

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

Class Location: Please check online for the latest updates to the class location.

Office hours: By appointment. Usually just before class or after it ends for the evening.

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

- *"Basics of Web Design: HTML5 and CSS3"*. ISBN: 978-0137003389
- *"Programming with JavaScript. Algorithms and Applications for Desktop and Mobile Browsers."*. ISBN: 978-0-7637-8060-9
- *"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; almost every week. 25% 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. 30% 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, just using other people's work/solutions.

Course Schedule

Schedule of Events *

Class			

Meeting Dates (Summer 2012: Tuesdays)	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> <p>There will be quizzes administered, at random, during this class.</p>			
May 22, 2012 Week 1	<ul style="list-style-type: none"> • Welcome to the course, policies and expectations. • Fundamental HTML. • Where and how to use validation services in your IDE and on the web. • Writing "Hello, World" and more... using HTML. • Discussion on web development tools. • Discussion on XAMPP and your development environment(s). 	<p>We will start our first class with the information presented in chapters 1,2 & 3 of Felke-Morris.</p> <p>Web References:</p> <ul style="list-style-type: none"> • CSS Validator Service • HTML Validation Service 	<ol style="list-style-type: none"> 1. During the first week of class, install XAMPP on your laptop and/or workstation. Visit Apache Friends to get all the software you need to run PHP, Apache and MySQL. 2. Create an HTML 5 version of your current resume.
May 29, 2012 Week 2	<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 PHP. 	<ul style="list-style-type: none"> • Chapter 5 (Felke-Morris) • Chapter 1, 2 (Murach) 	<ol style="list-style-type: none"> 1. (Felke-Morris) Review and Apply, Chapter 5. Sections: "Review Questions" and "Hands-On Exercises" (pg. 120-121) 2. (Murach) Work through the "Product Discount Application", Starts on page 14 and ends on page 21. (Chapter 1, Section 1).
June 5, 2012 Week 3	<ul style="list-style-type: none"> • Building HTML tables • Creating 2 to 3 	<ul style="list-style-type: none"> • Chapter 6 (Felke-Morris) • Chapter 8 (Felke- 	<ol style="list-style-type: none"> 1. Complete the "Pacific Trails Case Study, found on page 148 (Felkes-Morris).

	<p>column layouts without tables using CSS float.</p> <ul style="list-style-type: none"> • Understanding padding vs. margin (with block & inline elements). • Revamping a complete HTML page that used nested tables to use div's. 	Morris)	
<p>June 12, 2012 Week 4</p>	<ul style="list-style-type: none"> • Introduction to Relational Database Management Systems using MySQL. • Creating/adding tables to your database (DDL statements). • How to use PHP arrays. • CRUD operations/DML statements (Create Retrieve Update Delete). • Connecting to your MySQL database. • Writing PHP scripts that query and return data back to the client. 	<ul style="list-style-type: none"> • Chapter 3 (Murach) • Chapter 4 (Murach) 	<ol style="list-style-type: none"> 1. Do the "Product Viewer" application. It starts on page 138. 2. Do the "Product Manager" application. It starts on page 146.
<p>June 19, 2012 Week 5</p>	<ul style="list-style-type: none"> • Types of form elements. • Using a label. • Grouping elements. • Using fieldset and legend. • Using PHP to get your data out of a HTML form. 	<ul style="list-style-type: none"> • Chapter 10 (Felkes-Morris) • Chapter 7 (Murach) 	<ol style="list-style-type: none"> 1. Review and Apply, Chapter 10 (Felkes-Morris, starting on page 274) Sections: "Review Questions" and "Hands-On Exercises" 2. Exercise 7.1, Chapter 7 (Murach, page 229)

	<ul style="list-style-type: none"> Applying CSS to form elements. Validating form data on client/server with PHP and JavaScript. 		
June 26, 2012 Week 6	Midterm Examination		
July 3, 2012 Week 7	<ul style="list-style-type: none"> Use of JavaScript in today's websites. Variables and expressions. Data Types. Null and undefined. Type conversion. Objects. 	<ul style="list-style-type: none"> Chapter 2 (Dionsisio, Toal) Chapter 3 (Dionsisio, Toal) 	<p>Exercises, starting on page 48 (Dionsisio, Toal):</p> <ul style="list-style-type: none"> Exercise #14 Exercise #19 Exercise #21 Exercise #27 Exercise #28
July 10, 2012 Week 8	<ul style="list-style-type: none"> JavaScript Arrays. (From Chapter 3) Control Structures. Functions. Functions and Scope. Type conversion. Objects. 	<ul style="list-style-type: none"> Chapter 3 [con't] (Dionsisio, Toal) Chapter 4 (Dionsisio, Toal) Chapter 5 (Dionsisio, Toal) 	<p>Exercises, starting on page 92 (Dionsisio, Toal):</p> <ul style="list-style-type: none"> Exercise #4 Exercise #13 Exercise #21 Exercise #25 <p>Exercises, starting on page 140 (Dionsisio, Toal):</p> <ul style="list-style-type: none"> Exercise #1 Exercise #4 Exercise #6 Exercise #9 Exercise #12 Exercise #13 <p>Exercises, starting on page 188 (Dionsisio, Toal):</p> <ul style="list-style-type: none"> Exercise #1 Exercise #5 Exercise #7 Exercise #8 Exercise #18
July 17, 2012 Week 9	<ul style="list-style-type: none"> Understanding Events and the Event Model. 	<ul style="list-style-type: none"> Chapter 6 (Dionsisio, Toal) 	<p>Exercises, starting on page 261 (Dionsisio, Toal):</p> <ul style="list-style-type: none"> Exercise #5 Exercise #10
July 24, 2012 Week 10	<ul style="list-style-type: none"> XML with JavaScript XSLT using XSL 	We will learn these topics in-class, doing exercises.	There will be no homework this week.

	and XML		
July 31, 2012 Week 11	<ul style="list-style-type: none"> Using Ajax with jQuery (and PHP). What is the XMLHttpRequest Plugin/ActiveX object? Data Exchange and Markup: XML Sending, processing and handling the server response. JSON vs. XML 	<ul style="list-style-type: none"> Chapter 8 (Dionsisio, Toal) 	There will be no homework this week.
August 7, 2012 Week 12	Final Project Presentations		

* The schedule of classes are subject to change.