

Postgraduate studies at Sussex

The University of Sussex is an internationally recognised research institution with award-winning faculty. Postgraduate research students at all levels work in a supportive environment and receive extensive research training.

Research at Sussex

Sussex has a dynamic and thriving research culture. Our strengths range across the arts, social sciences, science and medicine, with excellence demonstrated both within individual subjects and across thematic areas.

Within the *Times Higher Education* World University Rankings 2010, the University of Sussex is in the top 10 in the UK, the top 20 in Europe, and in the top 80 of universities worldwide. One of the particular strengths highlighted was the impact of Sussex's research, which was ranked 4th in the UK as measured by research citation counts.

In the 2008 assessment of the standards of research in UK universities, the Research Assessment Exercise (RAE), over 90 per cent of Sussex research activity was rated as world leading, internationally excellent or internationally recognised, confirming Sussex among the leading research universities in the UK. One in six of the research outputs produced by staff was rated as world leading, with over 90 per cent producing work that is internationally recognised or better.

Distinguished faculty

Sussex's international reputation helps to attract leading researchers. We are proud to have counted three Nobel Prize winners, 15 Fellows of the Royal Society, six Fellows of the British Academy and a winner of the prestigious Crafoord Prize on our faculty.

Top right: cross-disciplinary research at the Centre for Computational Neuroscience and Robotics is exploiting the interfaces between biological and computational sciences. By studying the navigation techniques of insects such as ants and bees, we are advancing biological knowledge as well as developing new kinds of robotic systems

A pioneering approach to interdisciplinarity

A refusal to be confined by traditional disciplinary boundaries characterises some of the most distinctive research at Sussex. For example, the Brighton and Sussex Medical School (BSMS) – a partnership between the Universities of Sussex and Brighton – provides fruitful opportunities for biomedical research.

Sussex's six interdisciplinary research themes mean researchers from across the University can work together to solve the major issues of the day:

Citizenship and Democratisation Freedom, violence and reconciling conflict in an insecure world

Culture and Heritage Constructing identity and culture through notions of memory and place

Digital and Social Media Applying digital media to construct and communicate across space and society

Environment and Health Enhancing health and well-being by promoting illness prevention and disease management

Global Transformations Rethinking social adaptation in the context of changing environments and the global economy

Mind and Brain Unravelling the mind, brain and consciousness: from cell to self and personal identity.

For more information about the exciting and innovative research activity at Sussex, refer to pages 8-13 and the individual subject entries on pages 37-152.



Collaborative partnerships

At Sussex we recognise the importance of supporting research through collaboration. We have important academic partnerships with, among others, American Express, the Royal Botanic Gardens, Kew, and the Victoria and Albert Museum (V&A) in the UK; Renmin and Nanjing Universities in China; and Yale University in the US.

We are also part of the South East Physics Network (SEPNet), funded by £12.5 million of Government grants to support vital UK science research, teaching and development (also refer to the Physics subject entry on pages 135-137).

Superb resources

From the excellent newly refurbished University Library, which is home to the globally recognised Mass Observation Archive and our Careers and Employability Centre, to cutting-edge medical imaging equipment, the resources available to postgraduate students at Sussex are impressive.

The University has undertaken significant development of buildings on campus in recent years: our major new teaching building, Fulton, is now open, and work has begun on our £30-million innovative academic building. Our £100-million investment in both buildings and infrastructure will continue through to 2015 and beyond.

Investment also includes a new nuclear magnetic resonance facility and purpose-built apparatus in cryogenic research that is among the best in the world. The University has received millions of pounds from the Science Research Investment Fund to support our work in biological sciences, particle physics, and science and technology policy research.

Research at Sussex: arts and humanities

- outstanding rankings in the 2008 Research Assessment Exercise (RAE) for many arts and humanities subjects
- world-renowned arts research centres offer an interdisciplinary approach
- opportunities to study abroad at one of our European partner institutions as part of your degree

Sussex has always moved beyond the boundaries of single disciplines, questioning and challenging received ideas. In the arts and humanities, Sussex has pioneered interdisciplinary studies, unifying a strong focus on historical study with the exploration of modern and postmodern theory.

Excellence in the arts and humanities at Sussex was confirmed by the 2008 Research Assessment Exercise (RAE). All our subjects in arts and humanities were judged as having at least 90 per cent of their research internationally rated, with some outstanding results: American studies at Sussex was ranked 1st in the UK, and art history 3rd.

European co-operation

From its inception, the University of Sussex has been strongly committed to European co-operation, and Sussex now offers one of the best-supported European study abroad programmes in Britain. Sussex has long-established links with European HE institutions through the Commission's Lifelong Learning Programme. Research students, if eligible, may benefit from Erasmus grants, and undertake research abroad at one of our partner institutions. For more details, contact [E sussexabroad@sussex.ac.uk](mailto:Esussexabroad@sussex.ac.uk)

A performance of the opera *Knight Crew*. Julian Philips, who spent his final year of a PhD project as composer-in-residence at Glyndebourne Opera, under the supervision of Professor Nick Till in the Centre for Research in Opera and Music Theatre, was commissioned by Glyndebourne to write the score of the legend of King Arthur and the Knights of the Round Table in a contemporary urban setting. It was filmed for a new BBC Two programme called 'Gareth Goes to Glyndebourne', which follows the development of *Knight Crew* through rehearsals to performance

Our arts and humanities schools of studies

As a postgraduate student you will be based in one of the following schools of studies:

- English
- History, Art History and Philosophy
- Media, Film and Music.

The research activity within and across the schools is organised into a number of research centres, which are focal points for faculty, research staff and postgraduate students with common research interests.

Research centres in the arts and humanities

Sussex supports several interdisciplinary research centres:

The Centre for Byzantine Cultural History brings together art historians, textual scholars and archaeologists from the Universities of Sussex, Newcastle, and Queen's, Belfast.

The Centre for Colonial and Postcolonial Studies reflects significant interdisciplinary interest in the histories and cultures of colonialism, and in post-colonial studies.

The Centre for Early Modern Studies has been established to pursue interdisciplinary research in all areas of the early modern period, broadly 1350-1800.

The Centre for Gender Studies brings together faculty and postgraduate research students in arts and humanities and social sciences in a vibrant interdisciplinary research culture focused on representations and social relations of gender.

The Centre for German-Jewish Studies is concerned with the contribution made by German-speaking Jewish communities to modern European civilisation.

The Centre for Intellectual History was established to continue the University's distinguished tradition in intellectual history while widening the agenda to include the history of philosophy and religious thought and their connections with science.

The Centre for Literature and Philosophy builds on Sussex's long tradition of fruitful collaboration between literature and philosophy and develops new areas of enquiry addressing issues that arise at the intersection of the two disciplines.

The Centre for Material Digital Culture co-ordinates research into the cultural impacts of new media systems. It provides a platform for the study of new media forms within, and beyond, the boundaries of media studies, exploring the networked digital culture in which we live.

The Centre for Modernist Studies provides a focus for the interdisciplinary study of Anglo-American and European traditions in literary and cultural modernism.

The Centre for Research in Opera and Music Theatre is a national and international centre for research and development in the practice, theory and history of opera, music theatre and multimedia performance.

The Centre for the Study of Sexual Dissidence draws together and promotes new work on lesbian, gay, bisexual, queer, transsexual and transgender studies from a wide range of disciplines in the arts and humanities.

The Centre for Visual Fields is designed to foster research in a wide range of interests in visual studies, across media, disciplines and cultures.

The Centre for War and Society brings together a number of Sussex faculty around the central idea that war had a fundamental effect on British society in the long 20th century.

The Marcus Cunliffe Centre for the Study of the American South facilitates research in the social, political, economic and cultural history of the American South from the colonial period to the present.

The Sussex Centre for Cultural Studies brings together across disciplines our distinctive and internationally renowned research on popular cultural identities, practices, texts and beliefs.

For a list of all the research centres and groups at Sussex, visit www.sussex.ac.uk/research/researchgroups

On the page opposite we showcase one of our ground-breaking research projects. Find out more at www.sussex.ac.uk/research

Further information

For further details of programmes and for specific contact information, refer to the subject entries dealing with the research area or subject of your interests (pages 37-152).



Building a new picture of Byzantine art

The Culture and Heritage research theme is helping to construct identity through notions of memory and place.

Crossing the art/science disciplinary boundaries, Professor Liz James and an international group of archaeologists, art historians and glass scientists are re-evaluating the technology behind the construction of Byzantine mosaics and the composition of Byzantine glass mosaic tesserae.



Can understanding the origins of Byzantine glass mosaic tesserae shed new light on the economic and cultural connections of the past?

When one thinks of Byzantine art, the picture most likely to come to mind is of mosaics – beautifully coloured, richly detailed images, primarily depicting religious iconography, from an empire that spanned over a thousand years. Over the last three years, an international, multidisciplinary group of scholars, sponsored by the Leverhulme Trust, has been involved in the study of the composition of Byzantine glass to understand better the origins of these mosaics.

When studying other periods of art history, such as the Renaissance, in addition to the art itself, there is a wealth of knowledge about the artists who created it and detail of how it was produced. In contrast, for those who study Byzantine art, other than the physical presence of the mosaics on the walls, there is little or no surviving information on how they were made or who made them.

Byzantine mosaics are composed of thousands, or tens of thousands, of tiny pieces of coloured glass tesserae and, to a greater or lesser degree depending on the mosaic, similarly shaped pieces of differently coloured stone. Through the study of these tiny pieces of glass tesserae, one can begin to formulate and

answer questions about their provenance and production, possible consumer sites, and patterns of trade in the glass, which in turn might increase understanding of the wider economic and cultural connections in the Byzantine world. To begin to address some of these issues, Liz James, Professor of Art History at the University of Sussex, has been involved in workshop projects designed to foster collaboration between an international group of art historians, archaeologists and glass scientists with specialist interests in Byzantine art and history and in glass technology.

By bringing together the disciplines of art and science, one can begin to ask new and different questions that unpick previous assumptions about how mosaics are understood to have been made. One such assumption, when thinking about mosaics from a purely artistic perspective, might be that the style and appearance of a piece is attributable to the preference of the artist. However, thinking about the composition in more technical terms changes the questions that might be asked. For example, how much of the style of a particular mosaic is dictated by the materials and technology at the artist's disposal rather than artistic preference? In early Byzantine art, does the prevalence of green glass tesserae at sites across the Mediterranean and Near East indicate the existence of a widespread industry in producing this colour of glass?

Bente's perspective

'I was the Network Facilitator on the mosaic project and responsible for arranging the workshops, here and abroad, and with a major role in the outputs of the Network. The Network has been a great success – it's been a very rewarding experience to work with a team of international scholars, led by Liz James. The core team worked well together as an academic as well as a social group; a shared enthusiasm for the project meant that meetings were always dynamic, stimulating and enjoyable. 'Visits to sites in Italy and Greece immensely enhanced the research by being able to investigate in situ and share our knowledge on the spot. The Network has produced a glossary of mosaic terms and several databases with records of sites with and texts about glass mosaics. In working on these, my research knowledge and skills have grown through the investigation of data from art historical, archaeological, scientific and architectural sources. 'One of the achievements of this part of the Network activity has been to bring out of the shadows long-forgotten evidence of glass tessera finds in early 20th-century archaeological reports, which means that we now have a better picture of just how many buildings were decorated in this beautiful manner.'

Dr Bente Bjornholt
Network Facilitator,
Art History



Do the comparative rarity and the difficulty involved in making red glass indicate that there were only a few specialised sites hosting that particular technology? Similarly, are the shifting colour palettes observed across time – from a proliferation of greens and blues in the 5th, 6th and 7th centuries to more gold, pinks and browns being used in the later Byzantine Empire – because of technological, cultural or artistic factors? Did the switch from the use of reflective white and pink glass in the faces of 6th-century religious icons to the use of matt stone in the 11th century demonstrate changing artistic choices, or the loss or discarding of a specific technology?

By studying the composition of the glass tesserae – where it comes from, how it was coloured, where in its lifecycle it was coloured – it may be possible to begin to answer some of these questions. The project, which involves scholars from Sussex, the Universities of Cardiff, Nottingham, Thessaly and Bologna, from Lyons and Venice, and from the Department of Antiquities in Israel, as well as museums such as the Benaki Museum in Athens, the British Museum in London and the Metropolitan Museum in New York, has been designed to facilitate discussions that will shed new light on the origins of Byzantine art.

Research at Sussex: sciences

- research in all scientific areas ranked as world leading in the 2008 Research Assessment Exercise (RAE)
- postgraduate study in a range of scientific disciplines
- internationally recognised sciences faculty
- our interdisciplinary approach crosses traditional subject boundaries

Sussex offers exciting research opportunities for postgraduate study in a wide variety of related scientific disciplines. The University has been home to the research of three Nobel Prize winners in science and the winner of the prestigious Crafoord Prize (in biosciences). We have also counted 15 Fellows of the Royal Society on our staff.

Sussex offers many opportunities for research and activity that cross subject boundaries both within the sciences and across the University to the arts and social sciences. One of the driving forces in our current research is the interdisciplinary approach to the pursuit of knowledge at the important interfaces between subjects.

Our sciences schools of studies

As a postgraduate student you will be based in one of the following schools of studies:

- Engineering and Design
- Informatics
- Mathematical and Physical Sciences
- Life Sciences
- Psychology.

The research activity of Sussex's sciences schools and departments is organised into research groups, which are focal points for faculty, research staff and graduate students with common research interests. Research at Sussex is flexible, with recognised centres of excellence acting as hubs for multidisciplinary interests.

Research groups and centres in sciences

Membership of our research groups and centres of excellence can be quite informal and it is not unusual for faculty and their research students to participate in the activities of more than one of them. Many research groups have strong links with particular taught Masters degree programmes.

An overview of the research activities in science is provided on the right. For more detailed information on subjects of particular interest and the work of specific research groups and centres of excellence, refer to the subject entries in this prospectus starting on page 37, or visit www.sussex.ac.uk/research



Biochemistry

Structural biology • gene expression and cell signalling and genomics • genome stability and cancer. There is considerable overlap in research interests between these areas and other areas within life sciences, such as the Genome Damage and Stability Centre, the Brighton and Sussex Medical School (BSMS), and the Centre for Chemical Biology.

Biology

Genes and development • aspects of animal behaviour • plant science • evolution and natural selection (including the application of mathematical theory) • ecology and conservation. There is also a considerable overlap in research interests with the Genome Damage and Stability Centre, and the environmental science, biochemistry and neuroscience groups.

Chemistry

Chemical biology • polymer science • nanotechnology and molecular enzymology • chemical physics and spectroscopy • natural product synthesis • synthetic methodology • organic synthesis and reactions • organometallic chemistry • materials science • transition metal, main group and f-element chemistry • cluster science • theoretical chemistry.

Engineering and design

Research is organised into ten groups: Biomedical Engineering Group • Centre for Physical Electronics and Quantum Technology • Communications • Dynamics and Automotive Engineering (DAE) Group • Electrical and Electronic Engineering Group • Industrial Informatics • Mechanical Engineering Group • Space Science Centre • Thermo-Fluid Mechanics Research Centre (TFMRC) • Tribology.

Environmental science

Processes controlling the mobility, persistence and availability of toxic substances in soil and aquatic systems • environmental hazards, sampling and uncertainty • endocrine disruption • genotoxicology.

Informatics

Research is organised into four groups: Cognitive and Language Processing Systems • Evolutionary and Adaptive Systems (EASy) • Foundations of Software Systems • Interactive Systems. Informatics also plays a central role in three major cross-disciplinary research centres: Centre for Computational Neuroscience and Robotics (CCNR) • Centre for Research in Cognitive Science (COGS) • Sackler Centre for Consciousness Science (SCCS).

Mathematics

Research is organised into four groups: Analysis and Partial Differential Equations • Mathematical Biology • Numerical Analysis and Scientific Computing • Topology and Geometry.

Neuroscience

Fundamental studies of the molecular, cellular, electrophysiological and behavioural mechanisms of brain function including sensory physiology, hearing research, vision, motor control, learning and memory.

Physics and astronomy

Research is organised into four groups: Astronomy Centre • Atomic, Molecular and Optical Physics • Experimental Particle Physics • Theoretical Particle Physics.

Psychology

Research is organised into four groups: Behavioural and Clinical Neuroscience • Cognitive Psychology • Developmental and Clinical Psychology • Social and Applied Psychology.

On the page opposite we showcase one of our ground-breaking research projects. Find out more at www.sussex.ac.uk/research

Further information

For further details of programmes and for specific contact information, refer to the subject entries dealing with the research area or subject of your interests (pages 37-152).

The dynamics of interneuronal communication in the brain

The Mind and Brain research theme is helping to unravel consciousness from the cell to self and personal identity.

By demonstrating novel dynamic processes in individual neurons, a research team at Sussex is helping to understand how cells might adjust their communication properties to support the flexible output of the nervous system and even learning and memory formation.



The discovery of the sharing of a 'super-pool' of vesicles between neuronal synapses sheds light on the dynamic process of intercellular communication in the brain

In recent years, an increasing body of evidence has shown that many functions of the brain are highly dynamic, or 'plastic', ie that the brain is able to change continually in response to stimulus and experience. This flexibility is thought to be a key property in allowing the nervous system to support short-term and sustained changes in output, associated with learning and memory. However, the mechanisms that underlie this flexibility are not well understood. Chemical synapses are key sites in the nervous system, existing as junctions between neurons that allow the transmission of information from one cell to another within complex neuronal networks. Using innovative microscopic imaging technologies, researchers in the School of Life Sciences at Sussex are studying neurons in the hippocampus. By uncovering novel aspects of synapse-synapse interaction, they propose that these properties may underlie dynamic capabilities in brain function.

The hippocampus, the part of the brain thought to be critical to learning and memory, provides a standard model for studying interneuronal communication, how the transmission of information can change, and how alterations

in the 'strength' of the signal are transmitted at synaptic junctions. Synapses comprise a presynaptic and postsynaptic terminal on neuronal axons that are separated by an extracellular space. Any single presynaptic terminal can contain several hundreds or thousands of synaptic vesicles filled with neurotransmitter. Information is transmitted across the synapse by vesicles in the presynaptic terminal fusing with the cell membrane and releasing the neurotransmitter into the extracellular space, where it is 'taken up' by the postsynaptic terminal. Vesicles in the presynaptic terminal are then reclaimed from the cell membrane back into the cell through a process called endocytosis to permit further signalling events to take place. Through understanding the extent and timing of this process, and the mechanisms underlying vesicle recycling and changing 'strength' of the synaptic signal, it may be possible to better understand the processes of learning and memory.

Recently published work from a research group at Sussex, led by Dr Kevin Staras, Reader in Neuroscience, has demonstrated that the process of vesicle recycling may be more dynamic and complex than originally thought. Synaptic terminals within any neuron do not exist as single operational entities but are part of a much larger population, with hundreds or even thousands of terminals in a single neuron forming connections with other neuronal targets.

Arjuna's perspective

'It's really exciting to be part of a field that is challenging our fundamental understanding of the way the nervous system works. It's particularly appealing because we address these issues using state-of-the-art imaging methods that allow us to actually observe cellular events. For a visual person, there's something really satisfying about directly seeing the dynamic processes taking place in neurons to support information transmission around the brain.'

'The trick with this kind of work is to be really innovative in designing experiments: keeping a close eye on new optical imaging techniques and then exploiting these developments to provide novel insights into brain function.'

'The strength of neuroscience work at Sussex provides a great backdrop for our research. For example, major groups with interests in fundamental disease mechanisms and learning and memory offer genuine opportunities for collaborative projects, expanding our own research into new areas. Ultimately, we hope that the combination of approaches we use and the synergy between us and other groups at the University might even offer novel therapeutic targets for tackling diseases of the nervous system.'

Dr Arjuna Ratnayaka
Research Fellow,
School of Life Sciences



Using powerful cutting-edge fluorescence-based imaging and correlative light-electron microscope techniques, the Sussex team has been the first to show that, rather than these synaptic populations working independently of each other, vesicles form part of a shared 'super-pool' that can be transferred between the presynaptic terminals of a single neuron at a substantial rate. This trading of vesicles between synapses is potentially very important. For example, given that the strength of the synapse is directly related to the number of vesicles it contains, a mechanism by which synapses can draw from an extrasynaptic pool and increase their vesicle number offers a potential mechanism to dynamically adjust synaptic strength.

If this process is shown to underlie a capability for neurons to be flexible in their signalling function, it could offer insights into disease conditions where this flexibility may be severely compromised, thereby offering potential new therapeutic targets for combating neuronal dysfunction.

Research at Sussex: social sciences

- in the 2008 Research Assessment Exercise (RAE), 10 of 12 subjects we submitted ranked in the top 15 nationally
- one of the largest centres of social sciences doctoral training in the UK, with over 230 permanent academic staff
- leading research centres provide a forum for study and discussion
- distinctive, interdisciplinary Masters programmes

Research in the social sciences at Sussex covers 14 areas recognised by the UK's Economic and Social Research Council (ESRC), including all the major social science disciplines, and a number of specialist interdisciplinary areas in which Sussex has a major international reputation, such as development studies, European studies, migration studies, gender studies, international education and development, and science and technology policy research.

In the 2008 RAE, 10 of 12 social science subjects we submitted were ranked in the top 15 nationally, with the work of over 130 staff judged to be internationally excellent or world leading.

Our stimulating and accessible postgraduate programmes are informed by cutting-edge research, and are taught by established academic staff whose work is internationally recognised in their field. We aim to use research-led teaching at Masters level to provide you either with a route into the policy or business worlds, equipped with insights from the latest in social science research, or with a route to a research degree to explore further a specialist area of research.

Sussex research in the social sciences is particularly recognised for its high level of impact in policy fields such as social work, education, development studies, international migration, and law. This is reflected in a high degree of interaction with UK Government departments and international organisations in these fields, including two major research centres funded by the Department for International Development on migration and poverty, and access to education. We also host the ESRC Social, Technological and Environmental Pathways to Sustainability (STEPS) Centre.

Our social sciences schools of studies

As a postgraduate student you will be based in one of the following schools of studies:

- Business, Management and Economics
- Education and Social Work
- Global Studies
- Law, Politics and Sociology.

The research activity within and across the schools is organised into a number of research centres, which are focal points for faculty, research staff and postgraduate students with common research interests.

Research centres in the social sciences

Sussex is home to a number of leading interdisciplinary centres of excellence, which provide an unrivalled interdisciplinary context for the study of the contemporary world. Many of these centres host weekly research seminars that attract major international speakers, as well as providing a forum for discussion of work-in-progress undertaken by research students and academic faculty.

A number of research centres at Sussex are actively engaged in major international collaborative projects with researchers in Europe, North America, and across poorer parts of the world. Some centres provide workspace and paid research opportunities for affiliated research students.

All centres welcome both Masters and research students to participate in their activities:

- Centre for Colonial and Postcolonial Studies
- Centre for Gender Studies
- Centre for Global Political Economy
- Centre for Higher Education and Equity Research
- Centre for Inquiry and Research in Cognition, Learning and Teaching
- Centre for International Education
- Centre for Research and Innovation in Childhood and Youth
- Centre for Responsibilities, Rights and the Law
- Centre for Social and Political Thought
- Centre for the Study of Parties and Democracies in Europe
- Justice and Violence Research Centre
- Sussex Centre for Migration Research
- Sussex European Institute
- The Sussex Energy Group

For a list of all the research centres and groups at Sussex, visit www.sussex.ac.uk/research/researchgroups

The Institute of Development Studies (IDS) (www.ids.ac.uk) is housed on the Sussex campus and the University is home to SPRU – Science and Technology Policy Research (www.sussex.ac.uk/spru).

On the page opposite we showcase one of our ground-breaking research projects. Find out more at www.sussex.ac.uk/research



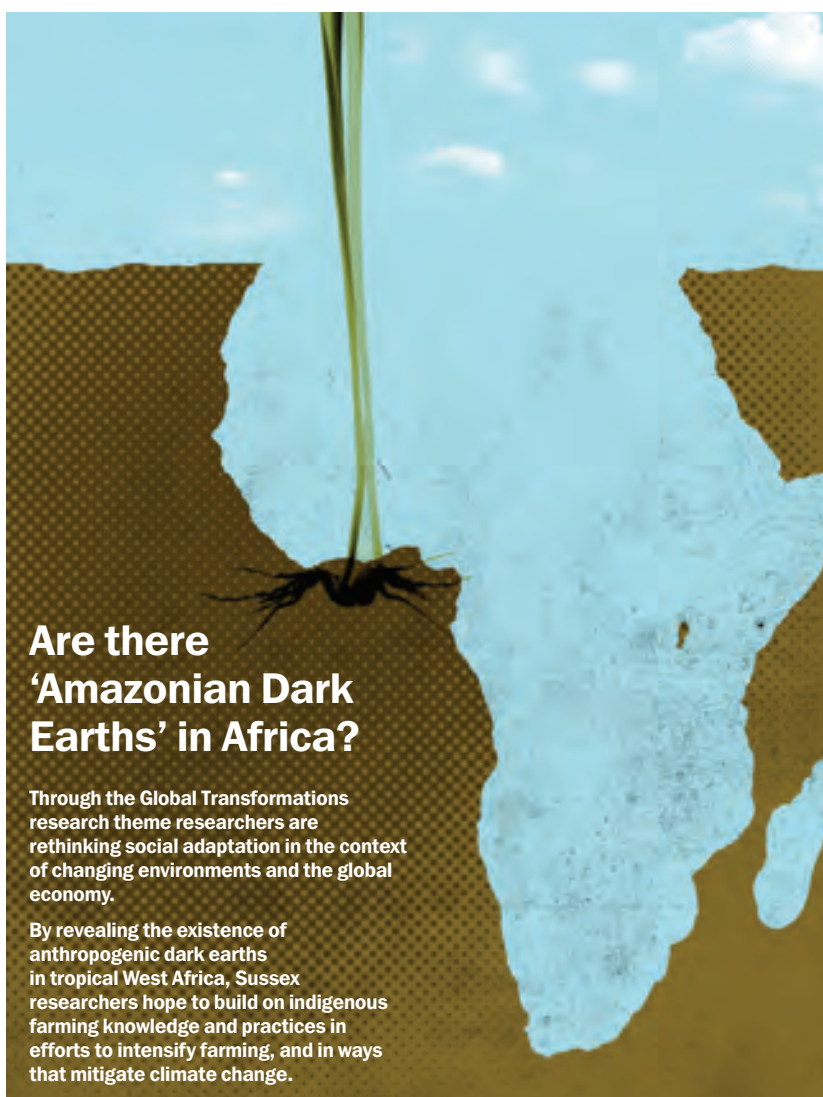
Lower-caste women at a water handpump in Rajasthan, India. Limited access to water is detrimental to their reproductive health. One of the areas of research at Sussex focuses on the anthropology of gender, reproduction and health

Further information

For details of degree programmes and for specific contact information, refer to the subject entries dealing with the research area or subject of your interests (pages 37-152).

Higher Education in Tanzania. Sussex staff engage in collaborative research and capacity building at two case-study institutions in Tanzania and Ghana, exploring factors that facilitate or impede access, participation and achievement in Higher Education





Are there 'Amazonian Dark Earths' in Africa?

Through the Global Transformations research theme researchers are rethinking social adaptation in the context of changing environments and the global economy.

By revealing the existence of anthropogenic dark earths in tropical West Africa, Sussex researchers hope to build on indigenous farming knowledge and practices in efforts to intensify farming, and in ways that mitigate climate change.

Uncovering the ecological and agricultural importance of anthropogenic dark earths in West Africa

Research into Amazonian soils in the last two decades has led to a fundamental reappraisal of the region's social and natural history. Highly fertile dark soils, commonly known as anthropogenic dark earths (ADEs) and locally as *terra preta* (black earth), had been thought to be naturally occurring but are now known to be human made. These ADEs are estimated to cover 1.2-1.8 million hectares and were produced by the continent's pre-Hispanic Amerindian peoples on otherwise extremely poor soils. They are now believed to have supported the tens of millions of people who suffered catastrophic mortality following contact with Europeans.

Previously, research on ADE soils has been confined to Amazonia. However, new research by an international team of anthropologists and soil scientists is revealing the existence of anthropogenic soils in tropical West Africa and, like Amazonian ADEs, they are a phenomenon that appears to have been overlooked by Western research.

ADEs are not only of historical interest but are potentially very relevant to modern society and agriculture. These soils are highly prized by farmers who are able to use them to farm intensively, unlike the natural soils in which they are formed. Understanding their creation and complex biology holds great scientific interest: if they could be mimicked, it may offer a way to intensify farming in developing regions with poor, highly weathered soil. Additionally, as a key component of the fertility of ADEs is the high proportion of charred carbon, or 'biochar', that they contain, farming technologies based on ADEs could be used to sequester enormous amounts of carbon in the soil. A great deal of work remains to be done on the feasibility of reducing atmospheric carbon by such methods. Nevertheless, ADEs suggest a potential research opportunity for improving agricultural practices while mitigating climate change.

It had been argued that ADEs are a feature unique to the Amazonian region, and that mimicking them may offer a useful technology to import into Africa. However, a multidisciplinary team that includes researchers from Sussex, headed by Professor of Social Anthropology James Fairhead, in collaboration with international research groups from the University of Ghana and Cornell University in the USA, is finding that anthropogenic dark earth soils already exist in the West African tropics and subtropics and are an important resource to farmers.

James's perspective

'The forests in Liberia are often depicted as primeval, so I was surprised to find that soils and vegetation in the northwest are revealing a long-domesticated landscape. Fertile anthropogenic dark earths (ADEs) are widespread and reveal historic settlement patterns like an archive. I know similar soils from my doctoral research on *terra preta* in Brazil where farmers profit from soils enriched in pre-Hispanic times. But in Liberia these soils are still forming around villages from the everyday deposition of fresh and charred organic waste.'

'Farmers have also been showing me dozens of anciently abandoned towns that also feature deep ADE, and which they prize for tree crops like cocoa and kola nuts or conserve as forest. The excitement is in finding that biochar practices and dark earths, which are now being explored by the scientific world as a new way to promote sustainable farming in tropical agro-ecosystems while sequestering huge quantities of carbon, are already part of the West African farming repertoire. There is a lot of experience and knowledge here that could be built on and incorporated into strategies to support agriculture on otherwise poor soils.'

James Fraser
Research Fellow,
Department of Anthropology



As in Amazonia, however, these soils have been overlooked by soil scientists and anthropologists. With fieldwork funded by the UK's Economic and Social Research Council (ESRC) in Ghana, Guinea, and Liberia, and in collaboration with researchers in Sierra Leone and Nigeria, the research is examining how ADE soils are created and used, asking: what processes of carbon enrichment and agro-ecological transformation are significant?; what mix of social, ecological and technical factors is involved?; how do African farmers distinguish, value and use these soils?; what is the significance to livelihoods?; and to what extent and in what ways do these soils share characteristics with Amazonian ADEs?

The intention of the research is to advance understanding of previously underappreciated local soil knowledge in Africa. Evidence for ADEs will also help establish a more productive dialogue and collaboration between researchers, building on ADE technologies in South American and African contexts. Whether or not the African dark earths are similar to those in the Amazon, it is hoped that this research will ultimately lead to technological advances to improve modern agronomic practice while addressing climate change.

Routes to postgraduate study at Sussex

- opportunity for postgraduate study at a number of different levels
- a range of taught postgraduate programmes complements the many postgraduate research options on offer
- strong links between taught and research programmes encourage cross-pollination of ideas between students and staff

We have structured postgraduate work at Sussex to enhance postgraduate education, and ensure that all of our students work within a stimulating context that promotes the cross-pollination essential to high-quality research.

So, whichever route into postgraduate study you choose, you will be joining a postgraduate community that draws appropriate subject areas into a coherent body, provides an academic and social environment in which students, research staff and faculty can learn from each other, and offers facilities that encourage both intellectual and social exchange.

Masters degrees and other taught postgraduate programmes

Our taught postgraduate programmes offer you the opportunity to study the subject of your first degree at an advanced level, or develop new skills and knowledge by undertaking a programme in a different subject. They can enhance your career prospects by developing knowledge and skills relevant to your chosen career, and help you prepare for a research degree by developing your subject knowledge and research skills.

With taught Masters programmes, typically between half and three-quarters of your time is devoted to taught courses, with the remainder spent researching and writing up a supervised dissertation or project on a topic chosen in conjunction with your assigned supervisor.

Sussex offers a range of taught postgraduate programmes including:

- Masters in Business Administration (MBA)
- Master of Arts (MA)
- Master of Laws (LLM)
- Master of Science (MSc)
- postgraduate diplomas and certificates.

We also offer professional qualifications such as the Postgraduate Certificate in Education (PGCE) and the Common Professional Examination (CPE)/Graduate Diploma. For a full listing of our programmes, refer to pages 165-167.

Research training

If you're interested in studying for a research degree in the social sciences, or want to learn about research methods, you might want to consider our innovative MSc in Social Research Methods, run by the new Economic and Social Research Council (ESRC) Doctoral Training Centre.

If you want to study for a PhD, and are seeking ESRC funding, you will be required to take this programme, unless you have already achieved a similar level of research training at a university elsewhere.

At the end of your first year you graduate with a Masters degree, before proceeding to the PhD (this is called 1+3 study).

In the fields of economics, psychology and science, technology and innovation, our specialist Masters programmes are recognised by the UK's Economic and Social Research Council (ESRC) as providing research training suitable for 1+3 study.

All the other social sciences at Sussex receive research training through our innovative and interdisciplinary MSc in Social Research Methods, run by the ESRC Doctoral Training Centre. This is for students in the fields of anthropology, contemporary European studies, development studies, education, human geography, international relations, politics, law, migration studies, social work and social care, and sociology.

This MSc programme is specifically designed to provide 1+3 training for those intending to move directly to doctoral study in relevant disciplines and interdisciplinary areas. It can also be taken as a stand-alone one-year programme by those who wish to apply advanced research methodologies to an area of academic or policy interest without continuing to a doctorate.

Programme structure of the MSc in Social Research Methods

Our MSc programme follows a standard model, in which you study the philosophical underpinnings of research, research design, research ethics, and both quantitative and qualitative methods. Following on from these core elements, you undertake a series of options on advanced research methods providing the key skills necessary for carrying out doctoral-level research.

Throughout the year, you also undertake a research elective in your chosen discipline or interdisciplinary area, which comprises independent reading, attendance at research seminars, and regular individual supervisions with a dedicated member of academic faculty.

Autumn term: you take courses in introductory quantitative and qualitative methods, as well as Philosophy of Science and Social Scientific Research Practice or a theoretical core course within your chosen discipline.

Spring term: you take Research Design and Ethics and *either* three intermediate methods courses *or* one intermediate methods course and a subject-specific course. Intermediate methods courses include Action Research

- Comparative Method
- Discourse Analysis
- Ethnographic Methods
- Evidence for Policy and Practice
- Geographical Information Systems
- Participatory Methods
- Policy and Programme Evaluation Research.

Summer term and vacation: you take a series of advanced methods options, offered in the form of short workshops, and undertake supervised work on a dissertation focused on research methods. This dissertation can be the full research outline for doctoral study.

Assessment of the MSc in Social Research Methods

Taught courses are variously assessed by term papers of 3,000-5,000 words or equivalent coursework portfolios. The research elective is assessed by a dissertation of 10,000 words.

In addition, there are two other awards available:

- a Postgraduate Diploma in Social Research Methods, which comprises 120 credits of coursework and has the same requirements as the MSc minus the research elective and dissertation component
- a Postgraduate Certificate (as above), which comprises 60 credits of coursework.

Donna's perspective

'The transition from undergraduate to postgraduate study can be quite daunting, but the MSc in Social Research Methods has provided me with a comprehensive skill set that makes me feel much more confident about progressing to PhD study.

Through a mixture of lectures, seminars, reading and applied practice, I've learned not only how different methods (both qualitative and quantitative) can be used, but to question my every assumption, to link theory to method and to really think about the types of knowledge that can be generated. Studying alongside people from a wide range of cultures and disciplines, in particular, has really expanded my understandings and opened up whole new avenues of thought about research, enabling me to be much more proactive and imaginative in how I approach social issues.

'For me, though, the real highlight of this degree programme has been the opportunity to develop my PhD research proposal in conjunction with two eminent academics in the field. I'm planning to investigate what it means to be diagnosed with Asperger syndrome (a form of autism) as an adult, so having regular one-to-one sessions with experts in the sociology of health has not only been a huge privilege, but enabled me to acquire specialist knowledge about this specific field of research. While it can be a bit nerve-wracking the first time a professor asks you to defend your position, having such focused expert input has not only developed my knowledge, but taught me a lot about life as an academic and how to progress in the field of social research.

'If you want a taste of doctoral life while continuing to develop your skills and research ideas, this MSc really is a must.'

Donna Dove-Wallington
MSc in Social Research
Methods



Research degrees

A research degree offers you the opportunity to undertake an in-depth study of a particular topic. You carry out an independent and original piece of work, which you then write up in the form of a thesis.

When you are admitted as a research student, you are carefully matched with two supervisors experienced in the field of your personal research interests, who assist you in formulating a research proposal. You will need to define a programme of research that can be completed within the maximum permitted period of registration. The support of your main supervisor is crucial in assisting you to complete your degree successfully. Supervisors can offer advice and guidance, but they will not tell you exactly what to read or how to design and carry out work on your thesis.

In the arts and social sciences you are normally required to complete a research proposal during the first year of registration, providing a rationale, statement of the research problem, discussion of research methods, timetable of activities and indication of the range of outcomes anticipated. You then work to develop your analytical frameworks, review relevant literature, develop your data collection methods and plan any fieldwork or experimental work necessary. Finally, you write up your research as a thesis.

In some cases you may be required to complete graduate coursework before proceeding to research. This may be the case if you register for a research degree and do not have a Masters degree, if your first degree and/or Masters degree are not in the same subject as your proposed research topic, or if faculty at Sussex decide that you need further grounding in the relevant subject. The graduate coursework will give you specialist and methodological knowledge that will provide support at a time when your research, though exciting, may be full of bewildering possibilities.

Scientists and engineers are registered for a specific research project. You normally choose an individual project, which may be part of a team project, and the first stage of your work is the preparation of a plan of research. You are required to do this within the first year of registration.

Sussex offers a range of research degrees including:

- Master of Philosophy (MPhil)
- Doctor of Education, International Doctor of Education (EdD)
- Doctor of Philosophy (PhD)
- Doctor of Social Work (DSW).

MPhil or PhD?

MPhil and PhD programmes differ in the length of the programme and therefore in the extent of the research work you can undertake and incorporate in your thesis. To qualify for an MPhil, a thesis must either make an adequate original contribution to knowledge or understanding, or be a valuable presentation or interpretation of material put together in an original manner. A PhD thesis must make a substantial original contribution to knowledge or understanding.

The subject entries of this prospectus (pages 37-152) refer to subject areas in which MPhil and PhD programmes are available. However, please note that the final MPhil or PhD award is not specifically linked to a particular subject. For example, a PhD student whose research focuses on physics will graduate with a PhD and not a PhD in Physics.

Part-time study

At Sussex we believe that the experience of part-time study is enhanced when part-time programmes are integrated with the corresponding full-time programmes. This gives you greater opportunities for studying and sharing ideas with a wide range of students and faculty.

The majority of our taught programmes are available part time (refer to the relevant subject entry for details). We also welcome suitably qualified research students who wish to study part time.

Part-time students are entitled to the same supervision and tuition as full-time students, on a pro-rata basis, and to full use of University facilities and social amenities (except University-managed accommodation).

The study patterns for part-time programmes vary, but are normally integrated with the corresponding full-time programmes (refer to individual subject entries on pages 37-152 for details). This means that teaching is generally carried out during the day and a minimum level of attendance is needed during term time to fulfil the requirements of the programme. Additionally, in order to benefit fully from the range of taught and research programmes offered at Sussex, part-time students should be prepared to attend additional seminars, tutorials and workshops.

Collaborative research

If you are carrying out research for an organisation outside the university sector, it may be possible to register for an MPhil or PhD at Sussex as a collaborative distant student. 'Distant' registration would allow work to continue at your industry base.

Distance learning

If you are a research degree candidate with an occupation in your own country that prevents you from attending full time in the UK for the whole period of study, it may be possible to register as an independent distant student. You would be required to spend a minimum registration period in full-time study at Sussex, and the remainder in an approved distant student arrangement.

For further information about our routes to postgraduate study, contact:

Student Recruitment Services,
Sussex House,
University of Sussex, Falmer,
Brighton BN1 9RH, UK
T +44 (0)1273 876787
E pg.enquiries@sussex.ac.uk
www.sussex.ac.uk/study/pg

At the time of going to print (July 2011), dates for postgraduate study for the academic year 2012-13 have yet to be confirmed.

For the most up-to-date information, visit www.sussex.ac.uk/termdates

Sally's perspective

'Prior to returning to studying as a mature student after a long break from education, I was filled with extreme emotions, from excitement to anxiety. I worried about fitting in with younger students, juggling the work/life balance and being able to cope with getting my brain working again. All my anxieties were quashed as soon as I began my Masters. The support and positivity offered by the Department and the University as a whole has been overwhelming and I soon felt part of the University community. Returning to studying has not only allowed me to develop from an academic perspective, but my time at Sussex has helped me to find my place in this new phase in my life and allowed me to discover who I am and what my goals are for the future. I can't recommend postgraduate study highly enough. Come to Sussex and discover the possibilities.'

Sally Johnson
MA in Art History



Aidan's perspective

'I loved studying here during my BSc and the decision to stay on after I graduated wasn't hard to make. The whole application process was smoothly aided by both my supervisor and my School's administration process. I was fortunate enough to receive a fully funded placement. I'm now midway through my second year, and so far it's been a very enjoyable, if challenging, experience. I've benefited from a helpful lab and a great social environment, while the transition from taught studies to independent research has been supported by my School and the University's doctoral research development programmes.'

Aidan Maartens
PhD in Biology

