The LTCC

The LTCC fosters the training of doctoral research students in the Mathematical Sciences. Its courses cover the areas of Statistics, Applied Mathematics and Pure Mathematics, with the goals of providing students with an overview of these areas, and of acquiring a working knowledge of classical results and recent developments in their own broad research fields but outside the specialised domains of their individual research projects. There is a wide range of expertise among the staff of the institutions currently in the LTCC consortium: UCL, Queen Mary, Imperial College (Statistics), King's College, LSE, City, Kent, Brunel and Royal Holloway (Statistics).

The LTCC programme, which is supported by the UK Engineering and Physical Science Research Council, emphasises direct teaching and personal contact rather than distance learning. The programme includes modular lecture courses and short intensive courses.

LTCC lectures take place at De Morgan House, which is located on the south side of Russell Square, within walking distance of Euston Station, and Russell Square, Holborn and Euston Square tube stations. A detailed map is available on the LTCC website.

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Basic courses 2011-2012

for PhD students in the mathematical sciences

LTCC

London Taught Course Centre

London Taught Course Centre

Basic Courses 2011-2012

October 3 — October 31

Applied Bayesian Methods
Dr J. Xue, UCL

Introducing the Bayesian approach to statistical inference and developing relevant theory, methodology and computational techniques for its implementation.

Bio-Mathematics
Dr S. Baigent, UCL

Global dynamics of Lotka-Volterra systems, Lotka Volterra population models, competition/predator-prey/cooperative, Picard theory for odes, Omega limit sets, existence and uniqueness of steady states etc.

Models
Dr O. Kerr, City

Examines basic principles behind modeling, and looks at a variety of qualitative and quantitative models and their application.

Geometric Group Theory
Professor I. Chiswell, QMUL

Basic constructions (free groups, free products with amalgamation, HNN-extensions), their applications and connections to geometry, via CW-complexes, manifolds, etc., will be considered. Bass-Serre theory will also be discussed briefly.

Algebraic Topology
Dr L. Hodgkin, Kings

An introduction to algebraic topology - the fundamental group, homology and homotopy theory, with some applications including the classification of surfaces.

November 7 — December 5

Stochastic Processes
Dr J. Nelson, UCL

An introduction to the main ideas and methods of applied probability. Topics will include Markov processes, point processes and epidemic models.

Measure-theoretic Probability
Professor N.H. Bingham, Imperial and LSE

This course gives a self-contained introduction to measure-theoretic probability and stochastic processes, including martingales, diffusions and Brownian motion.

January 16 — February 13

***p*-adic analysis**
Dr S. Sasaki, KCL

The aim of this course is to explain basic properties of non-archimedean fields, e.g., the *p*-adic numbers, and to give an introduction to *p*-adic analysis.

Graph Theory
Professor J. van den Heuvel and Dr J. Skokan, LSE

Discusses the major results of graph theory and provides an introduction to the language, methods and terminology. Emphasizes various fruitful approaches to modern graph theory.

Analytical Methods
Dr H.Wilson, UCL

Examines PDEs and perturbation theory: dimensional analysis and similarity solutions, characteristics, complex variable methods, matched asymptotics and steepest descents.

Fundamental Theory of Statistical Inference
Professor A. Young, Imperial

Approaches to statistical inference, decision theory, Bayesian methods, special families of models, principles of inference and data reduction, and key elements of frequentist theory.

February 20 — March 19

Statistical Modelling and Estimation
Dr H. Grossmann, QMUL

Covers the theory of linear models, with an emphasis on estimation and inference.

Applied Dynamical Systems
Dr W. Just, QMUL

Reviews some basic concepts of dynamical systems theory, like stability and bifurcations, chaos and complex dynamics in time discrete maps, or computational techniques for nonlinear systems.

Potential Theory
Professor B. Khoruzhenko, QMUL
Potential theory is concerned with the study of harmonic functions (solutions of Laplace's equation). This course will introduce potential theory and its applications in approximation theory and complex dynamics.

Complex Systems Dynamics
Dr H. Fry, UCL

The analysis of complex systems requires tools originating in game theory, statistical mechanics, non-linear dynamics and network analysis. This course aims to give an overview of the field of study, using case studies (particularly those of social systems) to demonstrate the broad range of techniques and possible practical applications.

All lectures take place on Mondays at De Morgan House

Further information, full text syllabi, registration form, and timetables are available online at: http://www.ltcc.ac.uk
or contact us for further enquiries at: office@ltcc.ac.uk