

THE UNIVERSITY OF AUCKLAND
Department of Computer Science 2007

COMPSCI 732 Software Tools

COURSE DESCRIPTION

Aims of the Course

This paper is concerned with advanced topics in tools that assist in the production of software, with a strong emphasis on practical aspects. The main topics for 2007 are as follows: meta tools for integrated software development environments, tools for mapping information within integrated environments, aspect oriented software development tools, and XML databases.

Lecturers

- John Hosking(john@cs), Maths/Physics building, room 303.487, extension 88297 (1st section – ISDEs, VLs, metatools)
- Robert Amor (supervisor) (trebor@cs), Maths/Physics building, room 303.387, extension 83068 (2nd section, data mapping)
- Santokh Singh (santokh@cs), Maths/Physics building, room 303.488, extension 82283 (3rd section, AOSD)
- Gill Dobbie (gill@cs), Maths/Physics building, room 479, extension 83949 (lectures on XML database)
- A variety of academic and industry guest lectures will also be contributing to the course

Course Outline

Some of the lecture times may involve in-class work, rather than formal lectures. Java will be used as the main programming language.

Topics covered include:

- integrated software development environments: examples and components of such environments, methods of construction,
- visual notations and languages,
- meta models, meta modelling (with UML as an example), meta tools (including our own Marama tool), consistency management,
- management of multiple, partially overlapping views of some canonical representation of a system, describing a new view of the base representation (and also the maintenance of consistency of the information in this view),
- traditional RDBMS views through to bespoke mapping languages (eg EXPRESS-X).
- aspect oriented systems and tools to support them
- aspect oriented software development across the development lifecycle
- storing XML documents in relational databases,
- storing XML in databases specifically designed for XML documents,
- project management tools
- software analysis tools

Course Assessment

There are three assignments and the final exam. The mark breakdown is

Three assignments	50%
Final Exam	50%

Assignments

1. Integrated Software Engineering Environments. This assignment will involve the construction of a small environment (or part of an environment) using our Marama meta tool which is Java based.

2. XML Mapping. This assignment will look at XML-based information mapping.

3. Aspect Oriented programming. This assignment will involve an exercise refactoring an existing OO program through use of aspects.

Text

There is no officially prescribed text, but the following are recommended reading:

- A good Java book, such as *Core Java*, Cornell & Horstmann, Prentice-Hall.
- *XML: A Primer*, St Laurent, MIS Press, 1997 (Call #005.72.S77).
- *UML Distilled*, 2ed, Martin Fowler, Addison-Wesley, 1999.
- A database book, such as *Database Management Systems*, 2ed, Raghu Ramakrishnan and Johannes Gehrke, McGraw-Hill, 2000.
- *Object Data Management*, 2ed, R.G.G. Cattell, Addison Wesley, 1994.
- *Data on the Web: From Relations to Semistructured Data and XML*, Serge Abiteboul, Peter Buneman, and Dan Suciu, Morgan Kaufmann, 2000.
- *Semistructured Database Design*, Tok Wang Ling, Mong Li Lee, and Gillian Dobbie, Springer, 2005.

Plagiarism

In any assignment, unacknowledged copying or plagiarism is not acceptable and is treated as an examination offence. In The University of Auckland guidelines on cheating in coursework (2001) plagiarism is defined as follows:

Plagiarism is the use of other people's work in an assignment and presenting it as your own without explicitly acknowledging - or referencing - where it came from. Plagiarism can also mean not acknowledging the full extent of indebtedness to a source. Work can be plagiarised from many sources - including books, articles, the world wide web, and other students' work. Plagiarism can easily occur unconsciously or inadvertently. Direct copying is also plagiarism. Paraphrasing of other work without attribution is also plagiarism. Submitting someone else's unattributed or less than fully attributed work or ideas is not evidence of your own grasp of the material and cannot earn you marks. Note: Plagiarism applies to all levels of work, including theses and dissertations.

The department of Computer Science has a [policy on cheating](#) which expands on this

Plagiarism at any level is treated very seriously. If you are unsure about what constitutes plagiarism, particularly with regard to your assignments you should seek advice from your lecturer.