Description
The growing capability and use of the Internet has created a demand for GIS application on the Web. Component-based web server design and efficient session and secure access management have become challenges to provide fast, robust, and flexible GIS services on the Internet. This course is designed to teach fundamental techniques required in developing server-side web application for not only GIS but also non-GIS applications. This course focuses on dynamic web development using ASP.NET and client-side programming with Ajax and covers web design and static web generation using HTML, XHTML, and CSS. This course also introduces object-oriented programming in Visual Basic.NET. Microsoft SQL Server and Structured Query Language are used to design and handle data for web applications.

The specific objectives of this course are that students are expected to learn the following:
- Have an understanding about the Internet and various Web applications
- Exposed to popular programming languages and techniques used on the Web
- Can design and develop static Web sites using HTML/XHTML, CSS
- Have an understanding of object-oriented programming with Visual Basic.NET
- Be able to publish interactive and data driven Web pages using ASP.NET
- Know the use of SQL to handle data from databases
- Can build ArcGIS application with ASP.NET and ArcGIS Server
- Can develop client-side processing in JavaScript working together with server-side processing

Prerequisites
GEOG676 Programming for GIS is pre-requisite. Or, you should have a minimum of programming experience with Python, C, C++, C+, Visual Basic, or Java. Web programming using HTML, XHTML, CSS, etc. will be helpful, but not required.

Textbooks
IS: Beginning ASP.NET 4: in C# and VB (Wrox Programmer to Programmer) by Imar Spaanjaars, 2010, Wiley Publishing, Inc. (Recommended)
MM: Beginning ASP.NET 4.0 in VB 2010 by Matthew MacDonald, 2010, Apress

**Other Useful References**

*W3Schools online web tutorial*, [http://www.w3schools.com/](http://www.w3schools.com/)


*ASP.NET Quick start Tutorial*, [http://quickstarts.asp.net/QuickStartv20/aspnet/](http://quickstarts.asp.net/QuickStartv20/aspnet/)


*ASP .NET Tutorial for beginners (and others)*, [http://www.aspsspider.com/tutorials/](http://www.aspsspider.com/tutorials/)


ArcGIS Resource Center Web APIs, [http://resources.arcgis.com/content/web/web-apis](http://resources.arcgis.com/content/web/web-apis)


**Course Requirements and Grading**

It is strongly encouraged to attend each lecture and actively participate in online discussion board as well as in class. Students are required to post a reply on the issue posted by the instructor. Lab assignments will be given on a weekly basis to help students gain practical experience in developing websites. Students need to complete final projects to design and implement dynamic websites using ASP .NET, (ArcGIS Server,) and Database Server (MS SQL Server or Oracle). Final grades will be determined by the following items:

- Weekly discussions and participation 5 %
- Lab assignments 42 %
- Quizzes 8 %
- Final project 45 %

**Make-up Policy**

Assignments must be turned in by midnight of the day which they are due. Late assignments will result in penalties unless prior arrangements are made with the instructor. If you have a documented disability and wish to discuss academic accommodations, please contact the instructor immediately. Students should not expect Incomplete grades as they will be only given under extra-ordinary circumstances.
Academic Integrity
The University of Maryland, College Park, has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student, you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.

Within our class, students may work together to review class notes and home assignments. However, assignments must be done individually. Each student must turn in his or her own work, from his or her own computer. Any discussion or problem solution must be his or her alone, without assistance from any other person.

Online Learning
This is an online course with occasional in-person experiences. We will meet online at the announced time for a live audio/video lecture. The lecture will be archived for anyone who absolutely must miss the class, but I encourage you to login at the appointed time so that you can ask questions.

Our class will meet within Blackboard, the university’s online learning system. Go to http://elms.umd.edu to access the course. After you login, our course will be listed in the right column under My Courses. Click on the course link to access the course. Short videos that illustrate how to use the online learning system are available on the course page. Click the Tutorials button on the left sidebar to access the tutorials.

Hardware and Software Requirements for Online Learning
You may use either a PC or a Macintosh computer to access Blackboard. Whichever you choose, it must be equipped with the following hardware:

- Webcam
- Headset (including headphones and microphone)

You will also need the following plug-ins (be sure you have the latest versions):

- Real Media
- Flash Player
- Quicktime for PCs
- Quicktime with the Flip4Mac plugin (for Macs)

Software Requirements for Web Programming
- Microsoft Visual Studio Professional 2010
- Microsoft SQL Server 2008.
• Komodo Edit ([http://www.activestate.com/komodo-edit/downloads](http://www.activestate.com/komodo-edit/downloads)). Komodo Edit is a free text editor that supports HTML/XHTML, PHP, etc.

• FTP software: we recommend WinSCP (Secure FTP) for PC and Fetch for Mac. Both of these are free downloads from [http://helpdesk.umd.edu](http://helpdesk.umd.edu) -- scroll down and choose “Free Software – OIT Provided Software Downloads”. If you choose to use a different FTP software, it must be capable of SFTP (secure uploads).

All students must have a UMD TerpConnect (used to be Glue) account to obtain permissions to upload HTML and CSS files to your personal account in [http://terpconnect.umd.edu](http://terpconnect.umd.edu). Students will be able to use Komodo Edit, MS Visual Studio, SQL Server, and ArcGIS Server available in the remote Hyperion server (129.2.24.163). MS Visual Studio and SQL Server are available on the lab computers at 1136 and Citrix ([http://geogwi.umd.edu/GeogCitrix/auth/login.aspx](http://geogwi.umd.edu/GeogCitrix/auth/login.aspx)). All assignments should be saved in your personal directory in the remote Web server and run on the server. Details about the web server will provided in the class and posted in the Announcements.

**Support for Online Learning**

This method of taking classes is undoubtedly new to some of you, so we have a few tools to make life easier for you.

**Email**

Both TA and instructor will always be available by email. Use the email link in the sidebar to send us emails at any time. We will try to answer within 24 hours and probably much sooner.

**Online office hours**

We will have office hours in a Live Classroom each week. The times will be posted in the Announcements. Use the link in the sidebar to access office hours.

**On campus office hours**

We will post times when we will be available on campus for face-to-face office hours. The TAs will have lab office hours on periodic Saturday mornings.

**Lounge**

We have created a place for you to visit with your classmates. This discussion board uses both text and voice. Share everything from discussions about the course material to what you did last weekend. I will look in from time to time but I probably won’t respond to anything posted here.

**Study Rooms**

Several study rooms have been set up for you to form study groups with your classmates. We will not be monitoring these rooms. Remember that the Honor Code specifies that you are free to work together to discuss the assignments but that you must then separately produce an original and independent result.
### Tentative Course Schedule

This is a tentative schedule and may be adjusted to suit our class. Changes will be announced and posted on Blackboard.

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<th>Topics</th>
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<th>Assignment</th>
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<td>Course Introduction HTML/XHTML</td>
<td>Overview of the Internet and the World Wide Web Basic HTML/XHTML Basic CSS (Cascading Stylesheet)</td>
<td>W3 HTML/XTML tutorial</td>
<td>Lab 1</td>
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<tr>
<td>Sep 12</td>
<td>HTML</td>
<td>More HTML/XHMTL More CSS</td>
<td>W3 HTML/XTML &amp; CSS tutorial</td>
<td>Lab 2 Quiz 1</td>
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<tr>
<td>Sep 19</td>
<td>Introduction to .NET VB .NET</td>
<td>HTML Forms Introduction to .NET Fundamentals in Visual Basic .NET ASP .NET Server Controls</td>
<td>IS Ch 1, 2, 4 MM Ch 1, 2, 5</td>
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<td>Sep 26</td>
<td>VB.NET ASP.NET</td>
<td>Object Oriented Programming with VB .NET Building Classes More on Server Controls</td>
<td>IS Ch 4, 5 MM Ch 5, 6</td>
<td>Lab 4 Due: Quiz 1</td>
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<td>Oct 3</td>
<td>ASP.NET</td>
<td>User Controls Master Page Web Navigation</td>
<td>IS Ch 6, 7, 8 MM Ch 11, 13</td>
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<td>Oct 10</td>
<td>MS SQL Server with ASP .NET</td>
<td>Databases Basics Structured Query Language (SQL)MS SQL Server Installation MS SQL Server with ASP .NET -Select</td>
<td>IS 12,13 MM Ch 14, 15,16</td>
<td>Lab 6</td>
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<td>Oct 17</td>
<td>MS SQL Server with ASP .NET</td>
<td>Managing Dynamic Data -Insert, Update, Delete -Join Validation Controls</td>
<td>IS 9, 12, 13 MM Ch 9 14, 15, 16</td>
<td>Lab 7</td>
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<td>Oct 24</td>
<td>Security Management</td>
<td>Managing Session State Authentication and Authorization Login Controls Deploying a Website</td>
<td>IS 16 MM Ch 8, 19, 20</td>
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<td>Oct 31</td>
<td>ASP .NET AJAX</td>
<td>Introduction to JavaScript, Ajax Client-side ASP .NET Ajax</td>
<td>IS10 MM Ch 26</td>
<td>Final Project Due: Nov 13</td>
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<td>Nov 7</td>
<td>ASP .NET AJAX ArcGIS Web APIs</td>
<td>More on Client-side ASP .NET Ajax Building Web Services for ArcGIS Server JavaScript API with ArcGIS</td>
<td>IS10 MM Ch 26</td>
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