

## **CS 372 Web Application Development**

### **Course Description**

P: 274. Introduction to Web application development. Characteristics of Web and application servers; Web engineering principles and application architectures; Web page construction; client and server-side scripting; database interaction; Web application deployment and management; security and performance issues; overview of application-layer protocols.

### **Course Goals and Learning Outcomes**

The goal of this course is to introduce the student to key client-side and server-side technologies used to build web applications. Specific learning outcomes are listed below. The letters in parentheses refer to ABET Program Learning Outcomes.

1. Describe the essential concepts associated with internet architecture that enable web applications (i)
2. Describe the basic components of web browsers and servers (c)
3. Construct a web server that implements a small subset of HTTP (a, c, j)
4. Utilize an integrated development environment to construct and deploy a web application (i)
5. Construct and validate web pages using HTML 4.01, XHTML 1.0 and CSS 2.1 (a, c, i)
6. Implement client-side application logic using Javascript (a, b, c)
7. Implement server-side application logic using Java servlets (a, b, c)
8. Implement the model-view-controller architecture using Java Server Pages (a, c, j, k)
9. Utilize JDBC to interact with persistent storage (a, c)
10. Read and apply web standards documents (a, h, i)
11. Identify trends in web technologies (h)
12. Independently investigate and apply non-Java technologies to construct web applications (a, b, c, h, i, k)

### **Instructor**

R. L. Sedlmeyer  
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Office Hours: MW 1:30 – 3:00 PM or by appointment

### **Course Web Site**

All materials for this course are available at <http://webct.ipfw.edu>. The web site contains PowerPoint slides, class announcements, the course syllabus, calendar, and all assignments for the course.

### **Books and Software**

## 1. Text

Web Technologies: A Computer Science Perspective, by Jeffrey C. Jackson, Pearson Prentice Hall, 2007, ISBN 0-13-185603-0

## 2. Software

We will be using Java as primary programming language and JBuilder Enterprise 2005 as our default Java program development environment and Apache Tomcat as our web server. This software is available in all campus open labs.

## Grading

Grades are based on the following assignments. These are weighted as follows:

Assignments : 80%  
Project : 20%

The instructor reserves the right to make adjustments to the number of assignments and weights.

For credit on a given assignment, it must be submitted by the published due date and time. Late assignments will not be accepted.

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	0% - 59%

## Assignment Submission

Code required to complete programming assignments will be independently tested by the instructor. These must be submitted electronically via WebCT. Be certain to check that any code you submit is virus-free. Code containing viruses will be assigned a grade of 0.

Hard-copy of materials associated with non-programming assignments must be handed in at the beginning of class.

## Attendance Policy

Attendance is a University requirement and I expect you to attend every class. I will be taking attendance and your grade may be adversely affected by any absences. In the event you cannot attend class you are responsible for obtaining any course-related information or materials.

## Academic Honesty Policy

Unless otherwise stated, assignments must be done individually. The following activities are not permitted unless explicitly expressed by the instructor:

- Seeking assistance in the development of algorithms
- Seeking assistance in the development of code
- Seeking assistance in debugging code

Seeking assistance means asking someone to show or tell you how to complete a task, working together to complete a task, or copying someone's work. The penalty for the first violation this policy is a score of 0; a subsequent violation will result in a grade of 'F' for the class and the placement of a memo describing the infraction in the CS Department's files. For non-majors the memo will be forwarded to the student's major department.

### **Accommodations for Students with Disabilities**

If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb Union, Room 113, telephone number 481-6658) as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site for SSD at <http://www.ipfw.edu/ssd/>

### **Help from the Center for Academic Support and Advancement (CASA)**

The SPOT Course-Specific Tutoring: Make your study time not only more effective, but also more efficient by signing up for free tutoring available in the SPOT in Kettler G21 (next door to the Writing Center). You are entitled to 2 free hours per week of one-to-one, course-specific help in understanding concepts, practicing the application or explanation of material being learned, and developing effective test-taking strategies. Make all appointments online through TutorTrac at [www.ipfw.edu/casa](http://www.ipfw.edu/casa). If you don't see a tutor available for your class, contact us in Kettler G21!

Drop-in tutoring is also available for math (schedule on website) and a few other subjects. If you need help with study skills in general, drop by the SPOT to view our self-paced tutorials or make a one-to-one appointment. Information about STEPS (Student Technology Education ProgramS) classes can be found the CASA website. Also, check with your instructor about whether Supplemental Instruction (group study) is available for this class. Questions? Call 481-5419.

SPOT Hours Spring 2008: Monday-Thursday 8 a.m. to 8 p.m.; Friday 8 a.m. to 4 p.m.

The WRITING CENTER: Save time and write better papers or presentations for any class through free one-to-one or small group consultations in The Writing Center, Kettler G19 (next door to the SPOT). Bring assignments, questions, ideas, and a draft (if you have one). Consultants can help you get started, write more clearly, revise, edit, and cite sources responsibly. Come as you begin and as you revise. Drop-ins are welcome if time is available, but appointments, made online through TutorTrac, receive preference. For TutorTrac, online consulting, and resources to make your writing process easier, go to [www.ipfw.edu/casa/writing](http://www.ipfw.edu/casa/writing). Questions? Call 481-5740.

Writing Center hours Spring 2008: M-Th 10 a.m. to 6 p.m.; F 10 a.m. to 2 p.m.; Su 1 to 5 p.m.

### **Tentative Schedule**

M	W
Aug 20 Course introduction; Internet and web applications overview; Demonstration Reading: Ch 1, pp. 1-11	Aug 22 Introduction to Java networking applications; Client/server applications using sockets Reading: Ch 1, pp. 12-23
Aug 27 Browser and web server fundamentals Reading: Ch 1, 24-46	Aug 29 XHTML 1.0 Reading: Ch 2, pp. 56-80
Sep 3 LABOR DAY – NO CLASS	Sep 5 XHTML 1.0 Reading: Ch 2, pp. 81-97, 106-111
Sep 10 CSS 2.1 Reading: Ch 3	Sep 12 CSS 2.1 Reading: Ch 3
Sep 17 CSS 2.1 Reading: Ch 3	Sep 19 Server-side programming with Java servlets Reading: Ch 6, pp. 307-321
Sep 24 Server-side programming with Java servlets Reading: Ch 6, pp. 322-333	Sep 26 Server-side programming with Java servlets Reading: Ch 6, pp. 334-338
Oct 1 Server-side programming with Java servlets Reading: Ch 6, pp. 334-338	Oct 3 Persistent storage using JDBC Reading: Supplemental
Oct 8 FALL BREAK – NO CLASS	Oct 10 Client-side programming with Javascript Reading: Ch 4, pp. 192-208
Oct 15 Client-side programming with Javascript Reading: Ch 4, pp. 209-223	Oct 17 Client-side programming with Javascript Reading: Ch 4, pp. 224-239
Oct 22 Host Objects: Browsers and the DOM Reading: Ch 5, pp. 249-267	Oct 24 Host Objects: Browsers and the DOM Reading: Ch 5, pp. 268-281
Oct 29	Oct 31

Host Objects: Browsers and the DOM Reading: Ch 5, pp. 282-299	Javascript libraries Reading: Supplemental
Nov 5 Representing web data: XML Reading: Ch 7, pp. 364-377	Nov 7 Representing web data: XML Reading: Ch 7, pp. 378-382
Nov 12 Representing web data: XML Reading: Ch 7, pp. 382-390	Nov 14 Representing web data: XML Reading: Ch 7, pp. 390-401
Nov 19 Representing web data: XML Reading: Ch 7, pp. 402-416	Nov 21 THANKSGIVING BREAK – NO CLASS
Nov 26 Java Server Pages (JSP) Reading: Ch 8, pp. 432-456	Nov 28 Java Server Pages (JSP) Reading: Ch 8, pp. 457-463
Dec 3 Java Server Pages (JSP) Reading: Ch 8, pp. 463-479	Dec 5 Invited speaker
Dec 10 Project presentations	

### ABET Program Learning Outcomes

The following learning outcomes are defined by ABET, our accrediting agency, for computer science programs.

- (a) An ability to apply knowledge of computing and mathematics appropriate to the discipline
- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- (d) An ability to function effectively on teams to accomplish a common goal
- (e) An understanding of professional, ethical, legal, security and social issues and responsibilities
- (f) An ability to communicate effectively with a range of audiences
- (g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
- (h) Recognition of the need for and an ability to engage in continuing professional development
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (j) 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.

(k) An ability to apply design and development principles in the construction of software systems of varying complexity.