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Further Particulars - Department of Mathematics

The Department of Mathematics is internationally recognised for the high quality of its research, and is rated amongst the very best in the country. It was founded in 1965 by Professor Sir Christopher Zeeman, and since that time has gone from strength to strength. Warwick Pure Mathematics was ranked 2nd in the UK in the recent national RAE 2008 research assessment exercise. Applied Mathematics was ranked equal first in the UK for the proportion of its research given the top 4\* "world-leading" rating. Taking Pure and Applied Mathematics together, over 70% of our research was rated as either 4\*(world-leading) or 3\* (internationally excellent).

The initial research strategy of the Department concentrated on analysis, algebra and topology. Strong groups were developed across what was seen as the mainstream of pure mathematics. In the mid/late-80s it was decided to also build up applied mathematics by extending out from the established group in dynamical systems. Today the applied mathematics component is one of the strongest and most vibrant in the UK and the Department can truly claim to cover a very broad range of the mathematical sciences.

The absence of barriers between pure and applied mathematics and the strong encouragement of links between them is a distinctive and crucial feature of our research culture. We believe that the cross fertilisation this enables produces a more creative and productive environment and opens up each area to the ideas and approaches of the other. Recent years have seen the Department leading the way in the development of interdisciplinary research and postdoctoral training (see below).

The Department continues to grow, including new academic posts, a £15m new building (2003) (extended in 2008) and an increased investment in support staff, facilities and initiatives. The University is committed to continuing support and improvement.

The Department has a vigorous research culture, manifested by a high level of activity including, over the past five years, more than 1,300 research seminars, five successful year-long symposia, and more than 100 workshops and meetings.

Academic Staff

The total number of academic staff is 64 (including 34 Professors; 26 Associate Professors,12 of whom are Readers; 3 Assistant Professors; and 1 Principal Teaching Fellow). All staff benefit from the broad range of well developed staff development activities provided by the University and the Department. There are generous schemes for paid (1 term in 7) and unpaid leave which are actively used to promote research. A research and development officer highlights grant opportunities and assists with applications and management of grants.

Department policy stresses the provision of extra support for young staff. New recruits are integrated into the research environment of the Department by allocation of a mentor, the University's appraisal system, a reduction of in the teaching load of probationary staff, and active involvement in the running of the Department's research. The Department provides funds for start-up, travel and conferences. Our outstanding record for rapid promotion of young staff testifies to the quality of our support.

The Department has an increasing number of postdoctoral research assistants and fellows: currently 33 including 2 Marie Curie Fellowships, 3 (EPSRC) Career Acceleration Fellowships, 1 EPSRC Postdoctoral Research Fellowships and 2 Leverhulme Early Career Fellowships and 2 EPSRC Doctoral Prize Fellows.

The Mathematics Research Centre

The Mathematics Research Centre (MRC, current director Professor Miles Reid) is an integral part of the Department. It plans and organises a very active visitor’s programme and has a strong reputation for welcoming and hosting exciting mathematical activity in an informal and productive atmosphere. Since 1965 it has run year‑long research symposia which attract mathematicians of international stature. Recent symposia have included: The Mathematics of Quantum systems (04/05); Turbulence (05/06); Low Dimensional Geometry and Topology (06/07); Algebraic Geometry (07/08); Challenges in Scientific Computing (08/09); The Mathematics of Complexity Science and Systems Biology (09/10); and Ergodic Theory and Dynamical Systems (10/11); Probability (11/12). The symposium in 12/13 is *Number Theory.*

Postgraduate Environment

The postgraduate community is: 97 PhDs and 27 MSc. Most PhD students are supported on the Department’s DTG from EPSRC, on individual grants, or by grants from other sources.

The Department of Mathematics and the Department of Statistics has a £4.2M grant from EPSRC to run a new Centre for Doctoral Training (CDT) in Warwick. This centre, MASDOC, will train 40 students in 4 cohorts of 10, beginning in 2010. Each student is funded for 4 years. In addition to undertaking a challenging and original research project at PhD level the students will receive a formal programme of taught coursework to broaden their skills and enhance their technical and interdisciplinary knowledge. See:

<http://www2.warwick.ac.uk/fac/sci/masdoc>

Since September 2007, the Department has jointly run an EPSRC supported Mathematics Taught Course Centre (TCC) together with the Universities of Bath, Bristol, Oxford and Imperial College. This delivers 20 PhD level modules each year to students in all 5 universities.

Taught masters programmes include the MSc and Interdisciplinary Mathematics MSc based in the Department,

Mathematics, Statistics and Economics Departments jointly with the Warwick Business School, run an internationally leading MSc in Financial Mathematics.

Mathematics Interdisciplinary links/Research Centres

The Department (together with Physics and other Departments in the University) has been awarded an EPSRC grant to support a **Complexity Science Doctoral Training Centre.** This funds part of Complexity complex for research and teaching in Complexity Science, including also a number of RCUK funding Academic Fellows.

The University of Warwick has created a centre in the strategically important area of **Systems Biology.** The initiative is being led by the Department of Mathematics, the Department of Life Sciences and the Medical School. The centre has a major EPSRC grant to support a Doctoral Training Centre.

Together with the Departments of Chemistry and Biological Sciences, the Department leads a Life Sciences Doctoral Training Centre called **MOAC** (Molecular Organisation and Assembly in Cells). Funding of over £5m from the EPSRC is supporting 50 multidisciplinary PhDs, many of them strongly Mathematical, over a 5 year period.

In 2008 the Department (together with the Department of Computer Science and the Operational Research Group, Warwick Business School) established a new research centre, **DIMAP** (**Centre for Discrete Mathematics and Its Applications)** partly funded by an EPSRC Science and Innovation award (£3.8m).

The University has invested over £2 million in the **Centre for Scientific Computing (CSC)**, with additional investment from departments, following an initiative from Mathematics. This multidisciplinary centre is the focal point for computation in science and engineering and involves staff with interests in mathematics, statistics, physics, chemistry and computing. It also co-ordinates an interdisciplinary taught MSc and PhD programme.

Mathematics Interdisciplinary Research at Warwick (**MIR@W**) is a unique enterprise bringing together the Department of Mathematics with 11 other University departments in science, engineering, business and the social sciences. It runs a series of half-day or whole-day interdisciplinary meetings called MIR@W days, on themes in both traditional and new areas of application of mathematics. The MIR@W MSc and PhD students are jointly supervised by Mathematics and another of the participating departments.

Undergraduate Environment

The Department currently has more than 979 undergraduate students. The undergraduate curriculum is distinguished by the combination of flexibility (students can take a very broad range of options from across the University) with a mathematical curriculum that is both broad and deep. There are both three year (BSc) and four year (MMath) courses: the four year MMath course is designed to enable more able students to study mathematics to a higher level. The Department also contributes to courses in Physics (BSc in Maths and Physics), in Statistics (MORSE degrees) and in Computer Science (BSc in Discrete Mathematics).

When taken together the mathematical courses at Warwick have the largest intake in the UK and are noted for their breadth, their innovative approach, the high quality of the students and high standards.

The Public Face of Science

The Department has a particularly distinguished record in the promotion and communication of mathematics to the general public. Both Christopher Zeeman and Ian Stewart have made extensive and outstandingly distinguished contributions and many other staff have been involved in substantial projects involving lectures, television programmes, films and books. The Department is host to the Warwick Further Mathematics Centre which provides Further Mathematics teaching (A-level) at local schools, and which is a lead organisation in the national Further Mathematics Network of such centres sponsored by the UK government (DfES).

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