

Boston University

Metropolitan College

MET CS601 - Web Application Development



Overview and Description:

This course focuses on building core competencies in web design and development. It begins with a complete immersion into HTML. Students are exposed to and are heavily encouraged to use Cascading Style Sheets (CSS) with any HTML page they create. The fundamentals of JavaScript language - including object-oriented JavaScript - will be covered. AJAX - using both XML and JSON - are covered in detail. Open source libraries such as jQuery core, jQuery UI will be covered, as they assist in building cross-browser web applications rapidly and efficiently. The PHP language will be presented and covered; however, students can use other server-side languages; such as ASP.NET, Java (JEE) or Ruby on Rails (RoR) for their projects. The course will focus on MySQL as a relational database system with the final project. Students may use other databases with instructor approval. Students will work with either IIS 6 (or better) or Apache 2, using any conventional operating system when working on their term projects and class laboratories.

This course has been designed to be very hands-on, with several in-class workshops in every class. Please have a functional laptop available during this course.

Instructor, Contact Email, Office Hours and Blackboard Site:

Instructor: Andrew Sheehan

Andrew is one of the many adjunct professors at Metropolitan College. He has been teaching at BU for over 11 years. He holds a Master of Science in Computer Science from BU and a BA in Economics from the State University of New York at Fredonia. He has close to 16 years of experience working with web technologies on various platforms and environments.

E-mail: asheehan@bu.edu

Office hours: By appointment.

Blackboard System: MET CS601 heavily relies on the blackboard system. (blackboard.bu.edu). You need [read: *must*] to have an account in-place and accessible for this class. Please attempt to login as soon as you can and verify that your account is all set and you see MET CS601 in your course listing.

Topic Coverage

1. Introduction to HTML.
2. Using Cascading Style Sheets.
3. Understanding JavaScript Fundamentals and then Object-oriented JavaScript.
4. Using jQuery for DOM manipulation and animation.
5. Using what HTML templates are.
6. Website layout.
7. Creating reusable HTML/JavaScript components.
8. Use of Ajax, with both JSON and XML.
9. Introduction to PHP.
10. Creating a data-driven websites with MySQL.
11. Fundamentals of security, securing information.

Course Objectives

- To understand and develop HTML.
- Develop an understanding and the importance of Cascading Style Sheets.
- To correctly use Ajax.
- Using XML and JSON with Ajax.
- Using encryption to secure Personally-Identifiable information.
- Using jQuery for DOM manipulation and animation.

- Show competency with PHP and a relational database management system (MySQL).
- Develop web applications in an IDE (Integrated Development Environment), or text editor (Emacs/VI).

Course Books

- **REQUIRED** "Basics of Web Design: HTML5 and CSS3". ISBN: 978-0137003389
- **OPTIONAL** "Programming with JavaScript. Algorithms and Applications for Desktop and Mobile Browsers.". ISBN: 978-0-7637-8060-9
- **REQUIRED** "Murach's PHP and MySQL". ISBN: 978-1-890774-56-1

Recommendations on Course Software

The software and/or libraries listed below are only recommendations. You are free to use any tool or software application.

- TextPad, NotePad, VI, Emacs, Dreamweaver, Expression Web, Netbeans, Zend Studio Pro or similar.
- Apache or IIS
- MySQL
- PHP

Course Policies

Class attendance and doing homework - on time - is mandatory. If you have to miss a class due to [insert reason here], notify the professor about it. You should ask for an extension or make-up. Set expectations between you and your professor for these types of untimely events.

Grading Policies

Homework

Several assignments will be given throughout the semester. 20% of your grade.

Quizzes

Given throughout the semester. **Cannot be made up.** 10% of your grade.

Midterm Examination

Covers all material up to the date of the midterm. 35% of your grade.

Project

Completion of a project and presenting it at the end of the course. 35% of your grade.

- *There will be no final examination.*
- *All homework assignments are due one (1) week from the date it was assigned.*

Academic Honesty

The course is governed by the Boston University Academic Conduct, for Metropolitan College.

You need to be aware of its contents: www.bu.edu/met/for-students/met-policies-procedures-resources/academic-conduct-code

Any code taken from the Internet (stackoverflow.com, javascriptkit.com, w3schools.com, etc...) must be cited in your source code. In general, you should avoid 'cut and paste' of other's work as you will not be learning the material as well as you need.

Course Schedule

Chapters 4, 7 (Murach)

Schedule of Events*

Class Meeting Dates	Lecture/Topic	Reading Assignments	Assignments
<p>All classes involve hands-on workshops (laboratories), slides, and in-class examples.</p> <p>All homework assignments will be discussed at the end of each class.</p>			

There will be several quizzes administered during the semester.

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September 4, 2012 Week 1	<ul style="list-style-type: none"> Welcome to the course, policies and expectations. Fundamental HTML elements. Where and how to use validation (CSS, HTML) on your markup. Writing "Hello, World" and more... using HTML. Discussion on tools: HTML, Database, and PHP. Discussion on XAMPP and your development environment(s). 	We will start our first class with the information presented in chapters 1,2 & 3 of Felke-Morris. Web References: <ul style="list-style-type: none"> CSS Validator Service HTML Validation Service 	During the first week of class (at home or office), install XAMPP on your laptop and/or workstation. <ol style="list-style-type: none"> Create an HTML 5 version of your current resume. Follow the instructions in Chapter One, Felke-Morris, on page 22, "Hands-On Exercise", for instructions on creating your own Blog. <p>The first entry in your Blog should use the "Focus on Web Design" section in Felke-Morris, page 23.</p> <p>If you already have a blog, then you will start augmenting it with your studies in this class. Part of your final grade is based on your content, that is only related to this class.</p>
September 11, 2012 Week 2	The class will continue from the discussion from last week on HTML and introduces the concepts involved with CSS. We will also start learning about	Chapter 5 (Felke-Morris) Chapter 1 (Murach)	<ol style="list-style-type: none"> (Felke-Morris) Review and Apply, Chapter 5.

	<p>PHP - the fundamentals.</p> <p><i>Students are encouraged to raise their questions during our classes, not just email the professor. Everyone will benefit with your contribution(s).</i></p> <ul style="list-style-type: none"> • Introduction to Cascading Style Sheets. • Selectors and Declarations. • Inline vs Embedded vs Linked. • Use of div and span over deprecated presentational elements. • Fundamentals of the PHP language. 		<p>Sections:</p> <p>Review Questions and Hands-On Exercises (pg. 120-121)</p> <p>2. (Murach> Work through the "Product Discount Application", Starts on pg. 14 (Chapter 1, Section 1).</p>
<p>September 18, 2012</p> <p>Week 3</p>	<p>We will focus more work on using more on CSS with HTML though in-class workshops.</p> <p>HTML tables will be introduced.</p> <ul style="list-style-type: none"> • Creating 2 & 3 column layouts without tables. • Understanding padding vs. margin (with block & inline elements). • Revamping a complete HTML page that used nested tables to use div's. • The value of using templates. • Interaction diagramming and storyboarding. 	<p>Chapters 7, 8 (Felke-Morris)</p> <p>Interaction Diagramming and Storyboard will be discussed.</p>	<p>In-class workshops not completed becomes homework.</p>
<p>September 25, 2012</p> <p>Week 4</p>	<p>Your final projects will involve the use of DHTML, PHP and MySQL. In this class, we will create a multi-page website first with HTML, then PHP - that connects to a MySQL database.</p> <ul style="list-style-type: none"> • Introduction to Relational Database Management Systems (RDMS), using MySQL. • Creating/adding tables to your database (DDL statements). • How to use PHP sessions. • CRUD operations/DML statements (Create Retrieve Update Delete). • Connecting to your MySQL database. • Writing PHP scripts that query and return data 	<p>Chapter 3 & 12 (Murach)</p>	<p>Do Product Viewer and Manager applications in Chapter 4, Murach. Zip up the screen shots of your completed solutions; upload to your student dropbox.</p>

	query and return data back to the client.		
October 2, 2012 Week 5	<p>We cover the purpose and use of HTML tables and working with images/graphics, and HTML form basics, including the incorporation of PHP and MySQL.</p> <ul style="list-style-type: none"> • Understanding graphic formats. • Adding graphics to HTML. • Using background images [with CSS]. • Using images with links. • List markers with images. • Creating tables. • Using the optional groups or sections within tables. • Using CSS with tables. • Types of form elements. • Using a label. • Grouping elements. • Using fieldsets and legends. • HTML5 form elements. • Using PHP to get your data out of a HTML form. • Applying CSS to form elements. • Validating form data on client/server with PHP and JavaScript. 	Chapters 6, 9 and 10 (Felke-Morris)	<ol style="list-style-type: none"> 1. (Felke-Morris) "Hands-on Practice" for Chapter 6, in Sections: <ul style="list-style-type: none"> ◦ 6.2 ◦ 6.3 ◦ 6.4 ◦ 6.5 ◦ 6.6 ◦ 6.7 1. (Felke-Morris) "Hands-on Practice" for Chapter 9, in Sections: <ul style="list-style-type: none"> ◦ 9.1 ◦ 9.2 ◦ 9.3 ◦ 9.4
October 9, 2012 Week 6	We do not have class, due to the holiday class schedule change (See BU academic calendar).		
October 16, 2012 Week 7	<p>We start learning JavaScript by combining slides and live (in-class) examples with laboratories.</p> <ul style="list-style-type: none"> • Use of JavaScript in today's websites. • Browser differences and how it affects a Developer. • What JavaScript can and can not do? • What is scope in Javascript? • Writing your first "Hello World!", JavaScript style. • The placement of the script elements in HTML. • Part I: Language Fundamentals. 	<p>Web References:</p> <ul style="list-style-type: none"> • Scope Chaining • w3schools.com • www.tizag.com • lynda.com • wdvl.com • quackit.com 	JavaScript assignment(s) will be posted on blackboard.
October	Events make the connection	Web References:	JavaScript

October 23, 2012 Week 8	<p>Events make the connection between clients and your business, in terms of a browser experience.</p> <ul style="list-style-type: none"> • Introduction to Arrays. • Creating and using Functions. • Understanding Events and the Event Model. 	<p>Web References:</p> <ul style="list-style-type: none"> • w3schools.com/core • w3schools.com/events • quirksmode.org • webmonkey.com 	<p>JavaScript assignment(s) will be posted on blackboard.</p>
October 30, 2012 Week 9	<ul style="list-style-type: none"> • Fundamentals of jQuery core & UI. • Using jQuery to build your own UI's. • Effects, animation & resizing abilities. • Building accordions & tabs. • Using jQuery Dialogs. • Implementing client validations and business rules. 	<p>Web References:</p> <ul style="list-style-type: none"> • jquery.com/ • jqueryui.com • jQuery UI tabs • http://flowplayer.org/tools/tabs/index.html • jQuery UI Accordion • bassistance.de 	<p>JavaScript assignment(s) will be posted on blackboard.</p>
November 6, 2012 Week 10	Midterm Examination		
November 13, 2012 Week 11	<p>Object-oriented JavaScript creates better, reusable code.</p> <ul style="list-style-type: none"> • Using Intrinsic objects. • User-defined objects. • Assigning properties to an object. • Creating and using PHP objects. • Creating methods on intrinsic and user-defined objects. 	<p>Web References:</p> <ul style="list-style-type: none"> • www.javascriptkit.com • nefariousdesigns.co.uk • javascriptkit.com 	<p>JavaScript assignment(s) will be posted on blackboard.</p>
November 20, 2012 Week 12	<ul style="list-style-type: none"> • Using Ajax with jQuery (and PHP). • What is the XMLHttpRequest Plugin/ActiveX object? 	<p>Web References:</p> <ul style="list-style-type: none"> • Mozilla Developer Network/ajax • Google Code • json.org • adaptivepath.com • github.com • havinne.com • msdn.microsoft.com 	<p>JavaScript assignment(s) will be posted on blackboard.</p>
November 27, 2012 Week 13	<ul style="list-style-type: none"> • Continuation of the November 20nd class. • Data Exchange and Markup: XML • Sending, processing and handling the server 	<p>Web References:</p> <ul style="list-style-type: none"> • inkscape.org • raphaeljs.com • w3schools.com • smashingmagazine.com 	<p>JavaScript assignment(s) will be posted on blackboard.</p>

	handling the server response. • JSON vs. XML	• tuzag.com • w3schools.com/php_ajax_php.asp • ajaxf1.com	
December 4, 2012 Week 14	• Final Project Presentations commence.	Web References: • inkscape.org • raphaeljs.com • w3schools.com • smashingmagazine.com • tuzag.com • w3schools.com/php_ajax_php.asp • ajaxf1.com	JavaScript assignment(s) will be posted on blackboard.
December 11, 2012 Week 15	Final Project Presentations		

* The schedule of events are subject to change