



Message from the Head

Professor Aleks Owczarek

Another busy year in the department and many changes are afoot.

We were very excited with the news that the Department would host the only successful Australian Research Council Centre of

Excellence based at the University of Melbourne starting in 2014. Professor Hall as Director and Professor de Gier as Deputy Director with Professors Taylor, Delaigle and Forrester as local Chief Investigators form a very strong team for the new Centre ACEMS (ARC Centre of Excellence for Mathematical & Statistical Frontiers). This is in conjunction with QUT and University of Technology (Sydney), University of Queensland, UNSW and University of Adelaide.

Staff have continued to be recognized for their excellence with Associate Professor Jan de Gier being promoted to a full professor, and Drs Nora Ganter and Alex Ghitza having been promoted to senior lecturers. It was wonderful to see that Professor Kerry Landman was awarded the ANZIAM medal this year. Professor Peter Hall continues to collect honours: he received a Doctor Honoris Causa from the University of Cantabria in Spain in January. The Maths and Statistics Learning Centre team of Ms Liz Bailey, Ms Sharon Gunn, Dr Heather Lonsdale, Dr Robert Maillardet, Dr Anthony Morphet, Dr Penny Wightwick and Ms Susan Wilson won the 2014 Dean's Award for Excellence in Teaching (Tutor/Demonstrator). Dr Nathan Clisby won the 2014 Dean's Award for Excellence in Research (Research Only).

New academic staff have also arrived this year including Professor David Balding who holds a prestigious R@MAP appointment as Chair of Statistical Genetics, Dr William (Bill) Holmes who works in mathematical biology and Dr John Banks who has taken up the position as Manager of the Mathematics and Statistics Learning Centre. Dr James Osborne who also works in mathematical biology will arrive in January 2015. In fact 2015 will see the arrival of several new academic staff hired over the past year including the new Chair of Pure Mathematics, Professor Christian Haesemeyer and another R@MAP appointment, this time in pure mathematics, in Professor Kari Vilonen.



They will be joined by Drs Marcy Robertson and Ting Xue who both work in pure mathematics.

In December the department will host the 8th Australia New Zealand Mathematics Convention. The Convention is the combined meeting of the Australian and New Zealand Mathematical Societies and is held every six years. This year will also include the 2014 annual meeting of the Australian and New Zealand Association of Mathematical Physics and provides an opportunity to showcase the wonderful work of all our academic staff and research students.

When I next write something for this newsletter it will be as Head of the new "School of Mathematics and Statistics". This change of name is part of an overall Faculty of Science restructure that sees the biological departments amalgamated into a School of Biosciences, and two new schools, Ecosystem and Forestry Science, and Geography, become part of the Faculty.

Ray Watson Retires

Associate Professor Ray Watson is our longest-serving member of staff, including the period before amalgamation of the Departments of Mathematics and Statistics. He was first employed as a senior tutor in 1970, and has been with us since then, in the Department of Statistics (until 1996) and subsequently the amalgamated department.

He has taught statistics subjects at every level, from first years to masters, most notably the mainstream second year probability and statistics subjects, which he developed and taught for about three decades. He supervised many postgrads, including the PhDs of at least two current members of staff (Ian Gordon and Graham Hepworth). He has also worked extensively on a very long-standing consulting project, involving the quality rating of Australian meat; this project won the national Australian Museum Eureka Prize in 2010 in the category "Research by an Interdisciplinary Team".



New Professor Jan de Gier



Jan de Gier studied theoretical physics at Utrecht University and continued to do a PhD in this field at The University of Amsterdam. After graduating in 1998, Jan was a postdoc in Utrecht for one year and moved to Australia in 1999 to take up a postdoctoral position at The Australian National University. In 2002 Jan was appointed as research fellow in the ARC Centre of Excellence for Mathematics and Statistics of Complex Systems (MASCOS) at The University of Melbourne. He was the recipient of a Queen Elizabeth II Fellowship from the Australian Research Council in 2007 and appointed as Associate Professor and Reader at Melbourne in 2012.

Jan's research interests are in mathematical physics, where he has made contributions to the mathematical intricacies of models of statistical mechanics. These models attempt to describe systems of many particles from first principles. Jan uses a broad set of mathematical techniques from algebra and complex analysis to analyse such models, thereby increasing our understanding of fundamental processes underlying emerging collective behaviour. He enjoys developing mathematical theory per se as well as working on specific and applied problems such as modelling traffic in Melbourne in collaboration with colleagues from Monash and VicRoads.

In 2011, Jan initiated the Australia and New Zealand Association of Mathematical Physics and was the inaugural Chair. In 2013, he was Director of the annual summer school of the Australian Mathematical Society. Since 2014 Jan is Deputy Director of the newly awarded ARC Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS). Jan enjoys the outdoors with his family, and in his free time likes to play squash, ride his bike or play chess.

Kerry Landman Wins ANZIAM Medal



Professor Kerry Landman was awarded the 2014 ANZIAM Medal for excellence in research and activities enhancing industrial and applied mathematics.

Kerry graduated with a PhD from the University of Melbourne in 1979, and has since published

116 papers in international journals. Her research reflects a career devoted to the application of mathematical modelling in industrial, environmental, biological and medical areas.

Kerry has used mathematical modelling to gain an understanding of a diverse group of topics, including shape changes of red blood cells, indoor pollution by radon gas, heat loss in houses, consolidation and filtration of minerals waste, cooking of wheat grains for breakfast cereal manufacture and the design of windscreen wipers. For the last ten years she has been collaborating with developmental biologists, with particular interest in the development of the nervous system in the gut.

Kerry was the Director of the Mathematics-in-Industry Study Group (MISG) during 1993-1997. As Director, she provided strong leadership to the applied mathematics community, bridging the interface between the University of Melbourne and the community, and expanding the mathematics profession's public profile through extensive media coverage.

Undergraduate Teaching

Undergraduate teaching is a major part of the Department's work. In 2014 the Department of Mathematics and Statistics taught 35 undergraduate subjects to around 5000 distinct students. In addition to our core subjects for students majoring in mathematics and statistics, the Department teaches subjects for engineering and biomedicine, introductory statistics and a University breadth subject.

The first year subjects taught by the Department are some of the largest subjects in the University. Our main first year mathematics subjects are Calculus 1, Calculus 2 and Linear Algebra. Together, these subjects have over 4,500 enrolments each year and are taught by a team of 17 lecturers and over 60 tutors. These subjects cover the knowledge and techniques necessary for further study in maths and stats, as well as many concepts important for science, engineering and commerce. We also teach introductory mathematics, data analysis, mathematics and statistics for Biomedicine, a University breadth subject teaching critical thinking with data, and an accelerated mathematics stream for high-achieving students. Most of our first year subjects have three lectures, one tutorial and (when appropriate) a computer lab each week. In tutorials, students work in small groups to solve mathematical problems, learning from and supporting each other as well as gaining experience with group work and mathematical communication.

Our second year offerings include perennial favourites such as Probability, Vector Calculus and Group Theory and Linear Algebra, as well as core subjects such as Real Analysis. These subjects typically have 100-250 students enrolled. As well as being core for students specialising in mathematics and statistics, our second-year subjects are popular with physics, engineering and commerce students. Over 900 students are enrolled in the subject Engineering Mathematics, which is core for all branches of engineering.

In third year, students study specialised areas in more detail. We offer subjects in each of the specialisations of Applied Mathematics, Discrete Mathematics and Operations Research, Pure Mathematics, and Statistics and Stochastic Processes. Students pursuing a major in Mathematics and Statistics focus on one of these specialisations, with electives from other specialisations or disciplines. Subjects at this level typically have 40-100 students. Our third year subjects develop mathematical knowledge and skills that form a sound basis for postgraduate study or practical application, as well as analytical and problem-solving skills, rigorous thinking, and other skills that are valuable in the workplace. In 2013, 74 students graduated with a major in Mathematics and Statistics, and 9 students graduated with a major in Mathematical Physics. We expect similar numbers in 2014.

Level	Number of subjects	Number of Enrolments in 2014
First year	10	6304
Second year	9	2546
Third year	16	1093

Building Renovations

We started the year with the opening of the new Evan Williams Lecture Theatre, a 56-seat theatre purpose built for our Master of Science students.



At the end of 2013, the Department acquired space in the adjacent building, Old Geology South. We have now started to renovate this area and hope it will be ready for 2015. It will provide much needed space for academic staff and research students.

In addition to this we are currently renovating four rooms within the Richard Berry building for our PhD students and continuing our plan to air-condition most rooms in the building.

Opening of the Evan Williams Lecture Theatre

The official opening of the Evan Williams Lecture Theatre was held on 29th April. Head of Department, Professor Aleks Owczarek, officially opened the venue. Drinks and nibbles were served in the corridor outside the lecture theatre. Professor Chris Lloyd gave a short talk about Evan Williams, who was his PhD supervisor, and praised his instinctive approach to statistics.

The theatre was named after Professor Evan Williams, who was Head of the Department of Statistics at the University of Melbourne from 1964 to 1982. Evan served as Editor of the Australian Journal of Statistics for six years, was President of the Central Council of the Statistical Society of Australia and served two terms as President of the Victorian branch of the Society. Evan was awarded the 1993 Pitman Medal of the Statistical Society of Australia in recognition of his outstanding contribution to Statistics over almost fifty years.



Chris Lloyd talking about Evan Williams