Information Systems 579B
Developing Web Applications
Spring 2000

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Office Hours:	M/W 11:30-1:30 and by appointment
Required Text:	Professional VB6 Web Programming, Willis, *et. al.*
Recommended Text:	Programming Business Applications with Visual Basic 6.0, Burrows & Langford

This course is about understanding some of the fundamental technologies associated with user interaction and delivery of content via browser software and the Internet. It contrasts client- versus server-side approaches to database processing as well as execution of business rules and logic. The course is hands on – you will be required to implement moderately simple examples of the various technologies.

Internet technology is rapidly evolving with technology vendors vying to "win" the marketplace. Included in the competition are "open standards" that have defined much of what we call the Internet. When designing this course, it was clear that not all technologies could be exposed so a choice had to be made on exactly what vendor's technology to focus on. The decision was to focus on Microsoft for several reasons: they have a large market share, they have a fairly complete product line, there are reference and text materials available for their products, and most importantly, they are currently the leader in browser technology and features. For example, an extremely important new technology in B2B and B2C Internet solutions is XML (eXtensible Markup Language – an open standard). Microsoft's Internet Explorer 5.0 is the clear leader in supporting XML (Netscape Navigator provides no support for XML).

The course is organized around five main topical areas. These include databases, object-orientation, client- and server-side scripting, active server pages, and XML. Databases are at the heart of almost every business Internet application so the understanding of database design and use is very important. We will see how to access databases within Visual Basic and active server pages (ASP) using Microsoft technologies including DAO, ADO, ODBC, and RDS. Almost all Internet and browser applications are designed and built using object-oriented principles. To understand these applications, we need to cover the object paradigm and its use within Web applications.

By definition, a Web application is multi-tiered. One of the most critical decisions in the design of a Web application is the decision where to perform the various tasks (presentation, database management, business rules) associated with the application. Client-side versus server-side decisions impact a number of critical performance factors including responsiveness, security, network bandwidth requirements and scalability. We will address these issues and build sample applications using both the client and server.

One of the ways a Web application performs server-side logic and database management in the Microsoft world is through the use of Active Server Pages and VBScript. Thus, we will spend some time understanding this technology, build some applications using it, and compare it to other options such as CGI and Java Servlets. We will also look briefly at DHTML (Dynamic HTML), a technology that supports client-side customization of page content.

Finally, we will spend some time understanding XML. XML is very BIG (and getting BIGGER) in the business Internet world. Among other things, it is a platform and technology neutral way of representing data. This facilitates the electronic exchange of data between business partners as well as between browsers and electronic "bots". XML can be embedded within a web browser (IE 5) and can be rendered into a user-friendly presentation using both cascading style sheets (CSS) and the eXtensible Stylesheet Language (XSL). We want to spend some time understanding XML and build an application or two that uses XML technology.

It is important to point out two things. First, this is an experimental course – it has never been offered before (and may never be offered again). There may be rough spots, the planned pace of the course may be wrong, and the topical coverage may be overoptimistic. This means that everyone (both instructor and student) needs to be flexible and willing to adjust. Second, this course is an academic course where academic content is required. The course could use any number of high-level tools, e.g., Visual Interdev, to build sites and implement some of the technologies. However, this would be too vocational in nature and not appropriate for graduate level academic credit.

One more thing needs to be addressed. Most of you are in your final quarter in the MBA program and are in a transition stage where school might be taking a lower priority than it did a year ago. Hands-on computer courses are notorious for their demands on your time and this course will not be an exception. Please understand this and be sure your expectations and the demands of the course are compatible.

Course Evaluation. Your grade in the course will be determined by your performance on a number of small computer projects that will be assigned over the quarter. Some of these will be the result of individual effort while others will be the result of group effort. There are no exams, papers, or large, comprehensive final projects.

Technology Requirements. You will need access to Microsoft Visual Basic 6.0 and IE 5, plus a number of free Microsoft tools (Script Debugger and ActiveX Control Pad). All the software is available in the Balmer labs. If you want to work on your home computer, VB 6.0 is available at a sizeable academic discount at the U Bookstore and IE 5 is a free download from Microsoft. You will also need access to the Internet.

Tentative Course Schedule

(subject to change)

3/28 Session 1: Course Introduction and Introduction to the VB IDE. Reference: VB6 Web Chapter 1 and B&L Chapters 2 & 4.
3/30 Session 2: Database Design and VB DAO Data control. Reference: B&L Chapter 8 and Guide to Data Modeling (see course Web site).

4/4 Session 3: Object-oriented concepts. Reference: B&L Section 10.4.
4/6 Session 4: Object-oriented concepts (continued).

4/11 Session 5: Database processing using VB and ActiveX Data Object (ADO) technology. Reference: B&L Section 8.6
4/13 Session 6: Database processing using VB and ActiveX Data Object (ADO) technology (continued).

4/18 Session 7: ActiveX components. Reference: VB6 Web Chapter 5 and B&L Section 10.5.
4/20 Session 8: ActiveX components (continued).

4/25 Session 9: Windows DNA and VBScript. Reference: VB6 Web Chapter 2, Chapter 4 (through page 108), and Appendices B and C.
4/27 Session 10: VBScript (continued).

5/2 Session 11: DHTML. Reference: VB6 Web Chapter 6.
5/4 Session 12: Active Server Pages. Reference: VB6 Web Chapter 8.

5/9 Session 13: ASP (continued).
5/11 Session 14: Remote Data Services (RDS). Reference: VB6 Web Chapter 15.

5/16 Session 15: An introduction to XML. Reference: VB 6 Web Chapter 16.
5/18 Session 16: XML and IE 5.

5/23 Session 17: XML and IS 5 (continued).
5/25 Session 18: Guest Speaker

5/30 Session 19: TBA (probably catching up because we're behind schedule).
6/1 Session 20: Course review and evaluation.