

**INF 523 – Web Technologies (with XML)**  
**Course Number: 13139**  
**Fall 2006**

**Instructor:** Bahadir K. Akcam

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**Office Hours:**

Monday after class by appointment

### Meeting Info

Location : Draper 0023

Time : Monday 1:30pm-2:40pm (70 min)

Wednesday 1:00pm-2:25pm (85 min)

(Starting at October 25<sup>th</sup> through end of the semester)

### Course Description

This course is web technologies module of “INF523: Fundamentals of Information Technology” course. The main course is designed to introduce students to fundamental information technologies in an intensive graduate format.

Web Technologies module is designed to introduce students web technologies concepts mainly focused on XML. This class is also designed to get Ph.D. students ready for INF 701 Proseminar in Information Science.

### Texts and Resources

No specific text required for this course. Main course material will be class presentations, readings and W3Schools web page.

<http://www.w3schools.com/>

Other resources

<http://www.w3.org/XML/>

[http://www.xml.org/xml/resources\\_cover.shtml](http://www.xml.org/xml/resources_cover.shtml)

<http://www.xml.com>

### Grading

(A1) Web page development 5%

(A2) DTD development 5%

(A3) XSLT Implementation 10%

(A4) Case Analysis 10%

(A5) XSD Implementation 10%

(A6) XPath Implementation 10%

(F) Final Project & Presentation 40%

Attendance 10%

Extra

(E) Research Paper 10%

## **Assignments**

### Readings

Many interesting articles about web technologies and class presentations can be downloaded from course's web site. It is highly recommended for students to read those materials before each class.

### Web page development \_\_\_\_\_ 5%

Developing a simple web site (Max 3 html pages with links, tables, frames, media, docs, examples of tags).

### A DTD development \_\_\_\_\_ 5%

A DTD example will be developed for a case.

### XSLT Implementation \_\_\_\_\_ 10%

XSLT will be implemented based on student's DTD examples.

### Case Analysis \_\_\_\_\_ 10%

Analysis of a real life XML project (Max 4 pages).

### XSD Implementation \_\_\_\_\_ 10%

Developing an XML file with XSD

### XPath Implementation \_\_\_\_\_ 10%

Developing an XML file with XPath, XLink, XQuery and XPointer examples

### Final Project \_\_\_\_\_ 40%

A web site will be developed for a specific organizational implementation. Students will prepare reports showing how they are addressing data management issues for a specific problem by using XML capabilities

### Research Paper \_\_\_\_\_ 10%

Students can take this assignment to increase their grades. In order to take this extra assignment, students should participate in all classes and should submit all their home works on time. Topic will be defined by the instructor.

### **Time commitment for this course**

Expected time commitment for this course and assignments is described at the following Schedule table. Total 20 hours of work is estimated for all of the assignments.

## Schedule, Course Topics, Assignments

Date	Topic	Readings Due	Written Work Due
<b>Week 1</b> October 25	<ul style="list-style-type: none"> <li>• Course description (10 min)</li> </ul> <p><b>Introduction to Web Technologies and HTML</b></p> <ul style="list-style-type: none"> <li>• Introduction to Web Technologies (15 min)               <ul style="list-style-type: none"> <li>○ History of markup languages</li> <li>○ Standards                   <ul style="list-style-type: none"> <li>▪ World Wide Web Consortium (W3C)</li> </ul> </li> </ul> </li> <li>• Fundamentals of Web Development (10 min)               <ul style="list-style-type: none"> <li>○ Planning a web site project</li> <li>○ Web design quality</li> <li>○ Web browser compatibility</li> <li>○ Marketing web site</li> </ul> </li> <li>• Basic HTML Tags, Links, Tables (30 min)</li> </ul>	<ul style="list-style-type: none"> <li>• Syllabus</li> <li>• INF523_XML_w1.ppt</li> </ul>	
<b>Week 2</b> October 30	<ul style="list-style-type: none"> <li>• DTD - Document Type Definition (15 min)</li> <li>• EBNF Syntax (10 min)</li> </ul> <p><b>XML – Introduction and Fundamentals</b></p> <p><b>Introduction</b></p> <ul style="list-style-type: none"> <li>• The benefits of XML (15 min)</li> <li>• XML vs. HTML (15 min)</li> <li>• How XML works (15 min)</li> <li>• The evaluation of XML (15 min)</li> </ul>	<ul style="list-style-type: none"> <li>• INF523_XML_w2.ppt</li> </ul>	Web page development (5%) (1 hour)

Date	Topic	Readings Due	Written Work Due
November 1	<b>XML - Fundamentals</b> <ul style="list-style-type: none"> <li>• XML Documents and Files (10 min)</li> <li>• Elements, Tags, and Character Data (10 min)</li> <li>• Attributes (10 min)</li> <li>• XML Names (10 min)</li> <li>• Entity references (10 min)</li> <li>• What is a well-formed XML document? (10 min)</li> <li>• XSLT: Displaying XML on web pages (25 min)</li> </ul>		Developing a DTD (5%) (1 hour)
<b>Week 3</b> November 6	<b>Cases</b> Discussion two XML implementation (60 min) Catch up from previous classes	<ul style="list-style-type: none"> <li>• Case #1</li> <li>• Case #2</li> </ul>	XSLT Implementation (10%) (2 hours)
November 8	<b>Valid XML document</b> <ul style="list-style-type: none"> <li>• What is a valid XML document?</li> <li>• Document Type Declaration</li> <li>• Element declarations</li> <li>• The internal DTD and The external DTD</li> </ul>	<ul style="list-style-type: none"> <li>• INF523_XML_w3.ppt</li> </ul>	Case Analysis (10%) (2-4 hours)
<b>Week 4</b> November 13	<b>XML Schema and Namespaces</b> <ul style="list-style-type: none"> <li>• What is an XML namespace?</li> <li>• Namespace syntax and Declaring namespaces</li> <li>• Attributes and namespaces</li> </ul>	<ul style="list-style-type: none"> <li>• INF523_XML_w4.ppt</li> </ul>	
November 15	<b>XML Schema (XSD)</b> <ul style="list-style-type: none"> <li>• Introduction (10 min)</li> <li>• Simple Types (Elements, Attributes, Restrictions) (20 min)</li> <li>• Complex Types (40 min)</li> <li>• Data Types (10 min) and Summary (10 min)</li> </ul>		

Date	Topic	Readings Due	Written Work Due
<b>Week 5</b> November 20	<b>XPath</b> <ul style="list-style-type: none"> <li>• Introduction (5 min)</li> <li>• Nodes (15 min)</li> <li>• Syntax (15 min)</li> <li>• Axes (15 min)</li> <li>• Operators (15 min)</li> <li>• Examples and Summary (20 min)</li> </ul>	<ul style="list-style-type: none"> <li>• INF523_XML_w5.ppt</li> </ul>	XSD Implementation (10%) (2 hours)
<b>Week 6</b> November 27	<b>XQuery</b> <ul style="list-style-type: none"> <li>• Introduction (5 min)</li> <li>• Example (15 min)</li> <li>• FLWOR (15 min)</li> <li>• HTML (15 min)</li> <li>• Terms and Syntax (15 min)</li> <li>• Examples (20 min)</li> </ul>	<ul style="list-style-type: none"> <li>• INF523_XML_w6.ppt</li> </ul>	
November 29	<b>XLink and X Pointer</b> <ul style="list-style-type: none"> <li>• Introduction (5 min)</li> <li>• Syntax (15 min)</li> <li>• Example (40 min)</li> <li>• Summary Xpath, Xquery, Xlink, X pointer (25 min)</li> </ul>		
<b>Week 7</b> December 4	<b>Application development with XML</b> <ul style="list-style-type: none"> <li>• XML Parser</li> <li>• XML CDATA</li> <li>• XML Applications</li> </ul>	<ul style="list-style-type: none"> <li>• INF523_XML_w7.ppt</li> </ul>	XPath, XQuery, XLink and XPointer implementation (10%) (2 hours)
December 6	<b>Student Interest Topics</b> <ul style="list-style-type: none"> <li>• Application development (Cont.)</li> </ul>		

Date	Topic	Readings Due	Written Work Due
<b>Week 8</b> December 11	<b>Final Project Presentations</b>		Final Project (40%) (8 hours) Research Paper (10%)