School District of Springfield Township

Springfield Township High School
Course Overview

Course Name: Web Application Development 2 Grade level(s): 10-12

Course Description
Web Applications Development II provides students with interactivity to their web application development toolbox. Students move from static web page development to dynamic web page development. Concepts related to user interface design and the human-computer interface are integral. Web App II emphasizes client-side scripting with JavaScript, the DOM (document object model), and XML (extensible markup language). Projects include mobile websites and community content sites (similar to Flikr).

Course Prerequisites
A minimum final grade of "C" in Web Applications Development I or teacher recommendation

Unit Titles
Unit 1: Introduction to JavaScript
Unit 2: Objects, Events and Regular Expressions
Unit 3: Dynamic Content
Unit 4: Introduction to AJAX

Essential Questions
1. Who should be in control of a Web Application?
2. Why is interactivity the key to Web 2.0?
3. What role does metadata have right now and what role will it have in the future?
4. How much should a Web Application do for the client?

Big Ideas/Enduring Understandings
Unit 1: Introduction to JavaScript
- Client side scripting gives application and security control to the user and user agents.

Unit 2: Objects, Events and Regular Expressions
- Interactivity and event-driven programming are linked and events aren't always triggered by people.
- Regular expressions allow the programming of fuzzy logic.

Unit 3: Dynamic Content
- The semantic web requires us to look at data and metadata in new ways.
- Web 2.0 is about giving control to the right user agent at the right time.

Unit 4: Introduction to AJAX

- Privacy, security and convenience are challenging for the web professional to balance.
- Asynchronous processing can be a valuable solution to many user interface design dynamic content issues.

Key Competencies/Skills/Procedures

Unit 1: Introduction to JavaScript

- JavaScript embedded in the XHTML
- Basics of JavaScript language

Unit 2: Objects, Events and Regular Expressions

- External JavaScript tiles
- Using the Document Object Model (DOM)
- Event driven programming
- Rules of regular expressions

Unit 3: Dynamic Content

- Navigating and creating nodes
- Opacity and transition effects with image objects
- Creating, using and destroying cookies

Unit 4: Introduction to AJAX

- Controlling browser windows
- Creating customized objects
- XML, JSON and document parsing

Core Vocabulary

Unit 1: Introduction to JavaScript

array, assignment operator, binary operator, Boolean, command block, comparison operator, compiled, conditional statement, counter variable, debugging, declaring, decrement operator, ECMA, function, global scope, increment operator, index, interpreted, load-time error, logical error, logical operator, method, modular code, modulus operator, negation operator, null, operand, parameter, prop-am loop, run-time error, scope, statement, unary operator

Unit 2: Objects, Events and Regular Expressions

anonymous function, basic model, bubbling phase, camel case, capture phase, character class, delimiter, document object, DOM, dot syntax, event bubbling, event capturing, focus, Luhn formula, Mod 10 algorithm, pattern matching, property, regular expression, string object, target phase, this keyword, traditional binding

Unit 3: Dynamic Content

cookie, custom property, dynamic content, filter, image object, opacity, node, persistent style sheet, plus/minus box, recursion, rollover, root node, stateless protocol, subkey, transition

Unit 4: Introduction to AJAX

aggregator, AJAX, associative array, asynchronous, base object, chrome, constructor, encapsulation, feed reader, host object, IIS, instance, instantiating, jquery, JSON, modal window, modeless window, opener keyword, overlay, parent keyword, Perl, private

method, privileged method, prototypal inheritance, prototype chain, public method, RSS, secondary window, self keyword, sub class, super class, synchronous, top keyword, user - defined object, XML, XSLT

Core Resources

Teacher created materials available on our Moodle
JavaScript and AJAX, 2nd Edition by Patrick Carey and Frank

Pennsylvania State Standards

PA State Science and Technology Standards:

3.1.12 A. Apply concepts of systems, subsystems, feedback and control to solve complex technological problems.
3.1.12.C. Assess and apply patterns in science and technology
3.2.12.A. Evaluate the nature of scientific and technological knowledge.
3.2.12.D. Analyze and use the technological design process to solve problems
3.6.12.B. Analyze knowledge of information technologies of processes encoding, transmitting, receiving, storing, retrieving and decoding.
3.7.12.A. Apply advanced tools, materials and techniques to answer complex questions
3.7.12.B. Evaluate appropriate instruments and apparatus to accurately measure materials and processes.
3.7.12.C. Evaluate computer operations and concepts as to their effectiveness to solve specific problems.
3.7.12.D. Evaluate the effectiveness of computer software to solve specific problems.
3.7.12.E. Assess the effectiveness of computer communications systems.
3.8.12.A. Synthesize and evaluate the interactions and constraints of science and technology on society
3.8.12.B. Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life
3.8.12.C. Evaluate the consequences and impacts of scientific and technological solutions

CSTA Proposed National Curriculum for Computer Science (Level III):

1. Fundamental ideas about the process of program design and problem solving, including style, abstraction, and initial discussions of correctness and efficiency as part of the software design process
2. Simple data structures and their uses
3. Topics in discrete mathematics: logic, functions, sets, and their relation to computer science
4. Design for usability.
5. Levels of language, software, and translation
6. The limits of computing
7. Principles of software engineering
8. Social issues: software as intellectual property, professional practice
9. Careers in computing

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