STATS 782 **Computing for Statisticians** **Semester 2, 2007**

Lecturer: Associate Professor David Scott
Lectures: Monday 9:30–11:00 and Wednesday 1:00–2:30
Room 169, Maths/Physics Building
Web page: http://www.stat.auckland.ac.nz/∼dscott/782/

Aim

This course introduces the software required to create an effective statistical research environment. The emphasis is on programming and command-line approaches rather than the use of a GUI. Basic software considered will be XEmacs, LaTeX, R, MySQL and Maple, and extensions to these such as ESS, Beamer and SWeave. Intelligent use of operating systems and tools such as make will also be included.
At the end of the course you should be able to make productive use of a large number of computing tools. Using these tools, you should be able to carry out and document data analyses, and to produce new software components for your own use and for use by others.

Course Topics

The course covers the following topics:

- Computers and software environments
- The Linux and Unix operating systems
- Software tools including the XEmacs text editor
- Typesetting with LaTeX
- The S language and R
- MySQL
- Maple

Assessment

The final grade will be based on five assignments given during the course, a test and two one-on-one demonstrations to show you know how to use the tools covered in the course.

Course Materials

There is no required text for the course. A number of tutorials and and manuals will be handed out. In addition, the following references may be useful.

J. M. Chambers (1998).
Programming with Data: A Guide to the S Language.
New York: Springer.

F. Mittelbach, M. Goossen; with J. Braams, D. Carlisle, and C. Rowley (2004)
The LaTeX Companion: 2nd Edition .
Boston, Mass.: Addison-Wesley.

M. Goossens, S. Rahtz, and F. Mittelbach (1997)
The LaTeX Graphics Companion: Illustrating Documents with TeX and PostScript.
Reading, Mass.: Addison-Wesley.

M. Goossens, S. Rahtz; with E. M. Gurari, R. Moore, and R. S. Sutor (1999)
The LaTeX Web Companion: Integrating TeX, HTML, and XML.
Reading, Mass.: Addison-Wesley Professional.

L. Lamport (1994).
LaTeX: A Document Preparation System, 2nd Edition.
Reading, Mass.: Addison-Wesley.

W. N. Venables and B. D. Ripley (2000)
S Programming.
New York: Springer-Verlag.

W. N. Venables and B. D. Ripley (2002).
Modern Applied Statistics with S, 4th Edition.
New York: Springer-Verlag.