ISE 503: Data Management
This course provides an understanding of the issues in managing database systems as an essential organizational resource. Students learn the enterprise data architecture components, data storage configurations, and information retrieval methods. It expands from the relational model to the multidimensional model, object-relational techniques, and web accessed data. The course includes concepts, principles, issues, and techniques for managing corporate data resources. Techniques for managing the design and development of large database systems including logical data models, concurrent processing, data distribution, database administration, data warehousing, data cleansing, and data mining. Students will use current methods and tools for database design and development. Limited to CSE/ISE graduate students; others, permission of instructor.
3 credits, Letter graded (A, A-, B+, etc.)

ISE 504: Analysis, Modeling, and Design
This course provides an understanding and application of system analysis and design processes. Students evaluate and choose appropriate system development methodologies and design a system. Students learn the importance of effective communication and integration with users and user systems. The course emphasizes interpersonal skill development with clients, users, team members, and others associated with the development, operation, and maintenance of systems. The course includes the system development life cycle; analysis and design techniques; information systems planning and project identification and selection, requirements collection and structuring, process modeling, data modeling, design of interface and data management, system implementation and operation, system maintenance, and change management implications of systems, and globalization issues in systems. Students will use current methods and tools such as rapid application development, prototyping, and visual development.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated 2 times FOR credit.

ISE 506: Quantitative Computer Architecture
Explores the physical structure of a computer; machine representation of information; architecture and organization of various mainframe, min­i-, and microcomputers; primary and secondary storage; and input and output communication. Architectural choices are compared and used to determine resulting function and performance. Architectural trade-offs are also identified.
3 credits, Letter graded (A, A-, B+, etc.)

ISE 507: Project Management
The course focuses on both the technical aspects of project management as well as the human aspects. Technical components include project definition, work breakdown structure development, and the use of optimization techniques for planning a project and optimizing schedules. Graphical approaches to project definition are addressed, as are needs analysis, preliminary design, and detailed design and implementation. Human aspects of project management include forming a project team, managing performance, and resolving conflicts.
3 credits, Letter graded (A, A-, B+, etc.)

ISE 516: Systems Engineering Principles
An introduction to the full range of system engineering concepts, tools and techniques. These elements are applied to both large- and small-scale projects. The course provides a review of the stages of an integrated, top-down, life-cycle approach to design engineering -- from analysis of customer requirements to maintenance and support, from definition of system operational concepts through material disposal and ability and maintainability engineering, human factors, safety, logistics engineering, quality engineering and value-cost engineering. The course also includes a treatment of crucial management issues, such as the planning and development of System Engineering Management Plans (SEMPs), work breakdown structures (WBSs), cost projections and supplier selection and management.
3 credits, Letter graded (A, A-, B+, etc.)
May be repeated 2 times FOR credit.

ISE 517: Human Factors in Systems Engineering
The course focuses on techniques to integrate human factors into the design of systems so that the systems match human abilities and limitations. The course addresses techniques to translate system requirements into project specific design requirements. The course addresses physiological and mental characteristics of humans and emphasizes methods used to generate human factors inputs for engineering work products. The course describes the effect of human factors on each stage of development.
Limited to CSE and ISE graduate students; others, permission of instructor. Cannot be used towards M.S. or Ph.D. degree in Computer Science.
Spring, 3 credits, Letter graded (A, A-, B+, etc.)
May be repeated 2 times FOR credit.