Postgraduate Research Opportunities in the Department of Management Science

Management Science Department
University of Strathclyde
Glasgow

For further information about courses offered by the Department, or about the Department's work in general, please visit our website,
http://www.managementscience.org/

or write to:
Department of Management Science
University of Strathclyde
Graham Hills Building
40 George Street
Glasgow G1 1QE
Scotland

phone (0141) 548 3613
fax (0141) 552 6686
email: contact-mansci@strath.ac.uk

The information in this brochure is correct at the time of going to press.
Changes are made from time to time, and the University reserves the right to add to or amend courses and facilities.
This edition published 2008

Contents

Introduction

This booklet gives information about research degrees, MRes, MPhil, PhD, and DBA for prospective postgraduate students in the Department of Management Science, Strathclyde University. Some information about taught MSc's within the department is also given.

The Department of Management Science at Strathclyde University has a strong international reputation for its research, consultancy and teaching. It received excellent ratings (4 or 5) in the three most recent UK Research Assessment Exercises carried out by the Universities Funding Council. The Department offers PhD, DBA, MPhil and MRes degrees, which can be pursued through either full- or part-time study. It has a flourishing community of research students, numbering around 40 at any given time, and has an active seminar programme designed to expose research students to the newest developments on the field.

Management Science (or Operational Research) can be briefly described as 'the scientific analysis of decisions'. It is concerned with the use of models, both qualitative and quantitative, to support decision-making and planning in a wide variety of settings, ranging from government departments and multinational corporations to small businesses, charities and community organisations.

The Department takes a broad interpretation of the subject's definition, as highlighted by the wide-ranging expertise of members of staff. All staff are actively involved in applied research or consultancy within a variety of organisations. New theory and concepts in Business and Management are best developed from a continual interaction with practice. The range of expertise is a particular strength of the Department, which influences its approach to both teaching and research.

With an international reputation for developing both quantitative and qualitative modelling methods, the Department can offer a powerful blend of 'hard' and 'soft' methods influenced by the mathematical and social sciences respectively. Members of staff are well known both for their academic output and through applied work, much of which is at the frontiers of OR.

Major Areas of Research

Staff are involved in many current projects spanning a number of broad themes. These involve active collaboration with a range of organisations, developing new ways of dealing with complex decisions. The following descriptions give a detailed idea of a number of current activities. Opportunities also exist in many other areas.

Decision Support

Understanding and supporting decision making by individuals and in organisations is an important thread of much of the ongoing research in the department. One focus of this research is in the field of Multicriteria Decision Analysis (MCDA), in particular on the integration of MCDA with other MS/OR approaches to modelling to provide support from problem structuring through to evaluation of options. For example, recent work has explored: the integration of causal mapping, system dynamics and MCDA for performance measurement; the combined use of MCDA and Drama Theory for exploring a complex organisational issue; and linking discrete event simulation, evolutionary multi-objective optimisation methods and MCDA - the emphasis in this work is on addressing problems as they arise. A complementary thread of research focuses on capturing expert knowledge in knowledge-based expert systems, using rule-based reasoning for original (ie first time) decisions and case-based induction trees for routine decisions. As the rule-based reasoning in knowledge-based systems can be viewed as a symbolic version of MCDA, there is a natural link for handling qualitative and quantitative aspects within a single framework.

A more mathematically based approach to decision support is to be found in the area of Mathematical Optimization. Here real life problems are represented in mathematical form, and algorithms are developed that provide either the best or a near best solution. Several, interesting theoretical questions are still open in these areas. Finding the most efficient, numerically stable algorithms for subclasses of nonlinear programming problems is a challenging activity. Various engineering- and economical models lead to complicated optimization problems. Finding the most suitable model for the problem helps the solution process too. Different operations research models can be formulated as assignment-, transportation- or multilinear optimization problems. Solution of such OR models are based on the proper usage of the high performance optimization techniques

Strategy and Operations Modelling

Developing Strategy can be viewed from a number of different perspectives, for example, taking a predominantly analytical approach or one that is more grounded in the social and political world of strategy making. Research in the department has led, through working with senior management teams in public and private, national and international organisations, to the development of a particular methodology JOURNEY Making. This takes as its basis a process view of strategy making and therefore actively engages with managers to develop a business model. By building qualitative models which provide the basis for negotiation and enable both internal (the identification of goals and distinctive competencies) and external (the

identification and management of stakeholders and scenarios) perspectives to be undertaken ensure ownership and commitment to the final product.

Operations Strategy can be defined as 'the pattern of decisions made in the operations domain that are intended to provide the business with the distinctive operations capabilities required to meet its competitive priorities, and thus to contribute to its pursuit of a sustainable competitive advantage.' To support managers in improving the effectiveness of these decisions, various types of models can be developed of a quantitative or qualitative nature. Examples of quantitative models include various types of simulation models (for instance, Discrete Event Simulation or System Dynamics models), optimisation models (for instance, Linear Programming or Non-Linear Programming models) and improvement models (for instance, through the application of Statistical Process Control and Six Sigma). Qualitative models include conceptual models describing the content of a company's operations strategy, highlighting its distinctive capabilities and sources of sustainable competitive advantage. Members of the department have extensive experience in working directly with managers from a wide range of business sectors to develop such models. The department works closely with the Department of Design, Manufacturing and Engineering Management in the Strathclyde Institute for Operations Management.

Technology Management

The use and development of complex organisational information systems, including telecommunications networks and the Internet, is another important area of research. This is exploring the way in which such networks bring about organisational transformation, as well as the availability, quality, cost and regulation of such networks. This work has progressed through close collaboration with leading organisations from a number of sectors (eg car manufacturing, retailing, electronics, and financial services), as well as telecommunication infrastructure providers and regulators. A wide array of research topics is being investigated, such as defining the rules for a new networked economy, the business transformation being brought about by the Internet and Intranet, and emerging forms of organisations (eg virtual or networked organisations) for the information economy. An area of special interest is electronic commerce.

Risk

This area of research covers assessments about the ways in which systems – both organisational and engineering systems – can fail, and how this knowledge can improve our knowledge of preventing future failures. For example, the increasing use of electronic systems in aircraft, and the need to better understand their reliability performance in order to support decision making during design, has motivated applied research in collaboration with a consortium of aerospace companies partially funded by the DTI. A coherent method for reliability enhancement has been developed and further research is now ongoing into the application of the model and to develop an effective model for assessment using both quantitative and qualitative data.

Risk assessment is applied also to model third party risks in many different sectors such as energy and transportation. A major thread of this research is to understand the impacts of dependencies within systems. Traditional approaches to risk

assessment have frequently ignored such dependencies, both because of the difficulty of quantifying them and because of the difficulty of modelling them. In systems where a “first pass” risk assessment has been carried out, the unquantified dependent risks are however often those that dominate the total system risk.

Another specific area of applied research concerns the management of risk in major projects, particularly through modelling the knock-on effects of delay and disruption. For example, several members of the Department collaborated in a major study of delay and disruption to elements of the Channel Tunnel project. This work, carried out for a major engineering consortium, involved both the structuring of qualitative data and the construction of a large mathematical model to quantify the impact of items such as changes to specification on final cost and completion time. This model formed the basis of a multi-million pound claim successfully pursued by the client. In addition, this project and a series of multi-million pound claims during which new techniques have been developed, has opened up some major research themes, on the modelling of the behaviour of complex projects, on modelling risk in very large projects, and on the novel use of different methodologies in combination.

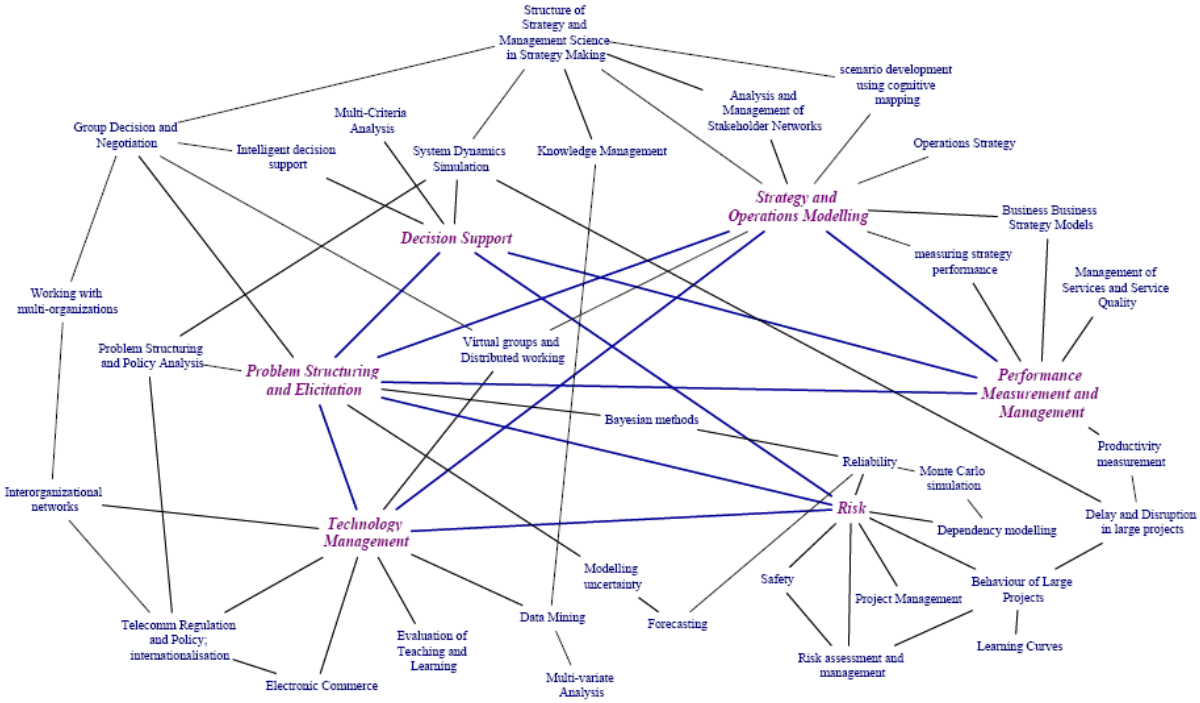
Performance measurement

Performance Measurement & Management (PMM) is a well-established area for research in the department, reflecting the challenges faced by many public and private organisations in their search for more effective performance improvement approaches. Attention is focused on the practical application of PMM frameworks such as the Balanced Scorecard, the Performance Prism, TQM, Six Sigma and the Business Excellence model. Intensive research is also done on the use of individual PMM techniques such as benchmarking, Data Envelopment Analysis & Stochastic Frontier Analysis (for productivity analysis), and various measures of customer satisfaction. A rapidly expanding research focus is on business process modelling, including the development of PMM tools for higher-level management processes. The research is carried out with a wide range of private and public sector (e.g. NHS, central & local government) partners. There is also expertise in the department on design and manufacturing performance measurement, including includes team performance measurement systems.

Problem Structuring and Elicitation

Problem Structuring and Elicitation can be seen as a key part of developing a common and comprehensive understanding of the situation under consideration. As such it frequently acts as a starting point for more quantitative modelling, for example continuous simulation, by ensuring that the focus adopted for further work is one that is relevant and owned. Research in this area is based on extensive work with organizations that are grappling with complex problems, and comprises a number of different methods and techniques, in many cases supported by computerised modelling, being applied. By providing support to managers to surface and structure their perceptions/contributions surrounding the area of concern, groups are able to subsequently explore, using a range of analysis, their different views. Facilitating discussion forms a key part of the process to ensure that a shared and agreed definition can be achieved. Two particular foci of work exist in the department. The first is the continual development of a well known Problem Structuring Method - Strategic Options Development and Analysis (SODA). The second focus

concentrates on techniques to facilitate the surfacing of expert judgement (in terms of the identification of risks, likelihood or value of variables, etc).



Staff Research Interests

The research activities of individual staff cross the boundaries of the different areas identified above, leading to cross fertilization of research in different themes. The interconnections between these areas are many. One way of visualising these interconnections is by looking at the research map on our website. This is an interactive map showing relations between different research areas.

Each research student is supervised by two members of staff, thus giving the opportunity of using insights from many different angles. In the admissions process for research students it is of great importance to match up supervisor and research student interests properly. A number of keywords describing individual staff research interests are given below.

Fran Ackermann

- Strategy development processes including stakeholder analysis, scenario planning and strategic performance measurement systems
- Group Decision Support Systems including distributed working
- Facilitating group working especially in messy, complex problem structuring arenas
- Qualitative aspects of risk assessment and disruption and delay on projects
- Use of models for capturing knowledge

Tim Bedford

- Probabilistic Risk Assessment
- Reliability and lifetime data analysis
- Expert judgement
- Uncertainty modelling and Monte Carlo simulation
- Quantitative modelling for decision support

Val Belton

- Multiple criteria decision analysis - theory and application
- Comparison and integration of MCDA approaches
- Integration of MCDA and other approaches to decision support (e.g. problem structuring methods, performance measurement, simulation, ..)
- Group decision support
- Intelligent decision support
- Reflection and learning in OR/MS (education and practice)

Viktor Dorfler

- Conceptual and knowledge-based system models of human knowledge and learning
- F-Learning as the next step of e-Learning, in which “f” stands for “free”
- Knowledge Portals and different types of knowledge sharing
- Knowledge-Based Expert Systems

Susan Howick

- System dynamics modelling
- Assessment and management of risk on large complex projects

Tibor Illés

- Linear optimization: theory, algorithms and applications
- Nonlinear optimization: theory, algorithms and applications
- Linear complementarity problems, matrix classes, algorithms
- Minimax theorems, game theory
- Operations research: models and solution methods

John Quigley

- Elicitation of prior probability distributions from individuals and groups
- Stochastic modelling with applications in reliability and risk
- Statistical inference, both classical and Bayesian

Jill MacBryde

- The future of manufacturing in the UK
- Value chain repositioning
- Team performance measurement
- Design performance
- Operations management
- Manage processes

Robert van der Meer

- Operations strategy
- Operations management
- Supply chain management
- Performance management
- Economics of strategy and management

Farhad Shafti

- Service Operations Management/Strategy
- Productivity and Quality in services and their interaction
- Performance Measurement in services
- The effect of cultural issues on performance and management

Lesley Walls

- reliability modelling and management
- risk assessment
- applied statistical modelling
- lifetime data analysis
- expert judgement methods

Jason Whalley

- internationalisation of telecommunication companies
- mobile telecommunication markets (standardisation, innovation, market structure)
- the relationship between international organisations and telecommunication policy development by least developed countries
- e-commerce business models
- ICT driven organisational innovation

Mik Wisniewski

- public sector performance measurement and management, in particular:
    - strategic action planning
    - developing Balanced Scorecards
    - the use of performance information amongst stakeholders

The research student community

Management Science has a flourishing, international, community of research students working both in and outside the Department. All full time PhD students have office space in the Department, with full access to computing facilities, email etc. Part-time research students share “hot-desks” in the Department, and also have full access to computing facilities.

Research Degrees

There are four different research degrees available. The MRes and MPhil degrees are one year degrees which can be taken to form the basis of further PhD research, or as qualifications in their own right.

Master of Research (MRes)
This degree, which focuses on research methodology in the context of Management Science, requires a minimum of 12 months’ full-time study, or a commensurate period for part-time study. Candidates are required to follow a course comprising research methodology and Management Science specific modules, and to submit a dissertation. There are two variants available offering a different balance of taught courses and dissertation. Variant 1 has 120 taught credits and 60 credits for the dissertation, while Variant 2 has 90 taught credits and 90 dissertation credits. Essentially, Variant 2 gives more prominence to the dissertation element (6 months) than Variant 1.

Master of Philosophy (MPhil)
This Masters degree is purely a research based qualification requiring a minimum of 12 months’ full-time study, or a commensurate period for part-time study. Candidates are required to follow an approved scheme of research and to submit a thesis embodying this work. This may comprise original research, a critical review of existing knowledge, or a combination of these.

Doctor of Philosophy (PhD)
Full-time study for a PhD normally lasts not less than 33 months. The minimum period of part-time study is set according to how much time the student is able to devote to study – but is NOT indefinite!. Students must follow a research methodology course and conduct a literature review and then perform research in their chosen area. Candidates submit a thesis embodying the results of their research, which must make a distinct contribution to knowledge, and there is also a viva. In most cases, students are registered for an MPhil in the first instance, with transfer to PhD candidature taking place after a year, subject to satisfactory progress. It is also possible to gain the MRes first and then start a PhD. In that case the total study time is approximately 4 years (1 for the MRes and 3 for the PhD).

Doctor of Business Administration (DBA)
This is an advanced degree obtained (through a minimum of 36 months’ study) via a mixture of lectures and research within the Business School. It is primarily intended for candidates with prior managerial experience who are seeking to apply some aspect of managerial theory in a practical context. The programme provides a more structured route to a doctoral qualification than the ‘classic’ PhD. Students start by

undertaking a taught MSc or MBA. After completing this, they carry out a critical literature review, in addition to taking the Faculty's research methodology course, and submit this for examination. In the final phase of study, an original piece of research is completed. The DBA thesis is submitted in two parts, comprising the literature review and final research report. There is also a viva.

Part-Time Study

It is possible to study for any of the above qualifications on a part-time basis. Locally-based part-time scholars have the use of office space in the Department and are encouraged to participate in regular departmental activities. Those based away from Glasgow are expected to maintain regular contact with their supervisor, both in person and via telephone/email and to take part in the postgraduate workshops

Research Methodology

All research students follow a course on research methodology. This is organised by the Business Faculty with lecturers from across the faculty, including Management Science. The course aims at giving a firm foundation to the research work carried out during the preparation of the thesis. Attendance at the course is compulsory. To make it easier for part time students to attend, the modules of the course are organised in short blocks

Postgraduate workshops

The department organises twice-yearly postgraduate research workshops, one of which is normally organised as an "away day" at the University's Ross Priory site on the banks of Loch Lomond. These workshops give all research scholars, particularly part timers, the chance to meet and exchange ideas. It is also an opportunity to find out more about the practical issues of writing a thesis and to hear about new research techniques. Staff members also attend to help facilitate the learning process.

Research Seminars

The Department has a programme of research seminars that all research students are encouraged to attend. These are often organised jointly with other groups such as the Operations Research Group of Scotland so that wider research contacts can be made. In addition the research students also organise their own seminars on topics of particular interest.

Postgraduate students' committee

There is an active committee run by the postgraduate research students that organises seminars and social events, and gives feedback to the members of staff about issues of importance to the research students.

Progressing through the research degree

The Department operates a system of annual reviews at which the student makes a small presentation to an independent reviewer (usually someone within the department).PhD students are normally admitted to the MPhil degree initially, and are transferred to PhD after a successful first year review. DBA students are normally admitted to a Masters programme for the taught part of their course (unless

they have already followed a cognate Masters degree) before being transferred to the DBA after a successful review.

A student who progresses well may finish and submit within the minimum registration times described above. However, it is more usual that students finish their empirical work in that period and enter a “writing up” stage. The university does not charge fees to students in writing up. The university target is for 75% of students to submit for PhD/DBA within 4 years (when working full time), as the actual time taken by students depends very much on individual circumstances.

Applying for a place

Formal requirements

Candidates should normally hold a good Honours degree (or the equivalent), though other forms of qualification and experience will be taken into account. First degrees may also be augmented by previous postgraduate qualifications, such as MSc or MBA. Students for whom English is not their first language must pass an English language test (TOEFL, IELTS etc) at an appropriate level. We will also need to have two references giving information about your research potential.

Draft Research Proposal

The most important part of the application is the draft research proposal. The main purpose of this is to enable us to make a judgement about how your research interests will fit with those of potential supervisors. We do not expect that your research proposal will be the complete and definitive version – indeed we see it as the start of a discussion between you and the potential supervisor. Very often the potential supervisor will engage in a discussion with you – possibly by email – in order to clarify matters and to help you assess how your proposal would fit into the departmental research community.

The draft research proposal is your opportunity to explain your problem area and your motivation – what excites you about your research. We get very many research applications and so a good research proposal will help your application stand out from the others.

The draft research proposal should be at least 4-5 pages and contain the following elements:

- Research topic: The general area in which you want to conduct your research
- Background to the research: Why you want to conduct research in this particular topic. What is your personal motivation? Why do you think it is important, and which groups (stakeholders) will benefit from the research?
- The research question: What are the aims of your research? Is there a particular hypothesis you are trying to prove (or disprove)?
- Methodology: What are your initial ideas for gathering evidence about your research question? How does it involve the stakeholders? What kind of field work do you envisage carrying out?
- Literature: How does your proposed topic fit into the existing literature?

Sources of Funding

Our research students are funded in many ways. Part-timers are normally in employment, and some receive financial support for fees etc from their employers. Full-time students from overseas receive a variety of scholarships from their own governments, institutions such as the British Council, etc. The Department has also been successful in finding funding for specific projects from industrial sponsors or partners, research councils, etc. A few University scholarships are available for candidates of exceptional merit. Many research students also supplement their income by undertaking work within the Department. This is encouraged, provided the time taken up is not such as to detract from the student's own research work.

The applications process

Applications can be made online via the website http://pgr.strath.ac.uk/ You will be able to submit your supporting documents with your application and this interactive way of applying allows you, among other things, to view the progress of your application and communicate with the department.

You can also apply via a paper application form which we can send out to you, or download the forms to print yourself from http://www.strath.ac.uk/prospectus/postgraduateapplications/. The draft research proposal, references, information about funding etc should accompany the form. When we receive your application it will be circulated in the Department to find members of staff who are interested in supervising the topic. In order to establish a discussion between the applicant and potential supervisors, it is important that you give us an email address with which we can contact you.

Non-EU applicants should note that for some more mathematically oriented Management Science dissertation projects, it may be necessary to go through the ATAS process to obtain a visa. The Director of PG Research can advise on whether this is necessary. For more information on ATAS please see http://www.strath.ac.uk/registry/atas/

Postgraduate Tuition Fees

As a guide, standard annual tuition fees for courses in the Strathclyde Business School in session 2007/2008 are shown below (a modest increase should be anticipated for subsequent years). All applicants are advised to check with Registry - Strathclyde Business School (0141 553 4170) as to the current fees which apply for the course they wish to follow.

For students from the UK and European Union:
Full-time study: £ £3,235 Part-time: £1,620

For students from outwith the EU:
Full-time study: £ 8,695
Part-time: dependent on arrangements for study and supervision

Applicants who are unsure of their status should seek clarification from the University Registry as early as possible in the application process. (The main criterion used in most cases is "normal place of residence" rather than nationality.)

The MBA programme

This programme is run by the Strathclyde Business School, not by the Management Science Department. For further details please write to: MBA Admissions Office, 199 Cathedral Street, Glasgow G4 0QU, Phone (+ 44) 0141 553 6118/6119 Fax: (+ 44) 0141 552 8851
or email admissions@gsb.strath.ac.uk.

MSc and Postgraduate Diploma In OR

Although this is not a postgraduate research degree, some information is given here for completeness.

This course is designed for students who wish to join the OR/Management Science profession. Its overall aim is to produce good analysts who will be in high demand from OR groups in business, government, and management consulting companies. This means that in addition to acquiring skills in formal techniques of OR, students learn to apply theories and concepts in a creative and practical way. They will also be helped to develop the intellectual and personal skills needed to work on complex issues in an organisational setting, often as part of a team. Students have a wide variety of first degrees. The class is typically about 30 strong, a size allowing good organisation of groupwork, as well as attention to the needs of each individual student. Students accepted onto the course have already demonstrated their intellectual ability: the course not only adds to their knowledge, but helps them develop the skills to apply it.

Course Duration, Entry and Funding

The full-time MSc course lasts twelve months, starting at the end of September. Applicants should normally expect to have at least a second class honours degree. Most students have first degrees in mathematics, the natural sciences, or engineering. However we also encourage applications from those with social science or business-related degrees who have demonstrated a grasp of mathematics/statistics.

The Engineering and Physical Sciences Research Council (EPSRC) allocates a quota of Advanced Studentships to the course. Demand for these is high, and early application is advised. This is done via the Department, rather than by individual application to EPSRC.

The MSc can also be obtained part-time, over two or three years. The same topics are studied, normally one day per week. Most students are sponsored by their employers, and carry out their project work within their own organisations.

A recent development is the establishment of an on-line distance learning version of the MSc. For more details of this contact the MSc Director or see www.operationalresearch.org.

Study for the Postgraduate Diploma degree lasts nine months, following the same curriculum as for the MSc. As well as allowing students to complete a recognised course in a shorter time, the Diploma provides the opportunity for a wider range of applicants to enter the OR world. Students demonstrating sufficient ability may be allowed to transfer in-course to study for the MSc.

Applicants for the Diploma course should normally expect at least a pass degree in an appropriate subject, but other forms of qualification or experience will also be considered. The Scottish Office allocates a quota of bursaries, and some English and Welsh Local Education Authorities offer grants to students from their areas

Outline Programme

The taught programme consists of a mixture of core and optional lecture classes, interspersed with practical exercises ("workshops") and work experience. For MSc candidates, this is followed by an extended external project.

Some workshops are guided by senior OR practitioners as guests of the Department. Students are presented with a real (current or recent) problem. They then form into small groups to tackle the issue, and each group presents its findings and suggestions at a later class session - typically, the following week. There is then a discussion on how the approaches taken compared both with each other and with the practitioners' experiences.

As part of the course, students also spend a short "Apprenticeship period" working within an established OR (or related) group, so gaining a preliminary experience of how analysis is carried out in an organisational setting. This lasts for three weeks, starting in mid-January. Many major groups collaborate in accepting students, singly or in pairs. The students work as members of the host group, while also being briefed to act as observers of how the group functions. While three weeks is a short time, the class gains collective experience of life in a wide range of organisations. This has proved to be a particularly valuable aspect of the Apprenticeship scheme, which is unique to the Strathclyde course.

The MSc project is usually carried out for an outside organisation. Students spend the three months from July to September working on a project of importance to the clients. The aim is to gain direct experience in applying the concepts and theories studied on the course. Projects may be carried out individually, or in small teams of two or three students. Project clients include many major concerns, in fields ranging from aerospace to whisky distilling!

A more detailed course brochure is available. For further information, please contact Dr Susan Howick (Course Director) at the Departmental address at the front of this leaflet.

Departmental Staff

Lesley Walls *BSc, PhD, FSaRS*	Professor and Head of Department
Valerie Belton *BSc, MA, PhD*	Professor (Vice Dean (Academic))
Fran Ackermann *BA, PhD*	Professor (Director of Postgrad Research)
Tim Bedford *BSc, MSc, PhD, FSaRS*	Professor (Director of Postgrad Research)
John Quigley *BMath, PhD*	Reader (Director of MRes)
Susan Howick *BSc, MSc, PhD*	Senior Lecturer (Director of MSc)
Jill MacBryde *BSc, PhD*	Senior Lecturer
Robert van der Meer *Cand Econ MSc(Econ)*	Senior Lecturer (Director of Undergrad Studies)
Jason Whalley *MA, MA, PhD*	Senior Lecturer (Director of Undergrad Studies)
Tibor Illés *MSc, PhD*	John Anderson Research Lecturer
Viktor Dörfler *MSc, MBA, PhD*	Lecturer
Farhad Shafti *BS, MSc, PhD*	Lecturer
Helyn Gould *BSc, MSc*	Director of Studies for SBS
Mik Wisniewski *BSc, MSocSci, FSS*	Senior Research Fellow (part-time)
Babakalli Alkali *BSc, MSc, PhD*	Research Staff
Alireza Daneshkhah *BSc, MSc, PhD*	Research Staff
Gavin Hardman *MMath, PhD*	Research Staff
Abi Jagun *BSc, MBA, MSc, PhD*	Research Staff
Zoltan Miklos *MSc*	Research Staff
Matthew Revie *BSc, MSc*	Research Staff
Derek Crowe *MA, MSc*	Senior Web Developer
Howard Ramsay *MA, MSc*	Teaching and Learning Technology Officer
Mark Elder *BSc, PhD*	Visiting Lecturer
Alison Kerr	Administrator
Jacqueline Barnhart	Secretary
Caroline Sisi	Secretary

Visiting Professors:

David Andersen	State University of New York
Peter Curwen	Former Professor of Business Economics
Joe Fragola	Valador Inc, USA
David Souter	ICT Development Associates Ltd

Advisory Board

Finlay Buchanan (Cap Gemini)	Douglas Watt (Royal Bank of Scotland)
Peter Bennett (Department of Health)	Alex Ormond (Shell International)
Trish White (HM Customs and Excise)	Alex Ross (British Airways)
Peter Starkey (DSTL)	

Staff Profiles

Lesley Walls has degrees in Mathematics and Applied Statistics. She is a Chartered Statistician and serves on the Business and Industrial Section of the Royal Statistical Society. Her main research interests are in applied statistics, reliability analysis and management. She led the statistical modelling team involved in the DTI/aerospace industry sponsored project REMM (Reliability Enhancement Methodology and Modelling). This project led to the development of new processes for managing and measuring reliability improvement in design and development and involved research into techniques for elicitation of structured engineering judgement, statistical inference for data with complex censoring structures, Bayesian updating procedures for reliability estimation. Lesley has conducted research in collaboration with a number of organisations, particularly in the manufacturing sector, and has delivered many training courses to industry. She has published papers in journals such as the Journal of the Operational Research Society, the Journal of the Royal Statistical Society, Reliability Engineering and System Safety, IEEE Transactions in Reliability. She is currently a UK expert on the International Electrotechnical Committee and an Associate editor of Quality and Reliability Engineering International. Lesley enjoys dance and football, especially Dundee United.

Valerie Belton gained degrees in mathematics and OR from Durham and Lancaster Universities respectively. She then took up a post with the Civil Aviation Authority, before completing a Doctorate at Cambridge. Prior to joining Strathclyde, she has held a lectureship in the OR Department at the University of Kent. She is well-known for her work on Multi-Criteria Decision-Making, and was President of the International Society for MCDM from 2000- 2004 and is Editor of the Journal of Multi-Criteria Decision Analysis. She was a Vice-President of EURO (The European Federation of OR Societies) from 1996 to 2000 and was President of the UK Operational Research Society (2004-2006). Another key research interest is student-centred teaching and learning, particularly the role of reflection. She "relaxes" by orienteering - on foot or on mountain bike.

Fran Ackermann gained her first degree from the University of Western Australia, and her Doctorate from Strathclyde. Her research focuses on how Information Systems (particularly Group Decision Support Systems (GDSS)) can aid groups when working with messy, complex problems. Stemming from this research interest emerged a focus on strategy development and implementation. As a result of both gaining an in-depth knowledge of relevant strategy theory and working with organizations (public and private, national and international) in an Action Research capacity she has developed (along with Colin Eden) a particular approach to Strategy Making that is widely adopted and about which she has two books. Current developments in this area include a focus on what makes an organization distinctive and gain competitive advantage. She currently runs the European Working Group on Group Decision and Negotiation and is associate editor for both MISQ and Group Decision and Negotiation. With Colin Eden, Terry Williams and Susan Howick she is also part of a team investigating risk on large scale projects. She is keen on scuba diving, sailing, tennis and ski-ing

Tim Bedford studied mathematics at Warwick University where he obtained BSc, M.Sc. and Ph.D. degrees. He held a fellowship at King's College Cambridge where he was a member of the King's College Research Centre project on Chaotic Dynamics. He then took a lectureship in applied probability at Delft University of Technology in the Netherlands, and later became Senior Lecturer in Applications of Decision Theory in the same department. Current research interests are in probabilistic risk analysis, uncertainty modelling and decision analysis. Tim is or has been active in various professional societies, amongst others the European Safety and Reliability Association and the Dutch Reliability Society, of which he was Chairman. He is now a Fellow of the Safety and Reliability Society. Tim enjoys jazz music and plays trombone. His great ambition, which will certainly remain unfulfilled, is to play like Frank Rosolino or Curtis Fuller...

Viktor Dörfler has an MSc in Mathematical Engineering from the Technical University of Budapest, an MSc in International Business Relations from the Budapest University of Economic Sciences, an MSc in Engineering Education from the Technical University of Budapest and an MBA also from the Technical University of Budapest. Viktor gained his PhD from the Strathclyde University. Before joining the department he was a lecturer at Budapest University of Technology and Economics, in Budapest, Hungary. He also worked as consultant in software development for Doctus Bt. His field of research covers human knowledge and learning, e-learning and the different ways of knowledge sharing as well as Knowledge-Based Expert Systems. He enjoys travelling.

Susan Howick gained a BSc in Mathematics from Dundee University and a MSc in OR and a PhD in Management Science from Strathclyde. Before joining the Department she worked for an employee benefits consultancy, training to be an actuary. Her main area of research is the use of System Dynamics in Project Management. She is also part of a team with Colin Eden, Terry Williams and Fran Ackermann investigating risk on large scale projects. She is a Vice President of the Policy Council for the UK Chapter of the System Dynamics Society. Susan enjoys keeping fit and likes to play most sports, but is particularly keen on mountain biking, snowboarding, and watersports.

Jill MacBryde has a BSc in Technology and Business Studies from Strathclyde University and a PhD from Strathclyde. Her main research interests are in business process management, business transformation and performance measurement. Jill's research is currently supported by the Engineering and Physical Sciences Research Council (EPSRC) and the Advanced Institute of Management (AIM). Ongoing funded research includes a project which sets out to understand how SMEs change their business model and reposition themselves in the value chain. A further funded project seeks to understand how UK manufacturing companies can change their business model and compete in a global context. Jill is particularly interested in how such strategic moves impact operations, business processes and performance. When not working Jill is likely to be found on the water indulging her passion for sailing.

Robert van der Meer gained degrees from the University of Amsterdam and the London School of Economics. His main research interests are in operations management and strategy, and the economics of organisation, management and strategy. He has worked with organisations in a wide range of industries - including electronics (IBM, Motorola, etc.), spirits (Allied Distillers, The Edrington Group, etc.), clothing (Playtex, Levi Strauss, Coats Thread) - and in the public sector (in particular, NHS Scotland). He has also acted as an Independent Expert advising the GMB Union on a number of occasions.

John Quigley gained a BMath in Actuarial Science from the University of Waterloo, Canada and a PhD in Management Science from the University of Strathclyde. He is also an Associate of the Society of Actuaries and a Fellow of the Royal Statistical Society. His main research interests are in reliability development of complex systems and applied probability modelling. He enjoys ice hockey and squash.

Jason Whalley gained an MA in Geography from the University of Cambridge, an MA in International Political Studies from the University of Leeds and a PhD from the University of Strathclyde. Before joining the Department he worked for TNO - STB in The Netherlands. At TNO - STB one of the research projects that he was involved in examined the impact of electronic commerce on the telecommunications industry, whilst another sought to identify the sources of innovation within the service sector. His main research interests are telecommunications, service sector innovation and electronic commerce. Apart from squash and swimming he collects antique books

Tibor Illés studied mathematics and operations research at Eötvös Loránd University of Sciences (ELTE) in Budapest, Hungary, where he obtained M.Sc. and Ph.D. degrees. He held a research position at the Computer and Automation Research Institute of Hungarian Academy of Sciences. As a young researcher he was awarded the Gyula Farkas Prize János Bolyai Mathematical Society (JBMS). He then took an assistant professor position in continuous optimization at the Operations Research Department of ELTE, and later, he became associate professor at the same department. He also led several applied operations research projects for leading Hungarian companies. Current research interests are in linear- and nonlinear optimization, and applications of operations research. Tibor enjoys fencing, hill-walking and music.

Farhad Shafti has a BSc in Industrial Engineering from the University of Science & Technology (Iran), an MSc in the same field, from the University of Tarbiat Modarres (Iran) and PhD in Management Science from the University of Strathclyde. He has held various positions in the National Iranian Productivity Organization before joining the department. He is now working on Productivity and Quality Management in the Service Industries. His research interests are Services Operations, Performance Measurement and Effects of Cultural Aspects on Organizational Performance. Farhad has a black belt in the Korean traditional martial arts (Kuk Sool Won) and he also enjoys jogging, travelling and reading.

Helyn Gould has been a member of the department since 1992. She holds a BSc and an MSc (OR). She initially joined the department to work on the Mentor Research Project and in 1996 began to split her time between managing the project and lecturing. In June 2000 she joined the University's Millennium Student Laptop

Initiative (piloting the use of mobile computing in HE) as the Academic Project Manager for the pilot study; reducing her teaching role in the department. Her principle areas of research include evaluation of learning resources, computer based learning, innovative teaching and Management Science/ Operational Research education. She is a keen cyclist.

Mik Wisniewski has degrees in Economics from Loughborough University and in Economic Planning from Birmingham University and is also a Fellow of the Royal Statistical Society. He has extensive OR consultancy experience in both public and private sectors. Before joining the Department on a part-time basis in 2001, he worked at Stirling University and Leeds Metropolitan University. His main research interests are in the areas of strategy, performance measurement, quality improvement techniques and the practical application of OR in business. He relaxes by hillwalking, listening to music and writing books (but not necessarily at the same time!).

Babakalli Alkali gained a BSc in Statistics from the University of Maiduguri Department of Mathematics and Statistics (Nigeria). He also has an MSc in Operational Research and Applied Statistics and a PhD in Operational Research and Applied Mathematical Statistics both from the University of Salford Greater Manchester. He joined the Department of Management Science Risk Centre as a research fellow, working in collaboration with Scottish power on competing risk and reliability project. His research interests are in applied probability modelling, stochastic processes, optimization, risks and reliability analysis. He has worked for a Multinational Oil Exploration and Production Company (Agip) as a budget assistance officer. Babakalli enjoys playing squash and basketball.

Alireza Daneshkhah has a BSc in Statistics from Shahid Chamran Ahwaz University and a MSc in Statistics from Shahid Beheshti Tehran University. He also has a PhD in Statistics from the University of Warwick. His PhD thesis is about the estimation of probabilities in the Causal Graphical models and Bayesian sensitivity analysis of Bayesian networks. He then worked in the Department of Probability and Statistics of the University of Sheffield as a research associate on a project to develop a new approach to elicit the expert's probabilities. Alireza joined the Management Science Department as a research fellow to use emulators to quantify the different types of uncertainties in the coupled models which are commonly used in risk assessment. His research interest is eliciting the expert's judgements, quantifying the (complex) model uncertainties by using emulators, in particular, Gaussian process; learning of Bayesian networks and causal graphical models and analysing Bayesian sensitivity.

Gavin Hardman has a MMath in Mathematics from the University of Durham and recently completed his PhD in Statistics, also at the University of Durham. Gavin joined the Management Science department in November 2006 to work on risk and reliability projects in association with the UK Ministry of Defence. Gavin's previous research concentrated on the application of Bayes linear to methods to industrial inspection planning problems and was conducted as part of a CASE studentship with Shell. His research interests include applications of Bayes linear methods, optimization problems and decision theory.

Abi Jagun earned her Ph.D. from the University of Strathclyde in 2006 with a thesis on the subject of “Telecommunications and the Structure of Economic Organisations”. She also has an MBA from the University of Cardiff and an MSc in Operational Research from the University of Strathclyde. Prior to joining the Management Science department, she worked with the Association for Progressive communications (APC) as ICT Policy Research Officer for the African region and also as a Lecturer in Information Systems and Development, with the Institute for Development Policy Management at the University of Manchester. Abi has also worked in the Nigerian office of the international consultancy Accenture. Her research interest is in the impact of technology on society – specifically the ways in which mobile communication devices impact on socio-economic development.

Zoltan Miklos studied mathematics and operations research at Eötvös Loránd University of Sciences (ELTE) at Budapest, Hungary where he obtained M.Sc. degree. During this year Zoltan is on leave from the Applied Mathematics Doctorate School of University ELTE. He is a member of the Hungarian Operations Research Society (HORS) and the Egerváry Research Group (EGRES). He’s research is focused on combinatorial optimization, matroid theory, submodular functions, graph theory and polynomial-time algorithms. He is also interested in the industrial applications of operations research. Zoltan enjoys playing football.

Matthew Revie has a BSc in Mathematics from the University of Glasgow, a MSc in Operational Research from the University of Strathclyde and is in the process of completing his PhD in Management Science, also at the University of Strathclyde. Matthew’s PhD focused on developing decision methods for the UK Ministry of Defence to support reliability assessment in procurement projects. His research interests include applications of Bayes linear methods, Bayesian Belief Networks, decision theory and reliability.

Derek Crowe has an MA in Economics from Glasgow University and an MSc in Operational Research from Strathclyde University. His main focus is on the design and development of websites. His interests include chess and photography.

Howard Ramsay is an educational technologist converting teaching materials for the department for use in Internet-based distance learning. He has an MA in Politics and an MSc in Information Technology from Glasgow University. His interests include hypnosis and learning foreign languages.

Research Students, their projects and their experiences at Strathclyde

Full-Time Students and Supervisor(s)

Nur Anisah Abdullah
Valerie Belton and Mik Wisniewski
Multi-Criteria Decision Making

Abdulla Alsada
Valerie Belton and Mik Wisniewski
Performance Measurement

Samenah Balali
Tim Bedford and Lesley Walls
Reliability and Maintenance Optimisation

Richard Burnham
Tim Bedford and Lesley Walls
Operational Research

Daosheng Cheng
Tim Bedford and John Quigley
Sensitivity analysis of the Railway Safety Risk Model

Marcos Maciel Filho
Jason Whalley and Robert van der Meer
Telecoms Management

Jane Martin
Valerie Belton and Fran Ackermann
Problem Structuring Methods

Jenny Morgan
Valerie Belton and Susan Howick
Integrating discrete event simulation and system dynamic

Vicky Thatsaringkharnsakun
Robert van der Meer and Terry Williams (Southampton University)
MRP in Thai Industry

Tricia Ragoobar
Jason Whalley and David Harle (EEE)
Next Generation Telecommunication Networks

Bram Wisse
Tim Bedford and John Quigley
Decision support in procurement

Part-time students and supervisor(s)

David Carey
Valerie Belton
Application of Soft Systems Methodology to Planning in Schools

Wafik El-Bardissi
Lesley Walls and Mik Wisniewski
Intelligent Model for Organizational Decision Support

Jeremy Garnett
Tim Bedford and Valerie Belton
Simulation

Mohd Abdul Hamid
Umit Bititci (DMEM) and Viktor Dorfler
Quality management in hi-tech industries

Vicki Hill
Robert van der Meer and Tim Bedford
Operations Strategy and Quality Management in the Food Industry

Hanine Salem
Fran Ackermann and Colin Eden (GSB)
Use of Performance Measurements systems within the public sector

Jim Thomson
Susan Howick and Valerie Belton
Critical learning incidents and system dynamics

Research degrees awarded 1999 – 2007

Alec Morton	PhD	Distributed Group Decision Support: an exploration of some key concepts
Alexandre Rodrigues	PhD	SYDPIM - A System Dynamics-based Project-Management Integrated Methodology
Jason Whalley	PhD	Understanding International Investment Activities in the Telecommunications Industry
Steve Smetham	MPhil	Information and Communications Technology: Reshaping the customer/bank interface
Susan Howick	PhD	An Exploration of the role of System Dynamics in the Analysis of Disruption and Delay for Litigation
Duncan Shaw	PhD	The Role of GDSSs in facilitating the interaction of individuals for effective decision making
Brian Cox	PhD	Discovering the Essence of Organisational Learning by Studying the Effectiveness of Scenario Planning
Abdul Razak Ibrahim	DBA	An Integrated Performance Measurement System in Healthcare Services: an empirical study of public and private hospitals in Malaysia
Raluca Bunduchi	PhD	Internet: New Business Models
Sergio Santos	PhD	Integrating Multicriteria Analysis and System Dynamics
Ebrahim Soltani	PhD	Production Quality and its relationship with profitability
William Cooper	PhD	Interactive Technology, AI, Training and Development
Terry Nelson	PhD	Integrating Action Research and Journey Making during Real World Organizational Strategy Development
Tom Rae	PhD	The influences on major engineering project success and failure
Nigel Grigg	PhD	Developing statistical thinking in the food industry : an empirical investigation of the use of statistical process control and improvement methodologies within food and drinks manufacturing facilities in the UK

Anastasia Koulouri	PhD	The use of Fuzzy-set approaches to Multiple Criteria Decision Support
Ramesh Sachdeva	DBA	The application of quantitative operational management techniques to develop a framework for identifying manpower needs and optimizing efficiency in healthcare systems
Brett Malyon	PhD	Mixing Methodologies in Group Decision Support - combining a problem structuring method with an evaluation technique
Farhad Shafti	PhD	Application of Classification Models in Studying Productivity Management in Services
Viktor Dorfler	PhD	Model of Learning Ability
Abi Jagun	PhD	Telecommunications and the structure of economic organisations : an investigation of the impact of telephony on economic activity within a Nigerian fabric weaving micro-industry
Raymond Flanagan	DBA	The impact of applying structured, object based software modelling techniques on the design and implementation of business processes, business perfomance management and business/operational risk management systems
Brian O'Flaherty	PhD	The structuring effect of Computer Mediated Communication Technologies in the networked organisation
Gordon Campbell	MPhil	Forecasting and Operations Management in the Scottish Whisky Industry
Sarunya Limkeatcherdchoo	PhD	Innovation and Technology Management in Telecommunications Business
Poomporn Thamsatitdej	DBA	The effect of cultural difference on project risk management practice
Rak Vorrakitpokatorn	DBA	The Corporate System of Innovation in Catching-up Economies: Case Study of Thai Corporation
Athena Zitrou	PhD	Exploring a Bayesian approach for structural modelling of common cause failures

Comments from our Graduate Students

Alec Morton (PhD 1999)

I arrived at Strathclyde in 1995 with a BSc in Mathematics and Philosophy from the University of Manchester, to study for the MSc in Operational Research. After completing the M.Sc., I decided to stay on and take a PhD in Management Science, focussing on Distributed Group Decision Support.

Since completing my PhD in 1999, I have been working in Singapore, first at Singapore Airlines, and subsequently as a Research Fellow at the National University of Singapore. I have a number of research projects here, mostly on airline and logistics-related applications of OR.

The Department is a very supportive environment for both study and research. I greatly enjoyed and benefited from my time there, and would recommend it to anyone interested in working in OR.

Alexandre Rodrigues (PhD 2000)

I came from Portugal to join the Department. My background is in Informatics and Systems Engineering, and I chose to undertake my PhD studies in the Management Science Department at Strathclyde because of its high international reputation in the field of Operational Research. Since then I have never been disappointed: the department provides excellent working conditions, and the staff are competent, friendly and show concern in understanding and respecting cultural differences. There is a wide range of subjects being researched, and there are strong links with industry. During my studies, I have been given excellent supervision and all the support I needed.

My research interests are in the field of System Dynamics applied to Project Management, particularly in the area of software development. I undertook a case-study at BAe/SEMA Ltd, where I undertook a major software project. I am sure that undertaking a PhD degree in this department will have a major impact in my future career.

Duncan Shaw (PhD 2001)

After completing a BA in the Management Science Department and working in industry as an OR Analyst, I returned to the department to complete a PhD. My research evaluated the way in which group facilitation, using two particular group decision making softwares developed in the department (Group Explorer and Decision Explorer), can enable the effective sharing of knowledge in the preparation of strategic plans and psychological buy-in to those plans.

I am now a Lecturer in the Knowledge Management Research Group at Aston Business School (Birmingham, UK) from where I still research and consult using group decision support technologies. Recent work includes taking group support into new areas of application, for example knowledge management, data envelopment

analysis modelling, education and learning, as well continuing to apply the techniques in strategy making.

Abdul Razak Ibrahim (DBA 2002)

I am a lecturer at the University of Malaya, Malaysia and got a scholarship to further my doctoral studies in Management Science. My research interest centred on performance measurement in healthcare services, which is a new emerging area in Malaysian hospitals. I chose survey as well as case studies to assist me in exploring and understanding the nature of performance measurement. Empirical data were collected from Malaysia and, with my supervisor's assistance, analysed at Strathclyde. As a result of intensive fieldwork, a framework was developed to enhance understanding of performance measurement systems in a developing country.

I found carrying out research at Strathclyde to be an enriching experience especially for a novice researcher like me. The Management Science department in particular have all the facilities to assist the students in their quest to find the light at the end of the tunnel. My supervisor's experience as well as close interaction creates a conducive environment for PhD students to take on the challenge and excel. The department's rigorous efforts to promote research across staff and students in their doctoral seminar series, intellectual discourse etc have shown a positive impact on research students.

I have settled peacefully in Malaysia and at the moment engage in various research topics within department-university level, state-federal government level and national-international level. Thank you to University of Strathclyde and the Management Science department in particular for its efforts to instil a 'lifelong learning' experience.

Raluca Bunduchi (PhD 2004)

After completing my MSc in Business Computing in Romania, I joined the Department in September 2001 to study information system management. My PhD research concerned the management of Internet technology use in organisations, and its outcome on the nature of inter-organisational relationships. I have found the Department very supporting, both in terms of resource provision and in facilitating the development a thriving PhD research community. I have thoroughly enjoyed the three years spent in Glasgow, and this is why I have decided to take up the next job not too far away. I am now a Research Fellow in the Research Centre for Social Sciences in Edinburgh and my current work is in the development of information technology standards for business to business.

Ebrahim Soltani (PhD 2005)

After completing my MBA, I joined Strathclyde not least because of its internationally renowned status as ‘a place of learning’. I registered with the Department of Management Science because of its reputation and its emphasis on interdisciplinary research. My PhD involved the challenging task of synthesising theoretically and

testing empirically the key findings of two quite separate areas of academic research: (a) quality management in general, and total quality management (TQM) in particular, and (b) human resource management (HRM) in general, and HR performance management in particular. In the course of my PhD research, the department offered me an incredibly rich environment, both challenging and supportive, which in turn unquestionably enhanced my professional development (departmental postdoctoral 2003-4, and ESRC Postdoctoral Fellowship 2004-5) and made me confident enough to carry on with my education towards developing my future career (University of Kent, 2005-present). Last, but certainly by no means least, was the support I have received from my supervisors and other member of staff with whom I had the good fortune to work. To all of them I am immensely grateful. God bless and thank you all so much.

Athena Zitrou (PhD 2006)

I joined the department in 2001 to study for the MSc in Operational Research, and I afterwards stayed to undertake a PhD in Management Science. The area of my PhD research was Risk Assessment, and it particularly concerned the mathematical modelling of Common Cause Failures. I am currently working as a safety consultant, and I am involved in projects related to the provision of risk management solutions in the defence, nuclear and allied industries.

I find that the department of Management Science provides an ideal environment in which to study for a PhD and to develop as an independent researcher. The services provided by the university were excellent, and access to academic resources and IT facilities was always possible. But most importantly, the support I received from my supervisors, fellow students and all the staff was outstanding. Looking back I can definitely say that studying at Strathclyde has been a joyful experience.

The Strathclyde Environment

The Business School and the University

Strathclyde Business School is one of the largest in Europe, with a high international reputation. The Department also has strong links with Statistics, Mathematics and Computer Science, all areas in which Strathclyde is highly regarded. The University itself has existed in various forms since 1796. It now has over 12,000 students, including 2,000 postgraduates in the Business School alone, and is well equipped with library, computing and other study facilities. The institution was founded to provide "a place of useful learning", and maintains that mission today.

Glasgow and its Surroundings

Located near the city centre, the University combines the advantages of city and country. Glasgow is the third largest city in Britain, and has the reputation of being one of the friendliest. Much of the centre has been extensively restored, and Glasgow is enjoying a major revival of cultural activity, evidenced by its designation as European City of Culture 1990 and City of Architecture and Design 1999. It was European City of Sport 2003. The University's central site ensures that a wide variety of theatres, cinemas, restaurants, cafes etc are within easy walking distance. The University itself contributes strongly to the cultural life of the City, regularly providing venues for exhibitions and concerts.

Just a few miles away, the lochs and mountains provide some of the most beautiful countryside in Britain, attracting millions of visitors from all over the world. The University is particularly well-situated for those interested in sailing, golf, hill-walking and mountaineering, ski-ing, canoeing, and so on. There is also ample provision for squash, tennis, rugby, soccer, etc. The University has a large Sports Centre, and a swimming pool. All this is reflected in the full range of activities catered for by the Students' Association.

There are also excellent facilities for travel, with express trains and many direct flights to London and other centres. Scotland is one of the main centres in Europe for computers and electronics, and for offshore oil development. Glasgow is also an important financial and commercial centre. Finally, overseas applicants may like to know that although Scotland is the northern part of Great Britain, its climate differs little from that of the rest of the UK. Scotland has warmer winters than other countries of similar latitudes. The weather changes quite often, but there are few extremes of temperature.

Student Accommodation

The University offers various forms of student accommodation, situated in the Student Village on the Campus and at other sites, almost all within walking distance. Some residences provide meals; others have shared kitchens. A few flats are available to married students, though demand for these is high.

The University also maintains lists of housing offered for private rent. For full details of all these services, please contact:

Residence Services,
Graham Hills Building, University of Strathclyde,
50 Richmond Street, Glasgow G1 1XT
Tel: 0141-548 3561/3454
Fax: 0141 548 4030
(office hours 9-5, Monday to Friday)

student.accommodation@mis.strath.ac.uk

http://www.strath.ac.uk/Departments/RESCAT/