Overview of enterprise data science tools, processes, and environment. Application of data science and machine learning techniques in an enterprise environment.

**Prerequisite:** CIS 324-CN or CIS 324-DL.

**CIS 326-CN Data Engineering (1 Unit)**
Overview of the discipline of data engineering, its tools and ecosystem.

**Prerequisite:** CIS 317-CN or equivalent, or knowledge of SQ.

**CIS 326-DL Data Engineering (1 Unit)**
Overview of the discipline of data engineering. Its tools and ecosystem.

**Prerequisite:** CIS 317-CN or equivalent, or knowledge of SQ.

**CIS 330-CN Human Computer Interaction (1 Unit)**
Introduction to research that encompasses usability, design, information architecture, psychology, ethnography, and software engineering. Topics include: contextual interviews; design process; prototype construction; evaluation techniques. May not be audited or taken P/N.

**Prerequisite:** CIS 313-CN or equivalent.

**CIS 350-DL Information Technology Strategy (1 Unit)**
This course examines current issues, themes, and research related to the strategic use of information systems in organizations at a high level. It focuses on the use of information and information technology for competitive advantage in businesses, organizations, and nonprofits. May not be audited or taken P/N.

**CIS 361-DL Natural Language Processing AI (1 Unit)**
AI algorithms and deep learning techniques that can be used for AI powered problem solving, object detection & tracking, speech recognition, behavioral cloning.

**Prerequisite:** CIS 324-DL.

**CIS 360-DL AI with Deep Learning (1 Unit)**
AI algorithms and deep learning techniques that can be used for AI powered problem solving, object detection & tracking, speech recognition, behavioral cloning.

**Prerequisite:** CIS 324-DL.

**CIS 370-CN System Analysis and Design (1 Unit)**
Overview of the systems development lifecycle (SDLC), with an emphasis on developing quality software systems that meet business requirements and goals. Students acquire the basic skill set needed by business analysts in today’s complex development environment. May not be audited or taken P/N.

**Prerequisite:** CIS 324-CN.

**CIS 380-CN Information Architecture (1 Unit)**
Introduction to the concepts, foundations and components of information architecture (IA) in the digital environment of the World Wide Web. May not be audited or taken P/N.

**CIS 385-CN Programming for the Web (1 Unit)**
Introduction to the concepts, foundations, and components of programming for the web. May not be audited or taken P/N.

**CIS 394-CN Project Management Concepts (1 Unit)**
This course introduces effective frameworks and methods for developing information technology and systems strategies that focus on meeting enterprises business objectives and on leveraging IT to competitively extend business capabilities. Topics covered include business driver identification and business and IT alignment; key technology components of the IT strategy, including enterprise architecture, enterprise systems, SOA and other integration technologies, networks,
and data management; portfolio management; sourcing and hosting alternatives; emerging technologies and entrepreneurship.

**CIS 395-CN Topics in Information Systems: (1 Unit)**
Topics vary. May be repeated for credit with different topic.

**CIS 399-CN Independent Study - Projects (1 Unit)**