COURSE DESCRIPTION

Department and Course Number	CS320	**Course Coordinator**	Chengyu Sun
Course Title	Web and Internet Programming	**Total Credits**	3

Current Catalog Description:

Server-side internet programming. Development of full-fledged Internet enterprise services and applications. Laboratory activities on application development.

Textbook:

Hall, Marty and Brown, Larry. *Core Servlets and JavaServer Pages, Vol. 1: Core Technologies, 2nd Edition,* Prentice Hall, 2003.

References:

- Sun Microsystems, Inc., *Java Servlet Specification (Version 2.4),* 2003.
- Sun Microsystems, Inc., *JavaServer Pages Specification (Version 2.0),* 2003.
- Bergsten, Hans., *Java Server Pages, 3rd Edition,* O, Reilly, 2003.
- Avedal, Karl., *Professional JSP,* Wrox Press, 2000.

Course Goals:

At the end of the course, students are able to

- Understand the paradigm shift from client-side programming to server-side programming.
- Grasp the basic elements of web programming such as HTTP request/response, common HTML tags, cookies and session tracking.
- Work with one mainstream web development technology such as J2EE, PHP, or ASP.NET.
- Design and develop a complete database-driven, multi-tiered, interactive web application, and deploy and test such an application with an application server.

These course goals contribute to the success of **Student Learning Outcomes 1.d, 5, and 6**.

Prerequisites by Topic:

- Strong Java Programming Skills
- Basic knowledge of client-side web programming such as HTML and JavaScript.
- Basic knowledge of relational databases and SQL.
- Exposure to Linux development environment.

Major Topics Covered in the Course:

- Application server setup and configuration
- HTTP requests and response
- Cookies and session tracking
- Servlet programming
- JSP directives and scripting elements
- JavaBeans
- JSP Expression Language (EL)
- JSP Standard Tag Library (JSTL)
- Databases and JDBC
- Custom tag libraries
- Authentication, Authorization, and SSL
- Introduction to MVC architecture and other web development technologies

Laboratory Projects (specify number of weeks on each):

Each week the students will complete an in-class lab of 2 hours and a half on selected topics:

- Week 1: Familiarize with the server setup, application deployment, and the development environment.
- Week 2: Develop a web application using servlet and HTML .
- Week 3: Add to the web application session tracking capabilities and support for multiple users.
- Week 4 and 5: Convert web application from servlet implementation to JSP, and address issues regarding the interactions among multiple JSP pages, and the separation of presentation and processing.
- Week 6: Lab on JavaBeans, Expression Language (EL), and JSP Standard Tag Library (JSTL).
- Week 7-8: Add database support and additional features to the web application.

- Week 9: Lab on creating custom tag libraries.
- Week 10: Add input validation and error handling to the web application; polish, package, and deploy the web application.

Estimate Curriculum Category Content (Quarter Hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms	0.5		Data Structures	0.5	
Software Design	1.0		Prog. Languages	1.0	
Comp. Arch.					

Oral and Written Communications:

Written documentation of software built in labs and homework assignments.

Social and Ethical Issues:

No significant component.

Theoretical Content:

No significant component.

Problem Analysis:

Students are required to analyze the feature requirements of typical web applications, such as interactivity, work flow, and data management, and to identify the appropriate tools and technologies for implementing these features.

Solution Design:

Solution design follows the n-tier design pattern of web applications. For simple applications, students are required to separate view implementation and processing logic. For more complex applications, business objects and data persistence are further separated for better flexibility and maintainability..