

COMPUTER SCIENCE (CS)

CS 5501 Database Management Systems (3)

Prerequisite(s): A programming language.

Information as corporate resource, data modeling, database design, implementation strategies and administration; security, information centers, decision support systems, mini- and microcomputer environment; teams of students will design and implement a relational database application.

CS 5521 Applied Software Engineering I (3)

Prerequisite(s): Admission to the MS in SSD program or permission of instructor.

Focuses specifically on methods that guide software engineers from requirements to code; provides broad understanding of current methods, and specific skills in using these methods.

CS 5523 Applied Software Engineering II (3)

Prerequisite(s): SSD major or permission of instructor.

Provides knowledge and skills necessary to lead a project team, understand the relationship of software development to overall product engineering, and understand the software process.

CS 5525 Advanced Web Applications Using Web Services (3)

Prerequisite(s): Undergraduate software engineering course or equivalent.

Utilization of various technologies and tools for developing Web applications using Web Services, emphasizing organizational issues, challenges, and security concerns related to the effective deployment of those applications. Students will evaluate real-world applications of Web services as well as the unique decision-making framework involved with their adoption while employing those lessons learned in practical solutions.

CS 5530 Human-Computer Interaction (3)

Prerequisite(s): Comprehensive undergraduate course in software engineering or industrial software engineering experience with a large project.

Human-computer interface, human performance, diversity, and mental models, interaction devices, dialog and interface styles, documentation, and usability testing.

CS 5534 Emerging Software Architectures and Methodologies (3)

Prerequisite(s): Comprehensive undergraduate course in software engineering or industrial software engineering experience with a large project.

Explores emerging technologies and contemporary development methodologies for large scale software systems; difficulties and benefits of software by component composition, component reuse and software architectures.

CS 5536 Computational Intelligence (3)

Prerequisite(s): Experience with an object oriented programming language.

Introducing concepts, models, algorithms, and tools for development of intelligent systems. Example topics include artificial neural networks, genetic algorithms, fuzzy systems, swarm intelligence, ant colony optimization, artificial life, and hybridizations of the above techniques. Additional focus will be placed on research methodologies and preparing research papers and reports.

CS 5538 Business Intelligence and Data Mining (3)

Prerequisite(s): Undergraduate or graduate statistics course.

Introduction to business intelligence and data mining methodologies and tools that enable users to analyze new patterns/relationships and develop insight for decision making. This course provides students thorough conceptual framework, discussion, and hands-on experience in business intelligence and data mining. Techniques that the course covers include, but not limited to, linear modeling, decision trees, association rules, classification rules, clustering & visualization, text mining methodologies. Topics covered will include business intelligence, data mining methods, predictive analysis, information quality, and a term project that applies the skills learned.

CS 5540 Bioinformatics Algorithms (3)

Prerequisite(s): Basic knowledge in probability and statistics, data structures, and algorithms.

Provides fundamental background in bioinformatics, both theoretical and practical, to students in computer science or biological sciences. Provides the principles that drive an algorithm's design. Covers various topics such as DNA and RNA structure, gene structure and control, protein structure, sequence alignment production, homologous sequences searches, phylogenetic trees structure and interpretation.

CS 5541 Digital Media: Theory and Processing (3)

Study of the fundamentals of image and video processing. This course will use a mathematical framework to describe and analyze images and videos as two- and three-dimensional signals in the spatial, spatio-temporal, and frequency domains. Techniques for image and video compression, morphological processing, segmentation, enhancement and recovery will be presented.

CS 5544 Applied Artificial Intelligence (3)

Prerequisite(s): Undergraduate artificial intelligence course or equivalent. Survey of artificial intelligence emphasizing applications in business, industrial, and scientific system development; autonomous agents, data mining, pattern recognition, and machine vision.

CS 5546 Advanced Management of Information Systems (3)

In-depth study of the theories of information systems and their relationship to organization, decision-making and information management processes. Topics include information systems' impact, strategic uses of information systems, technology adoption, enterprise computing architectures and infrastructures, information security and assurance, IT policy compliance, knowledge management and performance measurement.

CS 5547 Wireless Networking and Security (3)

Prerequisite(s): SSD major or permission of instructor.

A study of advanced topics in computer networks with emphasis on wireless communications. Fundamentals of cellular communications, CDMA systems, wireless security, Wireless Application Protocols (WAP), Bluetooth, and new wireless technologies are also covered.

CS 5550 Distributed Computing Systems (3)

Prerequisite(s): Undergraduate course in computer networking or equivalent.

Design and analysis of distributed computing systems; system architecture; load balancing and scheduling; remote procedure calls and message passing; distributed operating systems and database systems.

CS 5565 Embedded and Real-Time Software Development (3)

Prerequisite(s): SSD major or permission of instructor.

In-depth study of requirements or real-time and embedded software; examination of operating systems, languages, and devices that support these systems; real-time multimedia applications emphasized.

CS 5570 Advanced Computer Security (3)

Prerequisite(s): Undergraduate operating system course or equivalent. Study of advanced network security architectures, models, benchmarks and metrics, cryptography, authentication and authorization protocols, secure application and systems development, federal regulations and compliance, and advanced security topics on intrusion detection, biometrics, web services, and data mining. Emphasis is on security professional certification.

CS 5701 Research Methods and System Evaluation (3)

Prerequisite(s): Undergraduate or graduate statistics course. Introduction to the research techniques and methodologies used to evaluate systems such as control systems, computer systems, security systems, and information systems. Topics include methodological foundations, qualitative research methods and quantitative research methods.

CS 5891 Special Topics in Computer Science I (3)

Prerequisite(s): Approval of the advisor and approval of the department head. Selected topics from current problems in computing; topics vary from semester to semester.

CS 5892 Special Topics in Computer Science II (3)

Prerequisite(s): Approval of the advisor and approval of the department head. Selected topics from current problems in computing; topics vary from semester to semester.

CS 5991 Studio Component I (3)

Prerequisite(s): Approval of the advisor and approval of department head. Provides students with a laboratory for direct application of concepts learned in course work; students will produce a variety of software products. This course may be repeated for a total of six credit hours.

CS 5992 Studio Component II (3)

Prerequisite(s): Approval of the advisor and approval of department head. Provides students with a laboratory for direct application of concepts learned in course work; students will produce a variety of software products. This course may be repeated for a total of six credit hours.