

CS111

Client-Side Web Scripting

[Onsite]

Course Description:

This course covers how to add interactivity to a Web page using the client-side scripting tools such as JavaScript and AJAX. Students examine client-side script issues including browser compatibility and caching. Students will practice processing arrays, manipulating strings, and using predefined objects. Students will also be introduced to event-driven programming.

Prerequisite(s) and/or Corequisite(s):

Prerequisites: IT104 Introduction to Computer Programming or equivalent, CS110 Introduction to Web Applications or equivalent

Credit hours: 4

Contact hours: 50 (30 Theory Hours, 20 Lab Hours)

Syllabus: Client-Side Web Scripting

Instructor: _____

Office hours: _____

Class hours: _____

Major Instructional Areas

1. Introduction to JavaScript
2. Working with data types, operators, and expressions
3. Functions, events, control structures, and pattern matching
4. Manipulating data in strings and arrays
5. Validating form data with JavaScript
6. Debugging and error handling
7. Introduction to the Document Object Model (DOM)
8. Creating Dynamic HTML (DHTML)
9. Introduction to eXtensible Markup Language (XML)
10. Updating Web pages with AJAX

Course Objectives

1. Write control statements that make decisions and repeat loops.
2. Use the data structures in JavaScript to write scripts.
3. Use the Document Object Model (DOM) for events and event handling.
4. Create dynamic documents with JavaScript.

5. Use eXtensible Markup Language (XML) to exchange data between applications over the Internet.
6. Use AJAX (Asynchronous JavaScript), XML, and DOM to update Web pages.

SCANS Objectives

SCANS is an acronym for Secretary's Commission on Achieving Necessary Skills. The committee, created by the National Secretary of Labor in the early 1990s, created a list of skills and competencies that the committee feels are necessary for employees to function in a high-tech job market.

1. Demonstrate competence in selecting technology and determining desired outcomes and applicable constraints.
2. Demonstrate competence in how to apply technology to a task.
3. Employ computers to acquire, organize, analyze, and communicate information.
4. Judge which set of procedures, tools, or machines, including computers and their programs, will produce the desired results.
5. Allocate time and energy in completing projects in a timely manner.

Course Outline

Note: All graded activities, except the Project, are listed below in the pattern of <Unit Number>.<Assignment Number>. For example, Lab 1.2 refers to the 2nd lab activity in Unit 1.

Unit	Activities
1– The Basics of JavaScript–Part I	<ul style="list-style-type: none"> • Content Covered: <ul style="list-style-type: none"> <i>Programming the World Wide Web:</i> <ul style="list-style-type: none"> ○ Chapter 4, “The Basics of JavaScript,” pp. 129-159 • Labs: 1.1-1.3

Unit	Activities
	<ul style="list-style-type: none"> • Assignments: 1.1, 1.2
2– The Basics of JavaScript–Part II	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 4, “The Basics of JavaScript,” pp. 159-180 • Labs: 2.1, 2.2 • Assignments: 2.1 • Projects: 2.1
3– JavaScript and XHTML Documents–Part I	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 5, “JavaScript and XHTML Documents,” pp. 185-204 • Labs: 3.1, 3.2 • Assignments: 3.1, 3.2
4– JavaScript and XHTML Documents–Part II	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 5, “JavaScript and XHTML Documents,” pp. 205-224 • Labs: 4.1, 4.2 • Assignments: 4.1 • Projects: 4.1
5– Dynamic Documents with JavaScript–Part I	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 6, “Dynamic Documents with JavaScript,” pp. 227-248 • Labs: 5.1-5.3 • Assignments: 5.1
6– Dynamic Documents with JavaScript–Part II	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 6, “Dynamic Documents with JavaScript,” pp. 248-260

Unit	Activities
	<ul style="list-style-type: none"> • Labs: 6.1, 6.2 • Assignments: 6.1 • Projects: 6.1
7– Introduction to XML–Part I	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 7, “Introduction to XML,” pp. 263-287 • Labs: 7.1-7.3 • Assignments: 7.1
8– Introduction to XML–Part II	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 7, “Introduction to XML,” pp. 287-305 • Labs: 8.1, 8.2 • Assignments: 8.1 • Projects: 8.1
9– Introduction to AJAX–Part I	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 10, “Introduction to Ajax,” pp. 393-411 • Labs: 9.1, 9.2 • Assignments: 9.1, 9.2
10– Introduction to AJAX–Part II	<ul style="list-style-type: none"> • Read from <i>Programming the World Wide Web</i>: <ul style="list-style-type: none"> ○ Chapter 10, “Introduction to Ajax,” pp. 411-421 • Labs: 10.1 • Assignments: 10.1 • Projects: 10.1
11–	<ul style="list-style-type: none"> • Course Review

Unit	Activities
Course Review and Final Exam	<ul style="list-style-type: none"><li data-bbox="558 262 753 289">• Final Exam

Instructional Methods

This course is designed to promote a variety of teaching strategies that support the outcomes described in the course objectives and that foster higher cognitive skills. Delivery makes use of various media and delivery tools.

The Client-Side Web Scripting course is intended as a first course in JavaScript programming. Basic programming concepts are covered, including data representation, functions, control structures, and arrays. This is followed by detailed discussions of objects, the Document Object Model, and events. The course then covers dynamic Web pages, error handling, data validation, XML, and AJAX.

Classroom activities will allow you to participate on a team to identify the structures and features of JavaScript-based Web pages. You will also be expected to complete writing assignments and labs in every unit. Labs provide a hands-on approach to learning practical programming methods. Samples of code and output are provided to you in each lab, so you understand the major pieces of the code you will be required to write and how the output should be displayed. This approach allows you to build your knowledge as you progress throughout the course. In addition, a project will be assigned in every other unit. Projects are designed to build on the information learned in labs and the theory portion of class.

The final exam in Unit 11 will evaluate your understanding of the core concepts covered in this course.

Instructional Materials and References

Student Textbook Package

Sebesta, Robert W. *Programming the World Wide Web. 5th ed. San Francisco: Addison-Wesley, 2010.*

References

ITT Tech Virtual Library

Log on to the ITT Tech Virtual Library at <http://www.library.itt-tech.edu/> to access online books, journals, and other reference resources selected to support ITT Tech curricula.

Books

You may click “Books” or use the “Search” function on the home page to find the following books.

- Books 24x7>
 - Adams, Cameron, et al. *The Art & Science of JavaScript*. Victoria, Australia: SitePoint Pty. Ltd., 2007.
 - Edwards, James, and Cameron Adams. *The JavaScript Anthology: 101 Essential Tips, Tricks & Hacks*. Victoria, Australia: SitePoint Pty. Ltd., 2006.
 - Goodman, Danny, and Michael Morrison. *JavaScript Bible*. 6th ed. Indianapolis, IN: John Wiley & Sons, 2007.
 - Heilmann, Christian. *Beginning JavaScript with DOM Scripting and Ajax: From Novice to Professional*. Berkeley, CA: Apress, 2006.
 - Holzner, Steven. *Ajax: A Beginner's Guide*. New York: McGraw-Hill/Osborne, 2009.
 - Holzner, Steven. *Ajax Bible*. Indianapolis, IN: John Wiley & Sons, 2007.
 - Holzner, Steven. *Ajax: Your Visual Blueprint for Creating Rich Internet Applications*. Indianapolis, IN: John Wiley & Sons, 2006.
 - Powell, Thomas A. *Ajax: The Complete Reference*. New York: McGraw-Hill/Osborne, 2008.
 - Suehring, Steve. *JavaScript Step by Step*. Redmond, WA: Microsoft Press, 2008.
 - Thau, Dave. *The Book of JavaScript: A Practical Guide to Interactive Web Pages*. 2nd ed. San Francisco: No Starch Press, Inc., 2007.
 - Wilton, Paul, and Jeremy McPeak. *Beginning JavaScript*. 3rd ed. Indianapolis, IN: Wrox Press, 2007.

- Yank, Kevin, and Cameron Adams. *Simply JavaScript*. Victoria, Australia: SitePoint Pty. Ltd., 2007.
- Zammetti, Frank W. *Practical JavaScript, DOM Scripting, and Ajax Projects*. Berkeley, CA: Apress, 2007.
- NetLibrary>
 - Easttom, Chuck. *Advanced JavaScript*. 3rd ed. Plano, TX: Wordware Publishing, 2008.
 - Feiler, Jesse. *How to Do Everything With Web 2.0 Mashups*. New York: McGraw-Hill Professional, 2008.
 - Freire, Ma´rio Marques, and Manuela Periera. *Encyclopedia of Internet Technologies and Applications*. Hershey, PA: IGI Publishing, 2008.
 - Geroimenko, Vladimir, and Chaomei Chen. *Visualizing the Semantic Web: XML-based Internet and Information Visualization*. 2nd ed. London: Springer Science & Business Media, 2006.
 - Holzner, Steven. *Ajax for Dummies*. Indianapolis, IN: John Wiley & Sons, 2006.
 - Powell, Thomas A. *Ajax: The Complete Reference*. New York: McGraw-Hill Professional, 2008.
 - Smith, Susan Sharpless. *Web-based Instruction: A Guide for Libraries*. 2nd ed. Chicago: ALA Editions of the American Library Association, 2006.
 - Zakas, Nicholas C. *Professional JavaScript for Web Developers*. Indianapolis, IN: John Wiley & Sons, 2005.

Periodicals

You may click “Periodicals” or use the “Search” function on the home page to find the following periodicals.

- Periodicals> Program related online journals and magazines
 - Digital Web Magazine

Learning Guides

You may click “Learning Guides” or use the “Search” function on the home page to find the following learning guides.

- Online Tutorials>
 - Edumax> Web Development
 - Programming Tutorials>
 - JavaScript
 - XML
 - Tutorialized>
 - JavaScript
 - XML
 - W3Schools Tutorial
 - XML Beginner's Guide

Other References

The following resource may be found **outside** of the ITT Tech Virtual Library.

Web site

- The W3C Markup Validation Service
<http://validator.w3.org> (accessed February 24, 2009)
This Web page will be referred to in classroom demonstrations and labs to validate an HTML document against a specific standard, such as XHTML and JavaScript.

All links to Web references outside of the ITT Tech Virtual Library are always subject to change without prior notice.

Course Evaluation and Grading

Evaluation Criteria Table

The final grades will be based on the following categories:

CATEGORY	WEIGHT
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CATEGORY	WEIGHT
Labs	35%
Assignments	10%
Projects	35%
Final Exam	20%
Total	100%

Note: Students are responsible for abiding by the Plagiarism Policy.

Grade Conversion Table

The final grades will be calculated from the percentages earned in the course, as follows:

A	90-100%	4.0
B+	85-89%	3.5
B	80-84%	3.0
C+	75-79%	2.5
C	70-74%	2.0
D+	65-69%	1.5
D	60-64%	1.0
F	<60%	0.0