

# DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

## College of Natural and Social Sciences

Sherri Harms, Ph.D., Chair - (308) 865-8370

This department offers degrees at the undergraduate level (<http://catalog.unk.edu/undergraduate/departments-programs/computer-science-information-technology>) only.

The department participates in the Master of Science in Education Degree with a specialization in Instructional Technology (<http://catalog.unk.edu/graduate/departments/teacher-education/#programstext>).

Computer Science and Information Technology courses may be used as an Area of Emphasis within the Master of Business Administration Degree (<http://catalog.unk.edu/graduate/departments/business-administration-programs>).

Graduate Faculty

Professor: Sherri Harms, John Hastings

Assistant Professor: Matthew Miller

## Computer Science and Information Technology (CSIT)

### CSIT 801P – Operating Systems 3 credit hours

Introduction to modern operating system concepts and design. Topics will include: Processes, semaphores, monitors, concurrent process management, virtual memory, file systems, scheduling algorithms, deadlocks and protection, I/O control interrupt handling, client-server model, remote procedure call, distributed synchronization, threads and transactions.

Prerequisite: CSIT 330

### CSIT 802P – Intro to Automata, Formal Languages, & Computability 3 credit hours

A survey of the fundamental concepts and conclusions in the theory of computation. Topics cover regular languages and finite automata, Kleen's theorem, context-free languages and pushdown automata, formal grammars, Chomsky hierarchy, Turing machine and computability, computational complexity.

Prerequisite: CSIT 180 or MATH 115

### CSIT 805P – Compiler Construction 3 credit hours

Techniques and organization of compilers, assemblers, and interpreters. Structure of programming language symbol tables, scans, and object code generation considered.

Prerequisite: CSIT 402 or CSIT 802P

### CSIT 806P – Internet-Based Information Systems Development 3 credit hours

This course is designed to assist students in learning the skills necessary to design and build Internet-based information systems. Skills and knowledge gained in this course can be applied in the development of information systems that support interactive Web sites, electronic commerce systems, and other systems that involve interaction with a database through the Internet. Security of Internet based information systems will also be covered.

Prerequisite: Completion of or concurrent enrollment in CSIT 150 and CSIT 425 or CSIT 825P and graduate standing

### CSIT 822P – Computer Graphics 3 credit hours

Introduction to the techniques for generating lines, curves, surfaces, 2D and 3D graphics, modeling and rendering. Topics include display hardware, transformations, interactive technologies, geometric modeling, 2D and 3D display algorithms, graphics software system architecture, visible-surface algorithms, illumination and shading.

Prerequisite: CSIT 330

### CSIT 825P – Database Systems 3 credit hours

This course is a comprehensive study of multi-user database concepts. The relational model and relational database management systems along with proper database design will be emphasized. The normalization process and the various normal forms will be covered. Internet database applications are introduced. SQL will serve as the standard language for database manipulation. Several current database management systems will be introduced and will serve as the sample DBMSs for implementation of the course material.

Prerequisite: CSIT 130 or CSIT 834P or instructor permission and graduate standing

### CSIT 826P – Computer Architecture 4 credit hours

The study of the logic and theory of operation of the main hardware blocks of computers, their control, and their software/hardware interactions. The emphasis is on microcomputer architecture, including laboratory experiments with various systems and their I/O and interfacing characteristics.

Prerequisite: PHYS 205 and PHYS 205L or PHYS 275 and PHYS 275L and 6 hours of CSIT courses preferably CSIT 130 and CSIT 301

### CSIT 828P – Data Communications and Distributed Processing 3 credit hours

Study of network topology, protocols, management and communication media. Evaluation of present communication hardware, software, and future advancements in networking.

Department Consent Required

Prerequisite: CSIT 130 or CSIT 834P or ITEC 345 and instructor permission

### CSIT 834P – Information Technology Teaching Methods 3 credit hours

This course will include information technology curriculum development and instruction, with a focus on applying programming concepts to K-12 education. Intended only for Teachers. Cannot be applied toward any other Computer Science/Information System Major or Minor.

Prerequisite: TE 810 or TE 870 or TE 886P or instructor permission

**CSIT 840P – Client-Side Web Application Development 3 credit hours**

This course covers the wide range of state-of-the-art computer technologies that are used to present information in a multimedia context. Students will use current tools and strategies for the interfacing of text, graphics, sound, and additional multimedia objects. Students will also learn the current techniques for creating hypertext documents as defined by the World Wide Web Consortium. Finally the students will learn an appropriate state-of-the-art scripting language to allow for dynamic content in their hypertext documents.

Prerequisite: CSIT 130 or CSIT 834P or instructor permission and graduate standing

**CSIT 841P – Artificial Intelligence 3 credit hours**

An in-depth study of intelligent agents, tree and search methods, constraint satisfaction problems, optimization problems, game-playing, logical analysis, and uncertainty modeling. Machine learning techniques are introduced. Applications to robotics, psychology, business intelligence and data mining are also discussed.

Prerequisite: CSIT 150 and graduate status

Additional Course Fee Required

**CSIT 848P – System Administration 3 credit hours**

This course provides an overview of how to manage a server and its users. Topics include but not limited to installing server operating system, creating user and group accounts, setting up policies, adding and configuring devices and drivers, managing data storage, setting up security evaluating performance, trouble shooting, and virtualization

Prerequisite: CSIT 834P or TE 870 or permission of instructor

**CSIT 850P – E-Commerce Information Systems 3 credit hours**

This course will present, develop, explore, and illustrate the nature and use of E-commerce Information System development methodologies in an inter-organizational setting, and discuss responsibilities at all life cycle stages. It is a comprehensive study of electronic commerce, with in-depth coverage of e-commerce technologies and e-commerce business models including business-to-consumer models, business-to-business models, consumer-to-consumer models, peer-to-peer models, and mobile commerce. It introduces global e-commerce, security and encryption issues, and ethical, social and political issues related to e-commerce. E-commerce interface designs for electronic storefronts, malls, catalogs, shopping carts, search engines, auctions, e-payment systems, e-learning, and e-government will be covered. Consumer interactions with payment processing mechanisms and relationships to information technology development and support will be studied.

Prerequisite: CSIT 834P or TE 870 or TE 877

**CSIT 858P – Computer Security 3 credit hours**

This course provides an overview of security issues associated with the development and deployment of information systems. Topics include authentication, encryption, firewalls, security standards and protocols, attack prevention, detection, and recovery.

Prerequisite: CSIT 848P or instructor permission

**CSIT 892P – Practicum in Computer Science/Information Technology 1-6 credit hours**

This course provides the student the opportunity to gain experience in the application of computer science/computer information technology principles in a variety of settings. Arrangements must be made in writing prior to registering for the course. (A total of three credit hours of any combination of CSIT 892P-CSIT 895P may be applied toward a computer science/information technology major, minor, or endorsement.) (A total of 6 credits may be earned for a summer practicum and a total of 3 credits may be earned for a semester practicum.)

Department Consent Required

Total Credits Allowed: 6.00

**CSIT 893P – Directed Readings in Computer Science/Technology 1-3 credit hours**

Independent readings on advanced or contemporary topics in computer science/information technology, to be selected in consultation with and directed by a computer science/information technology faculty member. A written contract specifying readings and requirements for the course is required before registering for the course. Any topic that is thoroughly covered by any regularly offered computer science or information technology course is not allowed for Directed Readings. Upon completion of the project a format presentation will be given by the student to all interested parties.

Department Consent Required

Total Credits Allowed: 6.00

Prerequisite: CSIT 150 or CSIT 834P and permission of department chair and graduate standing

**CSIT 894P – Directed Research in Computer Science/Information Technology 1-6 credit hours**

Independent original research in computer science/ information technology under the direction of a computer science/information technology faculty member. A written contract specifying topic and requirements is required before registering for the course. Upon completion of the project a format presentation will be given by the student to all interested parties.

Department Consent Required

Total Credits Allowed: 6.00

Prerequisite: CSIT 150 or CSIT 834P and permission of department chair and graduate standing

**CSIT 895P – Independent Study in Computer Science/Information Technology 1-3 credit hours**

Project will be in an area of interest to the student and should include programming. Upon completion of the project a format presentation will be given by the student to all interested parties. A written contract specifying topic and requirements is required before registering for the course.

Department Consent Required

Total Credits Allowed: 6.00

Prerequisite: CSIT 150 or CSIT 834P and permission of department chair and graduate standing

**CSIT 896P – Seminar in Computer Science 3 credit hours**

Provides experience and background that will prepare the student for an actual working environment. Reinforcement of previous classwork, enhancement of communication skills, and learning to work with people will be stressed. Primary tasks include a team-based computer science project and the study of ethics for computer science professionals.

Prerequisite: CSIT 330 and graduate standing

**CSIT 897P – Seminar in Information Technology 3 credit hours**

This course provides experience and background that will prepare the student for an actual working environment. Reinforcement and validation of knowledge gained in previous course work, enhancement of communication skills, and learning to work with people will be stressed. Primary tasks will include a team-based information systems development project and the study of ethics for CS/IT professionals.

Prerequisite: Completion of or concurrent enrollment in CSIT 825P

**CSIT 899P – Special Topics in Computer Science and Information Technology 1-3 credit hours**

This course is designed to enable students to become knowledgeable of recent trends and issues in computer science and information technology. The course format varies depending on subject matter, instructor and student needs.

Total Credits Allowed: 3.00