Course Outline: ELEC3609 /5742 Internet Software Platforms

Course Website:
http://www.ee.usyd.edu.au/ELEC3609/

Lecturer:
Dr Frank Moisiadis email: frank.moisiadis@sydney.edu.au or frank@moisiadis.com
tel: 0402 385 356

Lectures:
PNR Building Farrell Lecture Theatre WEDNESDAY 4-6 PM

Tutorials:
R522 & R614 EE Blg THURSDAY 5-7PM (from week 2)

Assessment:
40% Project Deliverables
60% Final Exam

Course Description:
This course will focus on the design, the architecture and the development of web applications using technologies currently popular in the marketplace including Java and .NET environments. There are three key themes examined in the course: Presentation layer, Persistence layer, and Interoperability. The course will examine practical technologies such as JSP and Servlets, the model-view-controller (MVC) architecture, database programming with ADO.NET and JDBC, advanced persistence using ORM, XML for interoperability, and XML-based SOAP services and Ajax, in support of the theoretical themes identified.
On completion the students should be able to:

- Compare Java/J2EE web application development with Microsoft .NET web application development.
- Exposure to relevant developer tools (e.g. Eclipse and VS.NET).
- Be able to develop a real application on one of those environments.
- Use XML to implement simple web services and AJAX applications.

Resources and Text:
ELEC3609 will cover a wide range of issues in developing web applications using different web technologies. A wide range of resources will be utilised from textbooks, journals and web resources. The following is suggested reading for the course:

- "An Introduction to XML and Web Technologies", Anders Moller and Michael Schwartzbach, Published 2006, Addison-Wesley ISBN 0321269667.
- "Managing Software Requirements: A Use Case Approach" By Dean Leffingwell, Don Widrig. Published 2003, Addison-Wesley ISBN 032112247X.
- ".NET Framework Developer Center", http://msdn.microsoft.com/en-us/netframework/default.aspx

Learning Outcomes
L1. Ability to develop web services from inception to design through to implementation, testing and maintenance.
L2. Ability to compare Java/J2EE web application development with Microsoft .NET web application development.
L3. Ability to understand and use relevant web development tools (e.g. Eclipse and VS.NET).
L4. Ability to develop real web applications using web-based environments and web programming languages.
L5. Ability to use XML to implement simple web services and AJAX applications.

Teaching and Learning
There is a 2 hour lecture every week as well as a 2 hour tutorial. In addition there is a group project (designing and developing web services) which involves group meetings, discussions and development sessions (additional 4 hours per week).

Teaching and Learning Outcomes
40% Project Deliverables (4 in total)
60% Final Exam
Group Project Deliverable 1 due week 5 (worth 10% of total course grade): Response to Request for Proposal with Requirements Analysis and Specification to Web Services.
Group Project Deliverable 2 due week 7 (worth 5% of total course grade): Design Specifications of Web Services.
Group Project Deliverable 3 due week 12 (worth 20% of total course grade): Implementation of Web Applications
Group Project Deliverable 4 due week 13 (worth 5% of total course grade): Test results and user documentation

Learning Outcome	Description	Group Project Deliverable 1	Group Project Deliverable 2	Group Project Deliverable 3	Group Project Deliverable 4
L1	Ability to develop web services from inception to design through to implementation, testing and maintenance.	X	X	X	X
L2	Ability to Compare Java/J2EE web application development with Microsoft .NET web application development.	X	X	X	
L3	Ability to understand and use relevant web development tools (e.g. Eclipse and VS.NET).		X	X	X
L4	Ability to develop a real web application using a web-based environment and web programming language			X	X
L5	Ability to use XML to implement simple web services and AJAX applications.		X	X	

Schedule

Week 1: Problem Solving for Web Services and Applications
Week 2: Use Case modelling, Requirements Analysis and Requirements Specification for Web Applications
Week 3: Architecture for Web Applications
Week 4: Designing Web Applications and User Interfaces
Week 5: Electronic Commerce: Design and Technologies
Group Project Deliverable 1 due week 5: Response to Request for Proposal with Requirements Analysis and Specification to Web Services.
Week 6: XML Technology
Week 7: XML and DTDs
Group Project Deliverable 2 due week 7: Design Specifications of Web Services.
Week 8: Web Security, Privacy and Policies
Week 9: Java scripting and Using AJAX. Building Secure Web Servers and Web 2.0
Week 10: Web Services and Cloud Computing
Week 11: .NET Framework
Week 12: Revision
Group Project Deliverable 3 due week 12: Implementation of Web Applications
Week 13: Group Project Deliverable 4 due week 13: Test results and user documentation

Graduate Attributes

Develop in-depth technical skills and knowledge of web technologies and the development lifecycle and management of web-based projects.
Knowledge of tools and materials used in web services.
Knowledge of current issues and developments in web services.
Ability to undertake engineering design and problem solving using a clearly defined, systems based approach to web services.
Proficiency in creatively applying technical principles, design methodology, and knowledge of tools and materials in the design of web services.
Ability to produce clear and well-constructed engineering documents for web–based projects.
Ability to produce clear and informative diagrams and models for web–based projects.