BSc Statistics

Academic Profile

Dr. Brendan Murphy
BSc (NUI) MSc (NUI) MA (Yale)
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Brendan completed a M.Sc. in Mathematics at University College Cork (Ireland). He completed his PhD at Yale University. His PhD research was in the area of Bayesian robustness and his research addressed this problem using a decision theoretic and asymptotic approach.

Before joining UCD in 2007 to take up a position as Associate Professor of Statistics in the School of Mathematical Sciences, Brendan worked in Trinity College Dublin (Ireland) and the Center for Statistics and the Social Sciences in the University of Washington, Seattle (USA).

His current research interests include computational statistics, mixture modelling, cluster analysis, classification, rank data analysis and network modelling. He is interested in applications of statistical methods in areas including education, political science, food science and bioinformatics. He has published in major international journals including Bioinformatics, Journal of the Royal Statistical Society, Annals of Applied Statistics and Journal of the American Statistical Association.

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Statisticians develop mathematical models for uncertainty and investigate their properties and applicability. The power of modern computing has had a major impact on both the development and applicability of statistical methods in almost every area of science and industry.

Today, statisticians not only play a significant role in constructing Beijing, but increasingly in national economy planning and construction. A degree in this field is of great importance to boost the efficiency and standard of the overall planning and construction at both regional and national level in China.

Why is this programme for me?

If you have a strong interest or ability in quantitative subjects like mathematics and computing this programme will provide everything you need for developing your skills in statistics and statistical reasoning. This degree gives you the opportunity to apply these skills in a wide range of real life application areas.

Statistical graduates are much sought after by employers because of their abilities at handling data and quantitative information, their problem solving skills and their ability to understand, model and interpret uncertainty. Statistical graduates also have strong mathematical and computing skills and this opens many further opportunities.

What will I study?

Programme Structure
This is a 4-year bachelor degree programme in Statistics. The curriculum includes lectures, laboratory exercises, tutorials/seminars and project work. Students in this degree will study the foundations of statistics and probability as well as a wide range of specialised topics. The mathematics and computing underlying many modern statistical methods will also be studied.

You will learn how to design scientific and business investigations, so that they are effective at answering a question of interest. You will learn how to explore, handle, summarize and present exploratory data analysis results.

You will see how to develop statistical models and learn methods for fitting these statistical models to data. Importantly, you will study how to explore these models, test hypotheses of interest and how to present the results of a statistical modeling exercise.

Advanced topics including survival analysis, stochastic models, multivariate analysis, data mining, time series analysis and actuarial statistics will be studied in this programme.

The Statistics degree is structured so that the foundations and fundamental methods are studied in the first two years of study. More advanced and specialised topics are introduced in years three and four of the degree.

A key component of the fourth year of the degree in a final year project, which will give you an opportunity to do a large-scale data analysis project which applies the material studied in the degree programme.

Core modules include:
• Statistical Modelling
• Probability Theory
• Inferential Statistics
• Sample Surveys
• Time Series
• Actuarial Statistics
• Linear Models

Programme Objective

Statisticians provide important inputs into these areas from study design, all the way through the data analysis and modeling, to the presentation of results. The Statistics degree will provide you with the statistical tools and methods required to work as an effective statistician in a wide range of contexts. Statistics is widely used by people across many areas, including bioinformatics, ecology, computer science, pharmaceutical science, medicine, finance, social science and government.

Assessment

You will be assessed using a wide variety of assessment techniques. Assessment will vary between modules. Many modules may be assessed through a combination of coursework and formal exams. Coursework may include computer laboratory assignments, data analysis projects and group projects.

How will I benefit?

All core modules of this programme are taught in English, and the majority of modules are taught by academic staff from UCD who are often experts in relevant research areas. Years 1 and 2 will include 50% more English language tuition than currently required by the Chinese educational system. You will graduate with a dual degree from BJUT and UCD, both of which will be recognised around the world.

The Statistics degree provides strong training in statistics and probability and their application to a wide range of areas. Graduates of this programme develop strong data analysis skills, a deep understanding of probability and uncertainty and the principles of designing experiments and surveys. Modern statistics involves mathematical and advanced computational techniques, so graduates will also have strong mathematical and computer skills.

Career Opportunities and Prospective Employers

A Statistics degree opens a wide range of career opportunities. In particular:
• Training in statistical science is valued in many industries such as finance, environmental science, economic analysis, medicine, education, health and social services, and many areas of government
• Statistical skills are key in the new emerging areas of bioscience, such as genetics and bioinformatics
• In the pharmaceutical industry statistical modelling is vital in developing new drugs

Large multinational companies in the financial, ICT and pharmaceutical industries actively seek graduates from quantitative disciplines with a strong data analytic component. Government agencies employ statisticians to provide important insights into important planning decisions. A substantial number of statistical graduates commence training in actuarial science upon graduation.

Further Study

Many graduates will decide to avail of opportunities for further study abroad, leading to an MSc or a PhD degree in statistics.

UCD offers a number of postgraduate courses in Statistics and Actuarial Science. Research areas include Pharmaceutical Statistics, Medical Statistics, Environmental & Ecological Modelling, Epidemiology, Econometrics, Bayesian & Computational Statistics, Mortality, Morbidity, Pension Fund Investment Strategies and Risk Capital Markets.

Application

Applicants will be reviewed on basis of academic merit and English language standard. There will be significant competition for programme places. Applicants should obtain the first division line in Gaokao.

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