

Programme:

This two day course is designed to provide an introduction to Bayesian approaches to statistical modelling and associated methods (such as Markov Chain Monte Carlo (MCMC) techniques and variants of that. The focus will be very much on practical implementation of the methods using the statistical programming language R and related packages (including links between R and OpenBUGS/WinBUGS).

The course is arranged into four half day sessions:

- *Introduction to Bayesian Modelling and MCMC*

Review of the Bayesian Approach, MCMC and Hastings-Metropolis algorithm, model checking and inferential ideas.
- *Common Applications of Bayesian Modelling*

Examples of implementing a range of standard models using R and links between R and OpenBUGS/WinBUGS, including Linear and Generalised Linear Mixed models, survival models, temporal and spatio-temporal models, Generalised Additive models and extreme value models.
- *Practical Workshop*

An opportunity for groups of participants to work through modelling examples and associated computer implementation for themselves
- *Extensions and more Advanced Ideas*

A preview with examples of more advanced techniques, including Reversible Jump (RJMCMC), Bayesian Model Averaging and Approximate Bayesian Computation (ABC)

The course is appropriate for those involved in statistical analysis in application areas such as epidemiology, public health, medical statistics, environmental science and bioscience. It will assume background knowledge of routine statistical ideas such as regression and generalised linear models and related concepts and some familiarity with R. It will not assume a high level of theoretical mathematical statistical knowledge

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|------------------------------|-------------|---------------------------------------------|
| Monday 19 05 2014 | 09.00-13.00 | Introduction to Bayesian Modelling and MCMC |
| | 14.00-18.30 | Common Applications of Bayesian Modelling |
| Tuesday 20 05 2014 | 09.00-13.00 | Practical Workshop |
| | 14.00-18.30 | Extensions and more Advanced Ideas |

Professors/staff :

-Trevor Bailey
Associate Dean (Education)
College of Engineering, Mathematics and Physical Sciences
University of Exeter
-Theodoros Economou
CEMS, University of Exeter

Organizaters/responsible

Denisa Mendonça
Pedro Oliveira
Fátima Pina

Fee

Alunos, antigos alunos, funcionários da UP e médicos internos de Saúde Pública – 150€; Membros externos à UP – 200€; 20% desconto Sócios APE e SPE.

Language: English

Place: Institute of Public Health, University of Porto - Rua das Taipas, nº 135, Porto (Portugal)

Contact:

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Online application: The registration process is done at <http://www.ispup.up.pt>

Registration deadline: 18th May