CO7098 Web Technologies

Credits: 15  Convenor: S. Kerrigan  Semester: 1st

Prerequisites: none

Assessment: Coursework: 40%  Three hour exam in January: 60%

Lectures: 20 hours
Surgeries: 10 hours
Laboratories: 20 hours
Private Study: 62.5 hours

Subject Knowledge

Aims  The aim of this course is to teach the students the technologies and techniques for creating large-scale systems on the WWW. We consider these large scale distributed systems in the context of how they emerged before concentrating on two specific aspects: Java servlets and XML data representation and processing.

Learning Outcomes  At the end of the course the student should be able to: Understand the architectural foundations for Web Technologies, use XML and AJAX based techniques appropriately to create documents and handle data, be aware of security and session handling issues and use supporting techniques, understand Java servlet technology and use it to create web applications.

Methods  Class sessions, tutorials and practical sessions together with course notes, recommended reading, worksheets, and some additional hand-outs.

Assessment  Assessed coursework, traditional written examination.

Skills

Aims  To teach students problem solving skills.

Learning Outcomes  Students will be able to: solve abstract and concrete problems (both routine seen, and simple unseen).

Methods  Class sessions together with worksheets.

Explanation of Prerequisites  No specific knowledge is required, but an understanding of Database (SQL) and Programming in Object Oriented Paradigms (Java) as well as general program design skills will be helpful.

Course Description  Software engineering in the time the internet and e-commerce provides challenges that go beyond what is taught in traditional software engineering courses. In particular we are dealing with a large, distributed system that is not under particular control by anyone. This course discusses the issues that are relevant for designing useful, stable and secure systems in this context highlighting many of the currently prevailing technologies.

The course takes students from a background of 'traditional’ middleware to the emerging paradigm of Service Oriented Computing. We introduce scalable techniques for developing applications for the web (e.g. JavaServlets, .net) – by both discussing their respective merits as well as getting hands-on experience in writing applications using these techniques.

One important aspect of web applications, that also occurs in enterprise application integration, is to deal with different data formats, and the de-facto standard these days is XML and its related technologies. XML Schema, XPATH and Style Sheets (XSL), AJAX as well as DOM and SAX as programming paradigms will be explored.

The course concludes with placing the previous two parts into the context of Service Oriented Architecture, by looking at Web Services and discussing why they are the next generation technology for distributed (web) applications.

The Department of Computer Science
Detailed Syllabus

**Background:** The emergence of web technologies in the context of distributed computing, supporting architectures, static and dynamic content provisioning techniques and standards.

**Current Web data standards:** XML related technologies, such as AJAX, DTD, XML Schema, XLink, XSLT, as well as Java programming support for them

**Security and session handling:** session handling with cookies, sessions with servlet session APIs

**Java servlets:** designing and deploying servlets

**Web Services:** Web Services motivation

**Reading List**

[C] Moller and Schwartzbach,  
Addison Wesley, 2006.


**Resources** Study guide, worksheets, lecture rooms with data projector, computer laboratory access, tutorial rooms with OHP.

**Module Evaluation** Course questionnaires, course review.