

CSE 5915: Capstone Design: Information Systems

Course Description

Capstone design project; information system principles: database design methods and tools, indexing, searching, application development, testing, evaluation; teamwork, written and oral communication skills.

Prior Course Number: CSE 772

Transcript Abbreviation: Capstn: Info Sys

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad, Graduate

Student Ranks: Senior, Masters, Doctoral

Course Offerings: Autumn

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 4.0

Repeatable: No

Time Distribution: 1.0 hr Lec, 3.0 hr Lab

Expected out-of-class hours per week: 8.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: (CSE 2501 or CSE 5501 or CSE 601) and (CSE 3901 or CSE 3902 or CSE 4901 or CSE 4902 or CSE 560) and (CSE 3241 or CSE 5241 or CSE 670)

Exclusions: Not open to students with credit for CSE 772

Cross-Listings:

Course Rationale: Existing course.

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.0901

Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering
MS CSE	MS Computer Science and Engineering
PhD CSE	PhD Computer Science and Engineering

Course Goals

Master synthesizing and applying prior knowledge to designing and implementing solutions to open-ended computational problems while considering multiple realistic constraints.
Master design and implementation of an information systems project.
Master using database design methods and tools.

Be competent in evaluating design alternatives.
Be competent with software design and development practices and standards.
Be competent with deadline driven projects in a team setting.
Be competent with issues of project management, such as teamwork, project scheduling, individual and group time management.
Be competent with presenting work to a range of audiences and peers.
Be competent with techniques for effective written communication for a range of purposes.
Be familiar with researching and evaluating computing tools and practices for solving given problems.
Be familiar with analyzing professional issues, including ethical, legal and security issues, related to computing projects.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Description of information systems projects	3.0							
Multimedia (image, audio, video, text) and scientific data management	3.0							
Web-based Information Systems	2.0							
Requirement analysis, initial design, project proposals			10.0					
Project design progress			10.0					
User-interfaces, initial demonstrations	3.0		7.0					
Project implementations, testing			15.0					
Final demonstrations	3.0							

Representative Assignments

Design and implementation of a large-scale content-based image/audio/video database and search tool
Design and implementation of a simple data warehouse with OLAP and data analytics functionality
Design and implementation of an online community where doctors and patients can share data and communicate important health issues
Design and implementation of a web-based protein database and search tool

Grades

Aspect	Percent
Progress reports	15%
Presentations	15%
Midterm demo	15%
Final demo and report	45%
Participation	10%

Representative Textbooks and Other Course Materials

Title	Author
<i>Fundamentals of Database Systems, Third Edition</i>	Ramez Elmasri and Shamkant B. Navathe
<i>Principles of Multimedia Database Systems</i>	V.S. Subrahmanian
<i>Practical Analysis & Design for Client/Server & GUI Systems</i>	D. A. Ruble

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
**	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
***	c	An ability to design a system, component, or process to meet desired needs.
*	d	An ability to function on multi-disciplinary teams.
***	e	An ability to identify, formulate, and solve engineering problems.
**	f	An understanding of professional and ethical responsibility.
***	g	An ability to communicate effectively.
**	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
***	i	A recognition of the need for, and an ability to engage in life-long learning.
*	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

BS CSE Program Outcomes

Course Contribution		Program Outcome
***	a	an ability to apply knowledge of computing, mathematics including discrete mathematics as well as probability and statistics, science, and engineering;
**	b	an ability to design and conduct experiments, as well as to analyze and interpret data;
***	c	an ability to design, implement, and evaluate a software or a software/hardware system, component, or process to meet desired needs within realistic constraints such as memory, runtime efficiency, as well as appropriate constraints related to economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability considerations;
*	d	an ability to function on multi-disciplinary teams;
***	e	an ability to identify, formulate, and solve engineering problems;
**	f	an understanding of professional, ethical, legal, security and social issues and responsibilities;
***	g	an ability to communicate effectively with a range of audiences;
**	h	an ability to analyze the local and global impact of computing on individuals, organizations, and society;
***	i	a recognition of the need for, and an ability to engage in life-long learning and continuing professional development;
*	j	a knowledge of contemporary issues;
***	k	an ability to use the techniques, skills, and modern engineering tools necessary for practice as a CSE professional;
***	l	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
***	m	an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
***	n	an ability to apply design and development principles in the construction of software systems of varying complexity.

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