

CSE 3901: Project: Design, Development, and Documentation of Web Applications

Course Description

Intensive group project involving design, development, and documentation of a web application; client-side and server-side scripting; communication skills emphasized; builds programming maturity.

Transcript Abbreviation: Proj: Web Apps

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad

Student Ranks: Junior

Course Offerings: Autumn, Spring, May + Summer

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 4.0

Repeatable: No

Time Distribution: 3.0 hr Lec

Expected out-of-class hours per week: 9.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: Prereq: 2231; and 2321; and 2421 or 3430, or 2451 and ECE 2560.

Exclusions:

Cross-Listings:

Course Rationale: Existing course.

The course is required for this unit's degrees, majors, and/or minors: Yes

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: Baccalaureate Course

Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering

Course Goals

Be competent in the development of dynamic web applications using Java-based technologies
Be competent in the development and formatting of static web content
Be competent with writing, organizational, and presentation skills
Be competent with analyzing the intended audience for a written document and writing an audience profile
Be familiar with making engineering decisions involving tradeoffs
Be familiar with the use of SQL to access database content

Be familiar with defining the purpose (persuade, inform, etc.) of a written document and select the appropriate rhetorical devices
Be familiar with writing several pieces of documentation that have different purposes and to use appropriate organization to tie them together
Be familiar with group project organization techniques including conducting group meetings, recording minutes, and tracking project progress
Be familiar with using one structured approach to large software design to carry out a large group project
Be exposed to the use of application frameworks for the deployment of web applications
Be exposed to some basic security vulnerabilities sometimes found in web applications
Be exposed to methods for internationalizing web applications

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Static web and networking (HTTP)	2.0		1.0					
Document content and formatting (HTML, XHTML, XML, CSS)	6.0		1.0					
Client-side scripting with JavaScript	3.0		1.0					
Databases (MySQL, JDBC)	3.0							
Model-view-controller design pattern	2.0		1.0					
Server-side scripting with servlets and Java Server Pages	6.0		2.0					
Sessions and state (JavaBeans)	2.0		1.0					
Tag libraries (JSTL)	2.0		1.0					
Authentication and security (SSL, SQL injection attacks, Cross-site scripting attacks)	3.0		1.0					
Deployment frameworks (eg Struts, Webwork, Hibernate, Spring)	3.0		1.0					
Internationalization and localization	1.0							
Performance considerations	1.0							
Technical writing	3.0							
Improving responsiveness with asynchronous requests (Ajax)	3.0		1.0					
Introduction to web services (SOAP/WSDL/UDDI)	3.0							

Representative Assignments

An on-line task list organizer
An interview-day batch scheduling application

Grades

Aspect	Percent
Lab assignments	60%
Midterm	15%
Exam	25%

Representative Textbooks and Other Course Materials

Title	Author
<i>Head First Servlets & JSP (2nd ed)</i>	Kathy Sierra, Bert Bates, Bryan Basham, Kathy Sierra, Bert Bates, Bryan Basham

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.

Prepared by: Paolo Sivilotti