybersecurity technology, from users to system designers. Using the information gleaned in this course, you should be able to make better predictions about how people react to cybersecurity policies and tools, and how those reactions shape organizational behavior. The earlier part of the course focuses on explanations for behavior, while the later parts of the course focus more on the development and evaluation of tools for assisting people in cybersecurity.
Prerequisite: Minimum grade of C- from INST201 or INST301; and minimum grade of C- in INST327, STAT100, MATH115, and PSYC100.
Restriction: Must be in the Information Science program; or must be in the Information Risk Management, Ethics, and Privacy Minor.

INST366 Privacy, Security and Ethics for Big Data (3 Credits)
Evaluates major privacy and security questions raised by big data, Internet of things (IoT), wearables, ubiquitous sensing, social sharing platforms, and other AI-driven systems. Covers history of research ethics and considers how ethical frameworks can and should be applied to digital data.
Prerequisite: Minimum grade of C- from INST126 or GEOG276; and minimum grade of C- in STAT100; and minimum grade of C- in one of the following (AASP101, ANTH210, ANTH260, ECON200, ECON201,GEOG202, GVPT170, PSYC100, SOCY100, or SOCY105).
Restriction: Must be in the Information Science, Technology and Information Design, or Social Data Science programs; or must be in the Information Risk Management, Ethics, and Privacy Minor.

INST367 Prototyping and Development Studio (3 Credits)
Covers interaction design--the process of defining products and the broad services built around them--and user experience research--how you determine what to design and how successful your design is. When interacting with systems, people build expectations and mental models of how things work, based upon their previous experience with similar products or processes, and the successful or unsuccessful nature of their interactions determines the success of your design. This course is about how to design for digital interactions that will resonate with your audiences (how the features and functions of a product get translated into something people find usable, useful, and desirable), and the research that goes on throughout that process (from contextual inquiry to evaluating the final product), with a particular emphasis on prototyping and iteration.
Prerequisite: Minimum grade of C- in INST380.
Restriction: Must be in the Technology and Information Design program.
Credit Only Granted for: INST398A or INST367.
Formerly: INST398A.

INST370 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.
Prerequisite: Minimum grade of C- in INST201, INST126, MATH115, PSYC100, or STAT100.
Restriction: Must be in the Information Science program.
Credit Only Granted for: INST370 or INST770.

INST371 Teaching and Learning in Information Studies (3 Credits)
Introduces students to foundational theories and practices of teaching and learning, with an emphasis on how they intersect with ideas from the Information Sciences. Covers foundational theories related to teaching and learning, social and cultural dimensions of learning, designing for learning, evaluating educational technologies, and ways of creating equitable, effective, and accessible learning experiences. Students will design learning activities for others, analyze educational tools and technologies, and explore ways to help teach others about the big ideas of Information Science.
Prerequisite: Minimum grade of C- in INST201; and minimum grade of C- from PSYC100 or SOCY105.
Restriction: Must be in the Information Science program or Technology and Information Design program.

INST377 Dynamic Web Applications (3 Credits)
An exploration of the basic methods and tools for developing dynamic, database-driven websites, including acquiring, installing, and running web servers, database servers, and connectability applications.
Prerequisite: 1 course with a minimum grade of C- from (INST201, INST301, or BSOS233); and minimum grade of C- in INST327, STAT100, and MATH115 (or higher).
Restriction: Restricted to Information Science and Social Data Science.
Credit Only Granted for: INST377 or BMGT406.

INST380 Technology and Information Design: Do Good Now (3 Credits)
Climate change. Poverty. Racism. Pressing social issues are big, complex, and difficult. They can feel overwhelming to understand and impossible to address. You might care deeply about an issue, and want to make a difference, but don't know where to start. Sometimes you might not even try. This course will equip and empower you to delve deep into understanding a social issue of your choosing. Through course materials and activities, you'll try out your changemaker muscles and mindsets. Our goal is that this course will empower you to be an informed, engaged citizen who contributes to your community with and beyond your profession. Along the way, we'll address questions like, "What is social change?" and "What happens when our actions have unintended consequences?" We'll talk about the importance of understanding, empathy, agency, and community, and reflect on how these concepts relate to us as individuals.
Prerequisite: Minimum grade of C- in INST201, INST126, STAT100; minimum grade of C- from (PSYC100, SOCY105).
Restriction: Must be in the Technology and Information Design program.
Credit Only Granted for: ARHU380, BSOS388B, PLCY388D, or PLCY380.

INST381 Design Thinking for Visual Communication (3 Credits)
In an age where technology increasingly permeates our daily existence, there remain certain human qualities that machines cannot replicate: creativity, curiosity, and empathy. This course endeavors to delve into the dynamic relationship between the pillars of aesthetics and the core skills of Design Thinking (DT), all with the goal of enhancing the design process. Throughout the course, we will witness instances where DT bolsters Visual Communication (VC), and conversely, where VC lends its support to the DT process. Our exploration will revolve around three pivotal questions: How can we engage users and establish meaningful connections with them? How can we empathize with users' challenges and provide them with effective solutions? How can we embrace a holistic approach to design?
Prerequisite: Minimum grade of C- in PSYC100 or SOCY105; and minimum grade of C- in INST126, INST201, and STAT100; and minimum grade of C- in MATH115 or higher.
Restriction: Must be in the Technology and Information Design major.
Credit Only Granted for: INST398J or INST381.
Formerly: INST398J.

INST388 "Maker Movement" Approach to Computing (1 Credit)
Informed by the "maker movement," this course allows students to merge their personal interests and hobbies with computing. This course is great for students new to computing who want to explore real world applications, or for more advanced students wanting an opportunity to engage in depth with a niche topic.
Recommended: C- or higher in INST126 or comparable introductory programming course.
Repeatable to: 3 credits if content differs.

INST389 Supervised Internship in Information Science (1-3 Credits)
Course will provide students with the knowledge, skills, and experiences that will help shape their goals as they begin their successful high-impact Information Career. It will prepare them to work an in an environment in which suitability for high-status positions is not determined by specific skills, but rather by ability to take initiative in complex, dynamic situations. Students must have an internship arranged before enrolling.
Prerequisite: Minimum grade of C- in MATH115 or higher; minimum grade of C- in INST126 or GEOG276; and minimum grade of C- in (PSYC100, SOCY105, or BSOS233).
Restriction: Must be in the Information Science program, Technology and Information Design program, or Social Data Science program.
Repeatable to: 6 credits.

INST398 Special Topics in Information Studies (3 Credits)
Selected topics in information studies.
Prerequisite: Minimum grade of C- in STAT100 or MATH115 or higher; and minimum grade of C- in INST126 or GEOG276; and minimum grade of C- in (PSYC100, SOCY105, or BSOS233).
Restriction: Must be in the Information Science program, Technology and Information Design program, or Social Data Science program.
Repeatable to: 9 credits if content differs.

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 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 Information 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.

INST448 Digital Curation Research in Cultural Big Data Collections (3 Credits)
Provides an overview for students interested in learning the theory and practices involved in digital curation, and how this is applied in managing and accessing information in large cultural data collections. The digital curation lifecycle will be used as the foundation for understanding how records/information are created, managed throughout active use, and preserved for future access. Cyber-infrastructure development and cultural Big Data collections will form the basis for instruction, research, and learning. Students will participate in class lectures, discussions, and complete reading assignments. Student learning will be reinforced by active engagement in project teams focused on cyber-infrastructure projects and large data collections involving justice, human rights, and cultural heritage documentation.
Prerequisite: Minimum grade of C- from INST341 or INST380.
Restriction: Must be in the Information Science program or Technology and Information Design program.
Repeatable to: 6 credits if content differs.

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.

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.

INST465 Design and Human Disability and Aging (3 Credits)
Design of special and mainstream products and systems to include use by people facing barriers to use due to disability and aging. Includes introduction to people with disabilities and the tools they use and strategies for cross-disability inclusive design of special and mainstream technology.The class will then be divided into interdisciplinary design teams. These teams will be given a special or mass market product for which they are to develop a design which is more accessible, yet remains mass producible and marketable. Emphasis will be on practical mass-market design and the realities and constraints of design for commercial production and/or public systems.
Prerequisite: Minimum grade of C- in INST126 or INST201; and minimum grade of C- in PSYC100 or SOCY105; and minimum grade of C- in INST362 or INST367.
Restriction: Must be in the Information Science program or Technology and Information Design program.
Credit Only Granted for: INST408B or INST465.
Formerly: INST408B.

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.

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.