

H6672: WEB-BASED INFORMATION SYSTEMS
Academic Year 2008-2009, Semester 2

SYLLABUS

Lecturers

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Venue & Time

Fortnightly on alternate Saturday, 10:00 am to 5:00pm
Lecture: 10:00am to 11:30am, 2:00pm to 3:30pm, (Venue TTM Lab)
Lab: 11:45pm to 1:00 pm, 3:45pm to 5:00pm, (Venue TTM Lab)

Course Description

This course builds on the material covered in H6614 Internet and Web Technologies to focus on the development of web-based information systems and web services, design of enterprise systems using service-oriented architecture, and XML and semantic web technologies. Topics covered include

- XML and related specifications and technologies, including XML Schema, XSLT, RDF/XML, RDFS and OWL
- Server-side scripting for web interactivity using C# and ASP.NET
- Rich Client Application (RIA) scripting using AJAX technology
- Web services and service-oriented system architecture, and supporting specifications and technologies, including SOAP, WSDL, UDDI, WS-Coordination, WS-AtomicTransaction, WS-BPEL.
- Semantic web and enabling technologies such as ontology and metadata schema.

Prerequisite: H6514 Internet and Web Technologies (a grade of B- and above) or equivalent experience.

Objectives

At the end of the course, students are expected to be able to:

- design and develop a simple interactive web application, using ASP.NET
- design and develop a simple web agent using web services and Semantic Web technology
- design and implement a web service
- write simple server-side scripts for web interactivity, using C#
- describe AJAX technology and write simple client-side scripts using AJAX
- employ basic XML specifications, technologies and applications, including XML Schema, XSLT, RDF/XML, RDFS and OWL
- design web-based information systems using service-oriented architecture
- describe web service implementation issues, and supporting specifications and technologies, including SOAP, WSDL, UDDI, WS-Coordination, WS-AtomicTransaction, WS-BPEL.
- discuss and design simple semantic web applications using enabling technologies such as metadata schema and ontology.

Method of Assessment

Grading

- Assignment 1 – 20% (due 28 Feb)
- Assignment 2 – 20% (due 4 April)
- Final exam – 60%

Academic Honesty & Plagiarism

The paper and project that you submit for assessment in this course must be your own individual work. The SCI Master's programme's policies on academic honesty and plagiarism apply to this course. It is your responsibility to familiarise yourself with these principles and policies.

Here is the school policy on plagiarism:

- Plagiarism is a serious form of academic dishonesty involving:
- Paying someone else to do the work but submit the work in your name
- Copying someone else's work and passing it off as yours (even if you do it with the other person's knowledge and permission)
- Turning in a paper that you have submitted or are submitting for another subject without the approval from the professors
- Using or creating fabricated or fictitious data
- Making use of other people's ideas without proper attribution and citation
- Direct quoting without quotation marks, even though the source is cited (You must provide proper citation of articles, according to APA standards, in your assignments)
- Excessive use of other people's work/ideas

Disciplinary actions against academic dishonesty range from failing a course to expulsion. If you are not sure what constitutes academic dishonesty, please consult the instructor.

Web Site for the Course

<http://www.liuzehua.com/teaching/h6672-web-based-information-systems-2009-Jan/>

Information Studies Lab

Lab technicians:

Joe Tok Joo Guan (email: asjgtok@ntu.edu.sg)

Please contact a Lab technician if you have any question relating to software or hardware you are using for your class project.

Software used in the course:

Visual Studio v.2
XMLSpy
Windows 2000 Server & Internet Information Server (IIS) 5.0
MS SQL Server
Protégé
Ontostudio

Readings

Recommended Textbook

- [Erl] SOA: Principles of service design, by Thomas Erl. 2008. Prentice-Hall.

Suggested Readings

- Professional ASP.NET 3.5 in C# and VB, by Bill Evjen, Scott Hanselman, Devin Rader. 2008. Wrox. (*a reference for ASP.NET*)
- Professional Ajax, by Nicholas C. Zakas, Jeremy McPeak, Joe Fawcett. 2nd Edition. 2007. Wrox (*a reference for AJAX*)
- Beginning ASP.NET 3.5: In C# and VB, by Imar Spaanjaars. 2008. Wrox. (*a gentler introduction to ASP.NET*)

Class Schedule

Full day session (10:00am to 5:00pm) on all days except 10 Jan.

Week 1
10 January (only morning session 9:00am to 12:00noon)

Class 1

Introduction to XML

Lab: ASP .NET – Web Controls

Week 3
24 January

Class 2

Introduction to Web Services

Lab: ASP .NET – Web Controls, pt. 2
ASP.NET – Web database, pt. 1

Readings: [Erl] chap. 3

Class 3

Microsoft .NET framework

C# and object-oriented programming

Lab: ASP.NET – Web database, pt. 2

Readings: [Erl] chap. 4

Week 7
21 February

Class 4

N-tier architecture

Lab: ASP.NET – Web database, pt. 3

Readings: [Erl] chap. 5

Class 5

Web service specifications: SOAP, WSDL, UDDI

Lab: ASP.NET -- Application and session objects, and authentication

Readings: [Erl] chap. 6

Recess Week
28 February

Class 6

Service-oriented architecture: Coordination & service composition

Lab: ASP.NET – Setting up a Web service

Readings: [Erl] chap. 7

Class 7

Service-oriented architecture: Business Process Execution Language (WS-BPEL)

Readings: [Erl] chap. 8

Assignment 1 due.

Week 8
7 March

Class 8

Service-oriented architecture: Enterprise service bus

Lab: ASP.NET – AJAX

Readings: [Erl] chap. 9

Class 9

Metadata schema

Resource Description Framework (RDF), RDF/XML and RDFS

Lab: Create a metadata schema, and specify it in RDFS

Readings:

- Berners-Lee, T., Hendler, J., & Lassila, O. (2001) The Semantic Web. Scientific American, May 17, 2001. (http://www.sciam.com/print_version.cfm?articleID=00048144-10D2-1C70-84A9809EC588EF21)
- Iannella, R. (1998). An idiot's guide to the Resource Description Framework. (<http://www.dstc.edu.au/RDU/reports/RDF-Idiot/>)
- Skim the OWL Web Ontology Language Guide (<http://www.w3.org/TR/owl-guide/>)

Week 10
21 March

Class 10

Ontology

Web Ontology Language (OWL)

Lab: Creating an ontology using Protege

Readings: [Erl] chap. 10

Class 11

Ontology, pt. 2

Lab: Ontostudio

Readings: [Guruge] chap. 4 & 5

Week 12
4 April

Class 12

Semantic Web applications and technologies

Enterprise application integration product presentation

Class 13

Review

Assignment 2 due
