

PhD programmes in Statistics in Edinburgh

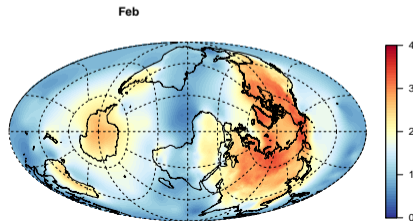
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18th January 2022

What can a Statistics PhD be?

- Statisticians work on a wide variety of topics which span the natural sciences, social sciences, and machine learning; there are many different 'types' of statistics PhD projects available, often closely linked to ecology, biology, genetics, geosciences, epidemiology, medicine, or finance.
- Some statisticians work largely on theory, focusing on 'pen and paper mathematics', theorem proving, etc., to develop the foundations of statistical methodology
- Others work largely on data, applying statistical modelling, estimation, and prediction methods to the analysis of data and scientific problems.
- Many are somewhere in the middle, combining elements of theory, algorithm design, computational software, and data applications.



Research Areas at UoE

Research Areas in the Statistics group at UoE include (but are not limited to):

- Geosciences
- Financial markets and financial risk
- Extreme values
- Genomics
- Ecology
- Medical statistics and biostatistics, including links to BioSS (Biomathematics and Statistics Scotland)
- Spatial statistics and stochastic space-time models
- Random fields and Gaussian processes
- Bayesian methods and nonparametric Bayes
- Markov Chain Monte Carlo and Sequential Monte Carlo
- Hidden Markov Models
- Point processes and Time Series
- General purpose statistical software

Statistics group, activities, training, and PhD projects

- A rapidly expanding group in the past 5 years:
<https://www.maths.ed.ac.uk/school-of-mathematics/research/data-decisions/statistics/stats-people>
- ~ 25 academic staff and ~ 35 PhD Students
- The Centre for Statistics: a multidisciplinary centre in the university lead by the School of Mathematics, connecting statisticians and statistical activities across the university
- Regular seminars and informal reading and discussion groups, formal training via SMSTC and APTS (<https://warwick.ac.uk/fac/sci/statistics/apts/>)

PhD project applications

- For the School scholarships, no pre-defined project is required
- In your application, write about what type(s) of problem(s) you are interested in
- Mention if you have discussed potential projects with specific supervisors
- Next slides: some sample projects (past, present, and future)

Sample Projects (past, present, and future)

- Natalia Bochkina, n.bochkina@ed.ac.uk
Theory of Nonparametric Bayesian Inference
- Vanda de Carvalho, vanda.inacio@ed.ac.uk
Bayesian flexible models for the statistical evaluation of medical diagnostic tests
- Chris Dent, chris.dent@ed.ac.uk
Bayesian decision analysis and uncertainty management for energy system planning
- Victor Elvira, victor.elvira@ed.ac.uk
Sequential Bayesian inference in complex and realistic dynamical systems
- Ruth King, ruth.king@ed.ac.uk
State-space models and efficient Monte Carlo techniques
- Finn Lindgren, finn.lindgren@ed.ac.uk
Spatial and spatio-temporal modelling for environmetrics and ecology
Fast computational Bayesian methods for random field estimation with SPDEs

Sample Projects

- Yiannis Papastathopoulos, ipapasta@ed.ac.uk
Graphical modelling of multivariate extremes
Statistical modelling of grid cell firing using log Gaussian Cox processes through the SPDE approach
- Daniel Paulin, dpaulin@ed.ac.uk
Scalable optimization methods for sparse statistical models
- Gordon Ross, gordon.ross@ed.ac.uk
Statistical Analysis of Literature and Social Media
Earthquake Forecasting Using Machine Learning and Statistics
- Sara Wade, sara.wade@ed.ac.uk
Bayesian nonparametrics
- Simon Wood, simon.wood@ed.ac.uk
Computational statistics, smoothing and statistical ecology

General scholarships and CDT/DTP programmes in Statistics (& deadlines)

- General Statistics scholarships (31 January 2022):
<https://www.maths.ed.ac.uk/school-of-mathematics/research/data-decisions/statistics/phd-opportunities>
Projects in Statistics, Data Science, Machine Learning, both theoretical and applied
- Special scholarship opportunities (mostly 31 January 2022):
<https://www.maths.ed.ac.uk/school-of-mathematics/studying-here/pgr/funding-opportunities>
- MAC-MIGS CDT (31 January 2022):
<https://www.mac-migs.org.uk/>
Applied and Computational Mathematics, including statistical Data Science and modelling
- NERC E4 DTP (6 January 2022):
<https://www.ed.ac.uk/e4-dtp>
A variety of projects related to geoscience, many of which have heavy statistical/OR elements.
- NERC SENSE CDT (9 January 2022):
<https://eo-cdt.org/>
A variety of projects related to satellite data in environmental science, many of which have heavy statistical/OR elements.