San Jose City College

Course Description and Learning Outcomes for Course Syllabus

Course Description:

CIS-021 - Java Servlets **Units: 3**

Students will learn how to develop and use Java Servlets. Java Servlets are being used to solve many problems associated with CGI (Common Gateway Interface) and proprietary server APIs (Application Program Interface). Students will learn the overall Servlet architecture and what is needed to develop dynamic and robust applications using Java Servlets.

Lecture Hours: 2.5 Lab Hours: 1.5 Repeatable: No Grading: L

Recommended: CIS 084 or equivalent is strongly recommended.

CAN: None

Advisory Level: Read: 3 Write: 3 Math: None

Transfer Status: CSU Degree Applicable: AA/AS

CSU GE: None District GE: None IGETC: None

Learning Outcomes:

1. Programming in the Web Environment
   A. Describe the difference between Web Client and Web Server environments
   B. Describe Web Browser to Web Server interaction
   C. Describe HTTP (HyperText Transfer Protocol) request and response elements and purpose
2. Servlet Basics
   A. Describe the difference between CGI (Common Gateway Interface) and Servlets
   B. Describe the difference between Servlets and HTTP
   C. Develop a small Servlet
3. HTML Clients
   A. Demonstrate how to use HTML to capture user input and convey it to an application on the server
   B. Describe how to interpret data sent by a form to a Servlet
   C. Create Web pages to be returned to the Web Server
   D. Describe how to handle errors and control the online conversation
4. Database Access
   A. Describe the steps necessary to use JDBC (Java DataBase Connectivity)
   B. Create a Web Page from a database query
   C. Describe connection pooling
   D. Describe how to read binary objects from a database
5. Debugging Techniques
   A. Describe the process of intercepting Servlet requests
   B. Illustrate what the Web Server sees
   C. Use Servlet logs to find errors
6. Session Management
   A.Describe how to create HTTP sessions
   B. Demonstrate saving state in hidden fields and cookies
   C. Identify HTTP session binding events
7. Servlet Life-Cycle Issues
   A. Describe the Servlet Life Cycle
   B. Identify the Initialization, Servicing Request, and Shutting Down processes
8. Threading Issues
   A. Illustrate the Servlet Threading Model
   B. Describe Thread safety
   C. Compare Single-Thread and Multi-Threaded Models
9. Interservlet Communications
   A. Describe Servlet chaining
   B. Compare Request Dispatching versus Direct Calls
10. Other Clients
    A. Describe and use Applet-to-Servlet communication
    B. Compare Perl and XML Clients
11. Other Servers
    A. Describe using Native Methods in a Servlet
    B. Illustrate the process of getting data from CGI scripts
    C. Use a Servlet as an FTP Proxy
    D Describe the process of invoking Active Server Pages (ASPs)
12. Java Server Pages/Applications
    A. Describe the Java Server Page function
    B. Compare Java Server Pages to Java Servlets
    C. Develop a Servlet to create a spreadsheet
    D. Use a Servlet to display images
    E. Describe the sending and receiving email process