

# INST - INFORMATION STUDIES

## **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.

## **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:** Minimum grade of C- in MATH115; or must have math eligibility of MATH140 or higher; or permission of instructor.

**Restriction:** Must not have completed INST326; and must be in Information Science program.

## **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.

## **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.

## **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.

## **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.

## **INST208 Special Topics in Information Studies (1-6 Credits)**

Covers special topics in information studies.

**Repeatable to:** 9 credits if content differs.

## **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.

## **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 (1-6 Credits)**

Covers special topics in information studies in foreign settings.

**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.

**Restriction:** Must be in 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 STAT100 and MATH115 (or higher).

**Restriction:** Must be in the Information Science program.

**Credit Only Granted for:** BIOM301, BMGT230, CCJS200, ECON230, ECON321, EDMS451, GEOG306, GEOL351, GVPT422, INST314, JOUR405, PSYC200 or SOCY201.

**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.

**Restriction:** Must be in the Information 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.

**Restriction:** Must be in the Information 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:** Minimum grade of C- in INST126, INST201, INST311, STAT100, MATH115, and PSYC100.

**Restriction:** Must be in Information Science program.

**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, supporting science, and conducting business operations. Current computing topics such as web environments, IoT, security, management, and policy will also be reviewed.

**Prerequisite:** 1 course with a minimum grade of C- from (INST201, INST301); and 1 course with a minimum grade of C- from (INST326, CMSC131); and minimum grade of C- in INST327.

**Restriction:** Must be in Information Science program; and permission of INFO-College of Information Studies.

**Credit Only Granted for:** INST346 or BMGT405.

**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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST311.

**Restriction:** Must be in Information Science program.

**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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, INST314, MATH115, STAT100, and PSYC100.

**Restriction:** Must be in 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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST326; and minimum grade of C- in PSYC100.

**Restriction:** Must be in Information Science program.

**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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, INST327, STAT100, MATH115, and PSYC100.

**Restriction:** Must be in Information Science program.

**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:** INST201 or INST301; or permission of instructor.

**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.

**Credit Only Granted for:** INST370 or INST770.

**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 connectivity applications.

**Prerequisite:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, INST327, STAT100, MATH115, and PSYC100.

**Restriction:** Must be in Information Science program.

**Credit Only Granted for:** INST377 or BMGT406.

**INST389 Supervised Internship in Information Science (1-6 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 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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, PSYC100, STAT100, and MATH115; and 12 credits in INST courses.

**Restriction:** Must be in Information Science program.

**Repeatable to:** 6 credits.

**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.

**Restriction:** Permission of instructor.

**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:** A minimum of a C- in INST201, MATH115, PSYC100, INST126, and STAT100.

**Restriction:** Must be in the Information Science program.

**INST408 Special Topics in Information Science (3 Credits)**

Selected topics in information science.

**Prerequisite:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, STAT100, PSYC100, and MATH115.

**Restriction:** Must be in Information Science program.

**Repeatable to:** 9 credits if content differs.

**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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, INST314, STAT100, MATH115, and PSYC100.

**Restriction:** Must be in Information Science program.

**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:** INST341; or permission of instructor.

**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).

**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. Hands-on experience with digital curation tools is an integral part of the course, and will be provided in the Digital Curation Innovation Center (DCIC).

**Prerequisite:** Must have completed or be concurrently enrolled in INST341.

**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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, INST327, STAT100, MATH115, and PSYC100; and 1 course with a minimum grade of C- from (INST326, CMSC131).

**Restriction:** Must be in Information Science program.

**INST448 Digital Curation Research in Cultural Big Data Collections (3 Credits)**

Students will learn the principles, methods, and technologies involved in the digital curation of large cultural data collections. Students will learn these concepts in class lectures, discussions, and participating on project teams in the Digital Curation Innovation Center (DCIC).

**Prerequisite:** INST311.

**Restriction:** Must be in Information Science program.

**Repeatable to:** 6 credits if content differs.

**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 of a C- in INST201, MATH115, PSYC100, INST126, and STAT100.

**Restriction:** Must be in the Information Science program.

**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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, INST314, MATH115, PSYC100, and STAT100.

**Restriction:** Must be in Information Science program.

**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.

**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:** 1 course with a minimum grade of C- from (INST201, INST301).

**Restriction:** Must be in the Information Science program.

**INST467 Practical Hacking 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:** Minimum grade of C- in INST126, INST201, INST364, MATH115, STAT100, and PSYC100.

**Restriction:** Must be in Information Science program.

**Credit Only Granted for:** INST408V, PLCY388C, or INST467.

**Formerly:** INST408V.

**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:** 1 course with a minimum grade of C- from (INST201, INST301); and minimum grade of C- in INST126, INST311, INST314, INST326, INST327, INST335, INST346, INST352, INST362, PSYC100, STAT100, and MATH115.

**Restriction:** Must be in Information Science program; and permission of INFO-College of Information Studies.