The heart of the University’s work is to be found in research, teaching and learning: pushing forward the frontiers of scholarship; applying the knowledge and understanding so gained in a multitude of contexts in the world outside academia; and creating a rich and varied learning environment in which our students can achieve academically and acquire life and work skills. This section provides a brief summary of where the University stood in autumn 2001.
School of Biomedical and Life Sciences

Professor James Lynch

The mission of the School is to ‘protect health, food and the environment through teaching and research’. Originally known as the School of Biological Sciences, it was renamed ‘Biomedical and Life Sciences’ in 2000. This change reflected the University’s increasing focus on health science and on co-operation with the health services, particularly the Royal Surrey County Hospital, with the aim of producing skilled graduates for the health service and the pharmaceutical industry. The change also reflected the increasing concern during the 1990s about chemical pollution of the environment and the food chain. The School is ideally equipped to examine such problems. In 2001 it was awarded over £4 million for laboratory refurbishment and research equipment to allow it to exploit the new technologies of the post-genomics era.

The School’s integrated teaching and research covers biochemistry, microbial sciences, and nutrition and food safety. Research in toxicology and pharmacology has addressed the safety of drugs and chemicals in clinical, industrial or agricultural use, and their effects on man and the environment. Work has focused on the molecular characterisation of enzymes responsible for the breakdown of drugs and chemicals in order to understand their inter-individual variation. The impact of pharmaceuticals and drugs of abuse on signalling in the central and peripheral nervous systems has also been examined. Research in neuroendocrinology has studied biological rhythms, the biochemical mechanisms that maintain those rhythms, and the effects of rhythm disruption. The importance of the hormone melatonin has been investigated, along with its role in alleviating jet lag, ill-health in shift workers, and the sleep problems of blind people.

In medical microbiology we have worked on infections caused by mycobacteria, the meningococcus and viruses. The diseases involved include TB, meningococcal meningitis, viral gastro-enteritis in children, and chronic fatigue syndrome. Research highlights have included the characterisation of a genetic element that has formed the basis of a DNA probe to monitor and control TB outbreaks. We also developed the first polymerase chain reaction test for meningococcal meningitis, and have patented an insect virus gene sequence that controls protein synthesis. At the metabolic level, the control of antibiotic production in the commercial fermentation processes has been studied extensively in collaboration with the pharmaceutical industry. This should lead to more efficient production processes when bacterial diseases become increasingly resistant to antibiotics. Micro-organisms can also cause harm in the environment; one process studied is the corrosion of metal surfaces. However, some organisms are useful in detecting problems in both health and the environment, and recent efforts have focused on developing whole-cell biosensors for this purpose. The result of releasing GM organisms into the environment and possible transmission through food chains has been studied; one interesting observation is that living modified organisms can often be less fit ecologically than their wild counterparts.
In food safety our research ranges from food-poisoning bacteria such as campylobacter to the complex polyphenols in tea and fruits that can benefit health and may protect against cancer. Nutrition research is unravelling how omega 3 fatty acids in oily fish reduce the risk of heart attack and whether those in flaxseed oil are equally effective: individuals whose genetic make-up increases their risk of a heart attack can benefit from oily fish in their diet. Work on the importance of some constituents of fruit and vegetables in minimising osteoporosis is also showing the link between diet and genetic make-up.

Cancer research at Surrey has highlighted the alarming fall in selenium intakes in the UK. Since selenium may protect against cancer and some viral infections, we are leading an international research effort to discover whether increased selenium intakes will reduce the high rates of cancer deaths.

School of Educational Studies

Professor Stephen McNair

Since the early 1970s, the School of Educational Studies at Surrey has worked exclusively on ‘post-school’ education and training. We study and teach the policy and practice of learning in further education, universities and the workplace, and we train teachers to work in these fields; our 3,000 students range in age from thirty to eighty.

When the School was founded in the early 1970s, lifelong learning was an eccentric minority interest. During the 1980s, governments came to recognise that, in a world of rapid change, people need to continue learning throughout their lives. Our expertise - in how people learn in adult life, and how such learning can be organised and managed - moved from the margins to the centre of the policy agenda. We responded with a distance learning MSc in lifelong learning, the first in the UK, and now with students in fifty countries. For mid-career professionals who wish to study these issues at a higher level and investigate learning in their own worlds, we created a large part-time doctoral programme; some eighty students are currently researching in fields ranging from psychotherapy to police training. Other programmes include: the innovative degree in workbased learning, which enables people to use their experience of work as a basis for degree-level study; the internationally recognised MSc in change agent skills and strategies; an MSc in counselling; and a new Masters programme for teachers to be launched in 2002. In 2000 the national Quality Assurance Agency awarded these programmes 23 points out of 24 in its review of teaching quality.

We have always been among the ten leading British research schools in post-school learning. The Centre for Research in Lifelong Learning has published widely, and its members are in much demand as speakers internationally. The Human Potential Research Group has had a national reputation for its work on individual and organisational change since the 1970s. In 1998 we added the Centre for Research into Nursing
and Midwifery Education, funded by the national bodies in this field. The Centre builds on the School’s long tradition of work on learning in the health professions, and aims to provide the knowledge base for the expansion of nursing required by government policy. Finally, the Centre for Policy and Change in Higher Education has already made a national and international mark for its work on quality and on widening participation in higher education; its ground-breaking study of the effect of globalisation and technology on the future of higher education has made a particular impact.

Throughout the 20th century, universities provided programmes of part-time study for adults in a wide range of subjects. This ‘extramural’ work, taking the expertise of the university into the wider community, is one of the School’s roles. Traditionally such programmes did not lead to any formal qualifications, making it difficult for adults to access degree-level work. In response we built two new degree programmes around the subjects commonly studied by adult learners, offering for the first time the chance to study for a full honours degree on a part-time basis in Surrey. The University’s first BA students graduated in 2000, and the first part-time BSc graduates are due to follow in 2002. The launch in 2002 of a BA in local history is doubly innovative. This is the first degree in the subject in the UK; it will also be the first federal degree, as it will be provided jointly to full- and part-time students in both Guildford and Roehampton.

School of Electronics, Computing and Mathematics

Professor Bernard Weiss

Everyone is aware of the impact of information technology on everyday life – it has been a defining characteristic of world change during the last forty years. Since 1960 world trade has grown at a remarkably constant 6 per cent per annum, while the IT, electronics and communications (ITEC) sector has grown by 14 per cent a year. At the start of the 21st century, ITEC represented about 10 per cent of world trade, and it is doubling its share every eight years. The focus during the 1980s was the personal computer; the emphasis now is on mobile communications and the internet. The coming wave is the growing use of wide bandwidth communication links that allow large quantities of video and data to be transferred, where once only voice was carried. Videophones first appeared on the TV news in the conflict in Afghanistan in autumn 2001. Before long they will become ubiquitous and their quality will improve.

At Surrey we have made important contributions to these advances. Ion implantation is the technique of choice for converting selected volumes of a semiconductor from conducting to insulating behaviour. We have shown the way to improve the quality, resolution and accuracy of this process ahead of the ever-tighter specifications demanded by those who design and manufacture silicon chips and the compound
semiconductors used for optical and microwave devices. Our Mobile Communications Research Group is the largest of its kind in Europe (and possibly the world). Over 100 researchers are developing more sophisticated methods for sending signals over more complex mobile communication networks; our new algorithms are being licensed to the major companies in the field. Our low-cost satellites are opening up space to smaller countries that could not afford the budgets of the US space agency NASA. Dedicated satellites for communications, earth observation and space science are available for less than $10 million. Twenty satellites make more than 100 passes over our Guildford groundstation each day, relaying back information from space. Our work on computer vision interprets television images automatically with the information often used to drive other equipment, a facility that has many applications in surveillance, safety and medical diagnosis.

Our latest contributions to computing are in the area of knowledge management: vast quantities of data are analysed and summaries produced. These can vary from quantifying the impact of a US presidential statement on Far East stock markets to producing profiles of key people based on publicly available information on the internet.

At the frontiers of mathematics and statistics, the study of non-linear effects produces a rich array of results. Through this work, we have increased our understanding of the erratic populations of garden slugs, effective ways of inflating the lungs of new-born babies with breathing difficulties, and mimicking the surface of dolphins to enhance the motion of underwater vehicles.
School of Engineering

Professor Mike Goringe

The School of Engineering encompasses the disciplines of chemical, civil, materials and mechanical engineering, and also environmental strategy. Here we highlight four aspects of our work from different areas.

EnFlo, the Environmental Flow Research Centre, is built around two major facilities donated by National Power, with substantial additional support from the Natural Environment Research Council and the UK Meteorological Office. It gives the Engineering School’s Fluids Research Centre a laboratory unequalled in Europe for studying at small scale a broad range of flow and dispersion problems, both fundamental and applied, in the atmosphere, rivers and oceans. Typical applications include determining the ways in which effluents are dispersed, which is of crucial importance in an age when so many effluents are emitted either routinely or by accident and concern about the consequences is strong.

Space structures constitute a family of structures that includes, for example, the London Eye and the Eden Project in Cornwall. The Space Structures Research Centre has played a central role in advancing design techniques and spreading the idea of space structures throughout the world. The Centre was founded in 1963 and has been an international centre of excellence in the field ever since. Among other activities, the Centre is responsible for publishing the *International Journal of Space Structures* and organising a series of international conferences on the topic.

The Centre for Environmental Strategy (CES) was opened in 1992 as a multidisciplinary centre for research and postgraduate teaching. The motivation for the CES came from the realisation that the solutions to environmental problems and their social consequences cannot be found within any one discipline. For example, it is essential for engineers to understand the social barriers to adopting new technologies, while social scientists must have some feeling for what is technologically possible. Research in the CES has been influential in both national and international policy through the Royal Commission on Environmental Pollution, the Cabinet Office, several UK government departments and agencies, and various European Union directorates.

The School of Engineering has a long tradition of developing innovative teaching for preparing students for the ‘real world’ of engineering. Strong links between the University and industry are promoted through the professional training placement programme. Since the early 1980s, leadership and teamwork training has been incorporated into engineering. In recognition of the School’s innovative teaching in this area, the TRANSEND (Transferable Skills in Engineering and their Dissemination) project was initiated in 1997 to assist other UK engineering departments to develop similar programmes.
The European Institute of Health and Medical Sciences

Professor Rosemary Pope

The European Institute of Health and Medical Sciences (EIHMS) was formed in 1995 when the University became responsible, under contract with the National Health Service, for the education and professional preparation of nurses and midwives, together with the continuing professional development of qualified nurses and midwives. The Department of Nursing, established at the University for over twenty-five years, was integrated into the EIHMS in 1996; this was one of the first University departments in Britain to run undergraduate degree courses for nurses and midwives. Together with its postgraduate programmes in Advanced Clinical Practice and its nationally recognised research portfolio, the Institute is acknowledged as a major contributor to the provision and development of nursing and midwifery.

In keeping with the Institute’s mission to establish a multi-disciplinary environment, elements of the Robens Centre for Public and Environmental Health joined the EIHMS in 1997, bringing to the School interests in occupational health and health ergonomics. The introduction of the first MSc programmes in Chiropractic in 1997 further strengthened the range of disciplines available for health professionals at the University of Surrey.

The Institute is one of the biggest Schools in the University: it has over 1,000 full-time undergraduate nurses and midwives in training, and a further 1,500 qualified healthcare professionals take a range of undergraduate and postgraduate modules and courses during an academic year as part of their continuing professional development.

The EIHMS is establishing a research base that drives and reflects innovation and change in clinical practice within healthcare. Research activities focus on a wide range of areas relevant to healthcare provision, and embrace evidence-based practice, policy and education. Research is organised within five broad themes: older people; mental health; communities, organisations and health; education and healthcare; and the clinical aspects of care.

Practice Development Units (PDUs) are one of the innovative ways in which the EIHMS is building links between research and good practice among healthcare professionals. PDUs aim to provide forums for discussion and debate on innovations in evidence-based practice and education, to identify practice-related issues in need of review or development, and to support innovations in practice and teaching. A wide range of PDUs - in such areas as mental health, critical care and learning disabilities - have so far been established to provide the basis for inter-professional collaboration between University and practice colleagues. Clinical Academic Units identify and disseminate best practice in relation to the care of patients, and initiate, encourage and participate in clinical, scientific and social research designed to improve the understanding of the causes and treatment of particular conditions. There are Clinical
Academic Units for stroke and rehabilitation, chiropractic, and cancer and palliative care.

The EIHMS is home to the International Centre for Nursing Ethics. This worldwide association of university research and teaching centres focuses on issues of morality, professional ethics, cultural and spiritual values, law and accountability in the field of nursing and related disciplines.

School of Human Sciences

Professor Sara Arber

The School of Human Sciences unites three disciplines - Economics, Psychology and Sociology - and teaches intellectually rigorous and vocationally relevant degree programmes that emphasise the applicability of research to real-world problems.

The School’s long-standing international reputation in energy economics dates back to the establishment of the Economics Department by Professor Colin Robinson, one of the world’s most eminent energy economists. Recent projects conducted by the Surrey Energy Economics Centre (SEEC) have concentrated on energy modelling, efficiency studies, and the regulation of gas and electricity.

The Surrey Centre for International Studies (SCIES) is at the forefront of work on open economy macroeconomics, international finance, technology transfer, growth and trade issues in developing countries, and macroeconometric modelling and policy. SCIES’s director, Professor Graham Bird, acts as consultant to the United Nation’s World Institute for Developing Economics Research and the International Monetary Fund.

The Health Research Group focuses on health economics and health services research, and the Regulation and Competition Policy Group (RCPG) brings together theoretical and mathematical economists and applied energy and utility economists. The RCPG co-ordinator, Professor Paul Levine, is a leading theoretical economist, and (on the basis of publications between 1994 and 1998) is ranked in the top fifty (1 per cent) of UK economists.

During the 1990s the Psychology Department became the largest UK provider of postgraduate psychology training. It offers courses to meet the growing needs of the NHS (clinical health, and psychotherapeutic and counselling psychology), the police and prison service (forensic psychology), and business (occupational and organisational psychology). Accredited by the British Psychological Society, these courses offer students the specialist grounding necessary to become chartered psychologists.

Notable research achievements in psychology include Professor Ian Davies’ work on colour perception. This overturned the widespread belief that whatever language people speak they develop a similar way of seeing colours because of the underlying physiology of colour perception. His work indicates the central importance of language: people from different language groups see colours differently. Professor Sarah Hampson has
integrated beliefs about health and personality, showing how personality moderates the association between risk perceptions and behaviour change.

Other key psychology projects have examined the safety of train drivers and signalling, multiculturalism and inter-group relations, public perceptions of food-related hazards, and the human aspects of the promotion of environmentally sustainable policies.

The Sociology Department is an internationally acknowledged centre for social research methodology. It applies innovative methods to theoretical advancement, works in partnership with a range of research users and collaborators, and contributes sociological knowledge to real-world issues of policy and practice. Its international reputation was affirmed by its 5* grade in the 2001 Research Assessment Exercise. The CAQDAS Networking Project pioneered the use of software to analyse qualitative data. The unique web-based Social Survey Question Bank makes available the questionnaires of major UK social surveys and raises standards in UK survey research. The Sociology Department is known for its long-established Masters courses that government departments and the research community recognise as national leaders for training the next generation of social researchers.

Sociologists at Surrey address gaps in theoretical and substantive knowledge and help solve pressing social problems. Research of international repute includes: Sara Arber’s work on ageing and gender, which effectively set the standards for the discipline’s interest in this topic; Jay Ginn’s work on pensions, which has informed international debate on pensions policy; and Nigel Fielding’s research on criminal justice, which has led to major changes in police practices.

The School builds on the synergies between the three Departments, with interdisciplinary research collaborations addressing economic, social and psychological issues relating to health, the environment, criminal justice and new technology. The interdisciplinary Digital World Research Centre was established in 1998.
School of Language, Law and International Studies

Professor Peter Lutzeier

The School of Language, Law and International Studies can be seen as the international heart of the University. In addition to the study of languages (French, German, Russian, Spanish, Swedish) and their use across the world, we provide our students, short-course delegates and research sponsors with an ever-increasing depth of knowledge relating to culture, society, English as a foreign language, European politics and economics, and national and international law. The School strives in its teaching, learning and research for greater insights into languages and their socio-cultural contexts in order to further mutual understanding and to meet people's needs in a world of growing globalisation. We have a strong research culture and have managed to transform some of this expertise into successful consultancies; for instance, we have done several lexicological projects on brand values for BMW AG, Germany.

We can claim numerous success stories, but two further examples must suffice. The foundation of the Centre for Translation Studies in 1982 marked the formal beginning of translator education at the University. Drawing on in-house expertise, including translation into many languages and specialist knowledge of key subject areas, a modular programme for undergraduate students from a range of well-known European schools of translation was developed. In a move to consolidate this early success, 1985 saw the launch of the Postgraduate Diploma/MA in Translation – a time when there were only a handful of such programmes in the UK. The philosophy of the programme is rooted in the close relationship between translation and knowledge, which is directly reflected in the curriculum in the mirroring of translation practice and specialist subject lectures, as well as a particular focus on terminology studies. Over the years, the translation programme has grown from an initial eight students working between English and two European languages to seventy students working in seven languages, enjoying an international reputation and attracting students from many parts of the world. A major contribution of the Centre has been to turn linguists into trained translation professionals. Recognising the many challenges posed to curriculum design by the rapid changes in the professional profile of translators and the emergence of new roles, the Centre has developed specialist options in subtitling, technical writing and computerised glossary compilation. For many years the Centre has also been active in running post-experience translation and interpreting courses for organisations such as professional translators' associations, commercial companies and international bodies (for example the European Commission, the European Parliament and the World Bank). Further training for professionals is a generally neglected aspect of translation and interpreting studies and the Centre is proud to be a pioneer in this area.

The Surrey Morphology Group has taken language in its own right as a fascinating research topic. Initial projects in the early 1990s put typology (types of language),
morphology (how words are built) and computational modelling together and contrasted Russian with other languages such as Mayali (from North Australia) and Central Alaskan Yup’ik. By the 1996 Research Assessment Exercise, the Group was the only ‘flagged research group’ in its unit of assessment. Fruitful collaboration was developed with the Departments of Psychology and Statistics and new projects involve the construction of databases for a sample of languages. The Group has become part of a European network, based in Utrecht. It has also been asked to contribute to the *World Atlas of Linguistic Structures*, being co-ordinated at the Max Planck Institute in Leipzig.

We believe we are well placed to provide vital answers for the future of society through meaningful communication in the context of globalisation and regionalisation.

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**School of Management Studies for the Service Sector**

**Professor David Airey**

The growth of the service sector represents one of the biggest shifts in world economies since 1945. Services now account for 80 per cent or more of employment in many western economies. The School of Management Studies for the Service Sector has been at the heart of these developments. Having initially provided education for the hotel industry, the School now embraces many other parts of the service economy, notably tourism, retail, healthcare and leisure.

As one of the pioneers in the field, the School has set an agenda for change in education and industry practice worldwide. Since 1970, academic staff in the School have produced many of the leading textbooks and much of the published research; three scholarly journals have been launched. Major research contributions can be seen in the development of globally accepted methodologies to measure the economic impacts of tourism, and the provision of expertise and methodologies for tourism planning in developing countries, as well as applied methodologies for tourism forecasting and sustainability. The School has also contributed to the understanding of food preferences and dietary analysis, and its best practice studies in education and industry have made major contributions to the hospitality sector. Industry recognition is demonstrated by the two chairs funded by industry sponsorship: the Charles Forte Chair of Hotel Management and the International Flight Catering Association Chair of Production and Operations Management. The latter is the first professorship in the world to focus on transport catering. The School’s leadership in scholarship and research linked to services was reinforced in 2001 with the award of a major government grant to study ‘performance and best practice’ in hospitality.

Currently the School has a total student population of 750 undergraduates, 190 postgraduates and more than 50 research students studying for PhDs. The last is the
largest such group in this field in the world. Nearly half the students are from overseas; whether from the UK or abroad their success rate in developing careers in services is truly impressive. Many industry leaders graduated from Surrey.

No sector of the economy remains static. The impact of information and communication technology is rapidly transforming the service sector through, for example, the introduction of home-shopping and online reservation systems. In research and education, the School has played a leading role in responding to these developments. During 2001 we launched the first-ever Masters degree course in e-tourism. At the same time our Masters programmes have been formulated for delivery on the web, making them ever more accessible to students worldwide. Our researchers are exploring the implications of ICT development for the operation of the industry, and all undergraduates take courses designed to bring them to the cutting edge of this aspect of service-sector activities.

Another key focus for the 21st century is captured in the word ‘sustainability’. Issues related to sustainability figure strongly in all our research and programmes. These include a major research programme funded by the European Union on the use of green space in towns, and programmes to measure indicators of sustainability. This work feeds into our courses, so that our students leave with a truly informed view of this major issue.

Above all, the School has developed its reputation in providing high-level scholarship related to management in the service sector. This remains at the heart of our work. The School employs leading scholars from a range of disciplines including geography, economics, organisational behaviour, operations management, food science, and marketing. They bring their core disciplines to an understanding of the many components, problems and challenges facing those who are developing their careers in what will remain one of the dynamos of the 21st century.
School of Performing Arts

Professor Janet Lansdale

A recent key development for both dance and music nationally is the establishment of the Arts and Humanities Research Board (AHRB), with research funds of £66 million in 2002/03; this is the first time that the performing and visual arts and design have received government funding for research. Janet Lansdale, Professor of Dance Studies and (until January 2002) Head of the School of Performing Arts, was one of the first Board members and chaired the research panel recommending awards in music and the performing arts. The AHRB should soon become a full Research Council, giving researchers in these fields greater access to funds and a more significant place in national inter-disciplinary research debate.

Socially significant research in dance at the University includes the reconstruction of the cultural heritage of Java through the computer modelling of movement from sculptural images (Janet Lansdale) and a reassessment of Central European dance history during Nazism – a topical if painful subject that achieved national press coverage in Germany (Dr Marion Kant). A further grant funds detailed analysis of the movement constructs of Rudolf Laban (Professor June Layson).

A regular series of cutting-edge dance concerts brings an audience from many sectors of the community into the Department. Recent compositional/choreographic initiatives have involved the Medici String Quartet with the choreographer Kate Lawrence. Performance research has attracted a large grant to develop new works around the theme of ‘Creative Ambiguities’ (Dr Emilyn Claid), giving the synergies between academic research and professional performance practice greater visibility.

In music, we have both broadened and deepened our activities. Recently, we have integrated aspects of the study of popular music and of non-western musics into the undergraduate curriculum, while popular music also figures now at postgraduate level. We have also made more explicit the relationship between the practice of music and wider cultural developments. In both of these we are ahead of many equivalent departments in British, European and North American universities. We see the legitimisation of the musical activities of so many people worldwide as a significant contribution to social justice.

Our research in music is unique in its aim to study sound all the way from inception to reproduction and perception, through its composition, performance, analysis, recording, reproduction, and consumer reception. Books on musicians who have been traditionally neglected by academics (from Allan Moore’s study of the Beatles to Steve Downes’ work on the Polish composer Szymanowski), intellectually challenging concert music (from Steve Goss’s commissions from Jane Manning to Sebastian Forbes’ widely sung choral music), interviews on the BBC, and the organisation of events such as the Guildford Music Festival, keep the work of the Department in the public eye. We regard our ability to maintain a reputation for both musicological and practical work as a notable achievement.
The growth of domestic digital audio, which started in 1982 with the launch of the CD and has continued over the last ten years with DVDs, digital television and MP3 files available over the internet, has highlighted a need for new skills in high-quality music recording. The 1990s have also seen a rapid increase in the number of home cinema installations with multi-channel surround sound. The Department of Sound Recording has played a major part in many of these developments. Its world-leading *Tonmeister* course in sound recording, widely acknowledged as the premier course in its field, has produced many excellent balance engineers as well as researchers, designers and support engineers who now work throughout the international audio industry. The Department’s research, funded mainly by grants currently totalling nearly £700,000, has developed rapidly, and has contributed vital knowledge to the evaluation of surround recording and other recording techniques.

**School of Physics and Chemistry**

*Professor Bill Gelletly*

Advances in physics and chemistry have moulded our lives. We live in the information age, an age driven by our capacity to transmit and manipulate enormous amounts of data. All this derives from basic studies of the properties of materials and from our subsequent ability to manipulate these properties to make the devices that lie at the heart of computers and electronic- and optical-communications systems.

Look around you. The clothes you wear, the materials in your home and office, the paint on the walls, the food you consume – all these have been profoundly influenced by advances in both chemistry and physics.

Janus-like, chemistry and physics face two ways. They seek a fundamental understanding of the world at the microscopic level that can then be applied to improve the quality of all our lives. At Surrey more than most places, one can see both strands at work, since both our teaching and our research have always had strong connections with industry. Surrey chemists capitalised on the increasing importance of computers by designing the first degree course in computer-aided chemistry, which further strengthened our strong industrial links. Chemistry at Surrey has been characterised by the development of new techniques – inductively coupled plasma mass spectrometry (ICPMS) and tritium nuclear magnetic resonance spectroscopy – that are now used worldwide. The former is a superb tool for multi-element analysis at trace levels and ideal for environmental studies. The latter relies on the fact that tritium provides the strongest of nmr signals. Hence labelling pharmaceuticals with tritium means that we can readily follow what happens to them in the body; this is of great benefit in the development of drugs.
In physics, fundamental studies at the University of Surrey of the properties of semiconductor materials and how they react to high pressures led to the invention of the quantum well laser, a vital component in high-speed optical communications systems, compact discs and optical data storage applications. Studies of the fundamental properties of atomic nuclei resulted in a theoretical understanding of the neutron haloes and skins found by experiment in studies of the most exotic nuclear species we can make. The tools needed to prosecute these studies can be applied to practical matters: the measurement of how quickly drugs are released into the body, and improvements and dose reduction in medical imaging. Watching paint dry is the popular image of boredom but understanding it is of great importance to the manufacturer of paints in order to create a durable and attractive surface.

Today Surrey’s research in physics and chemistry is vibrant and outward-looking. It encompasses, at one extreme, studies of nuclear reactions of importance in the novae and supernovae seen with our telescopes, and fundamental properties of semiconductors. At the other extreme it involves studies of great economic and environmental importance. These include improved fuel cells, the deterioration of concrete due to the ingress of water, and the design of selective receptors based on macrocyclic compounds incorporated into solid supports to allow the removal of toxic, ionic and neutral species from contaminated sources.
Postgraduate Medical School

Professor Ross Lawrenson

The University of Surrey always envisaged that a close association with the Royal Surrey County Hospital would be an important development, linking its education and research activities with local health services. Biological sciences have traditionally been very strong at the University, and in 1998 it resolved to develop medical research and postgraduate medical education further by establishing a Postgraduate Medical School (PGMS). This was launched in March 2000. Its aim is to link the NHS to the University, not only at a local level but also through nationally important research and educational initiatives. Joint NHS/University appointments and the establishment of key partnerships with senior NHS staff have fostered an environment in which academics and NHS staff can readily exchange ideas and pursue research opportunities. Located on the University’s Research Park, adjacent to the Royal Surrey County Hospital, the Guildford Nuffield Hospital and St Luke’s Cancer Centre, the PGMS is well placed to develop these links. This relationship will be strengthened still more by a new purpose-designed building, also close to the hospitals; when this is ready in 2004 it will significantly enhance the potential for research. We believe that this new initiative will also strengthen the local health services by adding value to the quality of care received by patients, as well as providing the opportunity to fund research fellowships and attract the best staff to Guildford.

Research is the keystone of current and future activity. Some will be clinical in priority areas such as cancer, heart disease, diabetes, and primary care. Two other areas in which the PGMS intends to concentrate its activities are oral and maxillofacial surgery and pharmaceutical medicine. The University has world-class research teams in pharmacology, psychopharmacology and pharmacoepidemiology. The opportunities presented by the facilities available on the Research Park and Guildford’s proximity to the UK offices of a number of the world’s biggest pharmaceutical companies make us well placed to work in partnership with the industry. Our Department of Pharmacoepidemiology is one of the largest and most productive in Europe and, with significant research contracts from firms in Europe, North America and Japan, has investigated the safety of oral contraceptives, acne treatments, hormone replacement therapy, antidepressants, and treatment for benign prostatic hypertrophy. In addition, it is investigating risk factors for various cancers and congenital anomalies. The influence and impact of this small group has been felt throughout the world where licensed drugs are used. The oral contraceptive pill scare is a prime example of the importance and relevance of their work.

Teaching forms an important part of the work of the PGMS, which runs programmes catering for doctors wanting to undertake a research degree and become Doctors of Medicine. In addition, the PGMS endeavours to meet the ever-changing educational needs of doctors, consultants and healthcare professionals. The PGMS also runs programmes in Pharmaceutical Medicine and Clinical Pharmacology aimed primarily at personnel
within the pharmaceutical industry. The PGMS specialises in providing ‘bite-sized’ education and training in all the above areas.

The future for the School is bright, and the new building will bring significant opportunities to expand teaching and research as well as to strengthen and deepen links with the NHS both locally and throughout the south-east region. A partnership approach will ensure that research, education and knowledge are shared to the ultimate benefit of patients and healthcare professionals.

Surrey European Management School

Professor Paul Gamble

The Surrey European Management School (SeMS) was effectively launched in 1990 with the aim of providing a postgraduate business school, and the first intake (of seventeen part-time students) to the MBA programme started work in September 1991. Initially we also ran a series of short executive courses and diploma programmes in association with organisations such as the British Institute of Management (BIM) and the Institute of Directors. We also ran, with BIM, the first NVQ Level 4 course in the UK.

In May 1992 the School opened its first overseas centres, offering its MBA programmes by distance learning in Singapore and Hong Kong. This form of delivery, very innovative at the time, became a substantial part of the School’s activities over the next five years; by the late 1990s the School was operating in ten overseas centres around the globe.

In autumn 1992 the School began to offer a full-time MBA programme at the Guildford campus. Many applications were received from students who did not meet the entry requirement of significant management experience. The average age of the MBA students was thirty-seven, and it was apparent that there was a huge demand for a general postgraduate management qualification to fill the gap. In September 1994 the School launched its first generic MSc programme in management with fifty-seven students. In the next six years, the School added to this broad management stream a series of specialist Masters degrees in areas including financial services management, marketing, international marketing, international business and, most recently, e-business management. By autumn 2001 the School was the University’s largest centre of graduate students, with almost 400 students on the Guildford campus alone.

Its distance learning roots give the School a keen interest in learning support services. The early MBA programmes were supported with textbooks and with printed manuals written within the School. Gradually these evolved into various forms of electronic support services, initially using a piece of authorware called ToolBook and then developing custom-made programmes which the School called CourseWare,
written in Visual Basic. However, changes in the marketplace and in the general level of international competition required the School to make a third paradigm shift. During the 1990s, competition for distance learning programmes from other British providers, the USA and Australia became very acute. In response to globalisation and increasing convergence in a digital world, the School drew on its experience of computer-assisted learning to develop one of the UK’s first fully virtual sets of Masters programmes, and launched it in January 2001 with the admission of thirty-five MBA students.

The School now operates in four modes – full-time, part-time, distance learning and virtual – and offers a range of programmes through MBAs, MScs and open access entry routes. In 1995 growing student enrolment, plus small increases in the core academic staff, made it possible to start to develop the School’s research presence. In the late 1990s the School established a very successful range of research partnerships with major international companies such as IBM, Equifax, the Royal Mail, Siebel and Syntegra (the Systems Integration arm of British Telecom). Concentrating on database management, the School developed expertise in e-commerce, customer relationship marketing and knowledge management, and carried out a number of studies for its major corporate sponsors.

When it moves to the new management building in January 2003, SeMS, in its role as the University’s graduate business school, will represent a significant presence in the postgraduate management education market, offering a range of courses, business consultancy services and sophisticated technological infrastructure, and will be effectively positioned to serve the needs of European and other international managers in the first decade of the new century.