

Information Science (IS)

IS 1300. Knowledge in a Digital World. (4 Hours)

Examines the impact that information technologies (such as the internet, search engines, blogs, wikis, and smartphones); information processing techniques (such as big data analysis, machine learning, crowdsourcing, and cryptography); and information policies (such as privacy norms and speech restrictions) have on what we know and how much we know, as individuals and as a society. The digital world can enhance our ability to acquire knowledge by providing us with fast and cheap access to huge amounts of information. However, it can also undermine our cognitive abilities and provide us with inaccurate or misleading information. Studies normative frameworks from epistemology and ethics (such as epistemic value theory, the extended mind hypothesis, and moral rights) to evaluate these technologies and policies.

Attribute(s): NUpath Ethical Reasoning, NUpath Societies/Institutions

IS 1500. Introduction to Web Development. (4 Hours)

Introduces Web development and networks. Discusses HTML5, CSS, and client-side scripting with JavaScript and jQuery; embedding of media: images, video, and sound; the use of back-end data (either from databases or XML) to create dynamic Web sites; Web hosting, operating systems, and network infrastructure; and the automation of website construction using content management systems. Considers the construction of Web forms and the underlying protocols for information exchange: HTTP and HTTPS. Emphasizes the need for testing both correctness and usability. Offers a brief introduction to server-side scripting. Surveys the security problems faced by dynamic websites. Hands-on laboratory work is built into the course. May be taken as a general elective by CCIS students but does not count as a CS or IS elective.

Attribute(s): NUpath Analyzing/Using Data

IS 1990. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

IS 2000. Principles of Information Science. (4 Hours)

Introduces information science. Examines how information is used to solve problems both for individuals and organizations and how information systems interface with their users. Considers the technical, economic, social, and ethical issues that arise when working with information. Discusses how to collect, manage, classify, store, encode, transmit, retrieve, and evaluate data and information with appropriate security and privacy. Storage models include lists, tables, and trees (hierarchies). Examines applications of information: visualization, presentation, categorization, decision making, and predictive modeling. Introduces key concepts in probability. Explains Bayesian analysis for information classification and modeling. Teaches intensive programming in Excel, including VBA macro development. Introduces programming in R.

Attribute(s): NUpath Analyzing/Using Data

IS 2990. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

IS 2991. Research in Information Science. (1-4 Hours)

Offers an opportunity to conduct introductory-level research or creative endeavors under faculty supervision.

IS 3500. Information System Design and Development. (4 Hours)

Discusses the planning, analysis, design, and implementation of computer-based information systems, focusing on the methodologies and procedures used in organizational problem solving and systems development. Topics include the systems development life cycle; project management; requirements analysis and specification; feasibility and cost-benefit analysis; logical and physical design; prototyping; and system validation, deployment, and postimplementation review. Additional topics may include platform and database selection and integration issues; CASE tools; end-user training; maintenance; and object-oriented analysis and design.

Prerequisite(s): IS 2000 with a minimum grade of D-; CS 3500 with a minimum grade of D-; (ENGL 1111 with a minimum grade of C or ENGL 1102 with a minimum grade of C or ENGW 1111 with a minimum grade of C or ENGW 1102 with a minimum grade of C)

Attribute(s): NUpath Writing Intensive

IS 3990. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

IS 4200. Information Retrieval. (4 Hours)

Introduces information retrieval (IR) systems and different approaches to IR. Topics covered include evaluation of IR systems; retrieval, language, and indexing models; file organization; compression; relevance feedback; clustering; distributed retrieval and metasearch; probabilistic approaches to IR; Web retrieval; filtering, collaborative filtering, and recommendation systems; cross-language IR; multimedia IR; and machine learning for IR.

Prerequisite(s): (CS 3500 with a minimum grade of D- or DS 3500 with a minimum grade of D-); (CS 2810 with a minimum grade of D- or ECON 2350 with a minimum grade of D- or MATH 2280 with a minimum grade of D- or MATH 3081 with a minimum grade of D- or MGSC 2301 with a minimum grade of D- or PSYC 2320 with a minimum grade of D-)

IS 4300. Human Computer Interaction. (4 Hours)

Studies the principles of human-computer interaction and the practice of user interface design. Discusses the major human information processing subsystems (perception, memory, attention, and problem solving), and how the properties of these systems influence the design of interactive systems. Reviews guidelines and specification languages for designing user interfaces, with an emphasis on tool kits of standard graphical user interface (GUI) objects. Introduces usability metrics and evaluation methods. Additional topics may include World Wide Web design principles and tools; wireless/mobile device interfaces; computer-supported cooperative work; information visualization; and virtual reality. Course work includes designing user interfaces, creating working prototypes using a GUI tool kit, and evaluating existing interfaces using the methods studied.

Prerequisite(s): CS 3500 with a minimum grade of D- or DS 3500 with a minimum grade of D-

IS 4600. Software Project Management. (4 Hours)

Covers both technical and managerial aspects of software project management, which is critical to the success of software projects. Emphasizes the differences between traditional software life-cycle models and modern iterative and agile practices. Includes project manager responsibilities, stakeholder management, staffing, resource allocation, estimation, activity scheduling, budget control, quality management, risk assessment, communication, scope control, and project metrics. Introduces standard project management tools combined with control mechanisms including PERT, burndown, and Gantt charts. Examines these methods in the context of standard frameworks, including the Project Management Body of Knowledge (PMBOK), applicable IEEE Standards, ISO 9001, CMMI, Unified Process, Scrum, and Kanban-driven continuous delivery models.

Prerequisite(s): CS 3500 with a minimum grade of D-

IS 4800. Empirical Research Methods. (4 Hours)

Evaluates and conducts empirical research, focusing on students' use of empirical methods to study the effectiveness and organizational/social impact of information systems and technologies. Empirical research involves a number of broad steps including identifying problems; developing specific hypotheses; collecting data relevant to the hypotheses; analyzing the data; and considering alternative explanations for the empirical findings. Some of the most commonly used research techniques, such as surveys, experiments, and ethnographic methods, are discussed. Additional topics include the ethics of data collection and experimentation in behavioral science. Although the course focuses primarily on the relationship between formulating research questions and implementing the appropriate methods to answer them, students can expect to apply the statistical techniques learned in the course prerequisites.

Prerequisite(s): CS 2810 with a minimum grade of D- or ECON 2350 with a minimum grade of D- or ENVR 2500 with a minimum grade of D- or MATH 2280 with a minimum grade of D- or MATH 3081 with a minimum grade of D- or MGSC 2301 with a minimum grade of D- or PHTH 2210 with a minimum grade of D- or PSYC 2320 with a minimum grade of D-

IS 4900. Information Science Senior Project. (5 Hours)

Helps students develop a sophisticated understanding of the interaction between technology and its context. Students write an in-depth research paper that reflects upon and analyzes the observations and experiences of the field study using the information science literature to interpret and better understand those experiences. Students then participate in a seminar in which they present the results of their research.

Prerequisite(s): IS 4800 (may be taken concurrently) with a minimum grade of D- or CS 6350 (may be taken concurrently) with a minimum grade of C- or CS 6350 (may be taken concurrently) with a minimum grade of D-

Attribute(s): NUpath Capstone Experience, NUpath Writing Intensive

IS 4990. Elective. (1-4 Hours)

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

IS 4991. Research. (4,8 Hours)

Offers an opportunity to conduct research under faculty supervision. May be repeated up to three times.

Prerequisite(s): IS 4800 with a minimum grade of D- or (CS 5350 with a minimum grade of C- or CS 5350 with a minimum grade of D-)

Attribute(s): NUpath Capstone Experience, NUpath Integration Experience, NUpath Writing Intensive